

An Influence-Cost Model of Organizational Practices and Firm Boundaries

Michael Powell – Kellogg M&S

ISNIE, 2013

Markets versus Hierarchies

Costs of Market Exchange

Costs of Internal Organization



Haggling

Markets versus Hierarchies

Costs of Market Exchange

Haggling

Costs of Internal Organization

Influence
Costs

Markets versus Hierarchies

Costs of Market Exchange

Haggling

Bargaining
Costs

Costs of Internal Organization

Bureaucracy

Influence
Costs

vs.

vs.

A Unified Approach?

Costs of Market Exchange

Haggling

vs.

Costs of Internal Organization

Influence
Costs

“substantially the same factors that are ultimately responsible for market failures also explain failures of internal organization.” (Williamson, 1973; p. 316)

A Unified Approach?

Costs of Market Exchange

Costs of Internal Organization

Haggling

vs.

Influence
Costs

environmental uncertainty

ex-post disagreement

“substantially the same factors that are ultimately responsible for market failures also explain failures of internal organization.” (Williamson, 1973; p. 316)

A Unified Approach?

Costs of Market Exchange

Haggling

input prices

Costs of Internal Organization

Influence
Costs

vs.

vs.

transfer prices

A Unified Approach?

Costs of Market Exchange

Haggling

input prices

trade credit

Costs of Internal Organization

Influence
Costs

vs.

vs.

vs.

transfer prices

capital allocation

A Unified Approach?

Costs of Market Exchange

Haggling

input prices

trade credit

...

Costs of Internal Organization

Influence
Costs

vs.

vs.

vs.

transfer prices

capital allocation

...

A Unified Approach?

Costs of Market Exchange

Influence
Costs

input prices

trade credit

...

Costs of Internal Organization

Influence
Costs

vs.

vs.

vs.

transfer prices

capital allocation

...

A Unified Approach?

Costs of Market Exchange

Influence
Costs

Costs of Internal Organization

Influence
Costs

vs.

Rigid
Decisions

Costs of Internal Organization with Rigid Practices

THE MODEL

Two Managers



Two Decisions

d_1

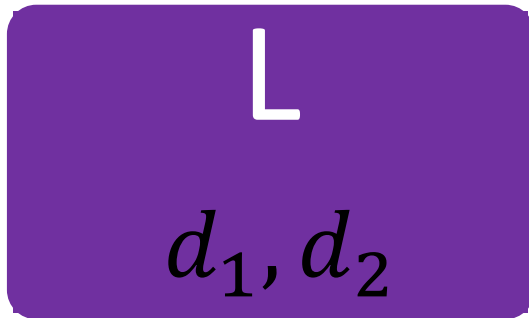


d_2



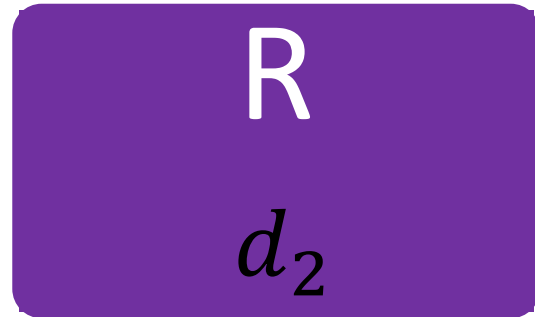
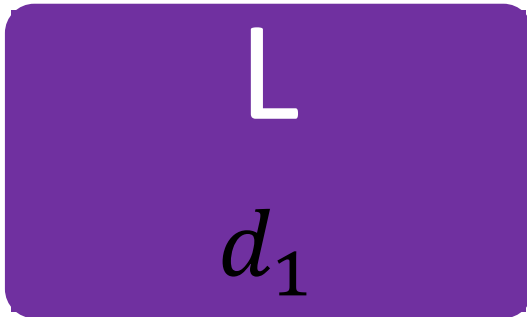
Integration

$$G = \{I, NI\}$$



Non-Integration

$$G = \{I, NI\}$$

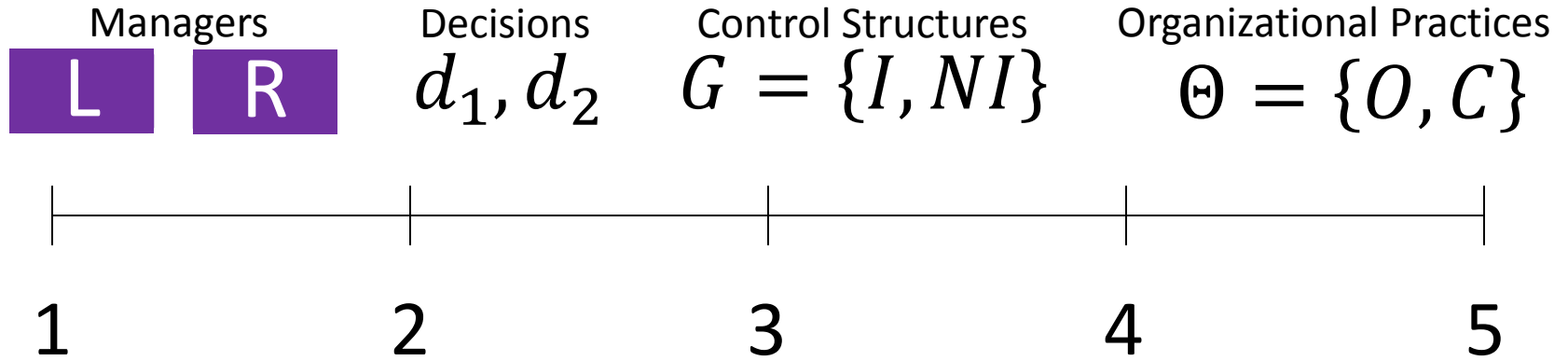


Two Organizational Practices

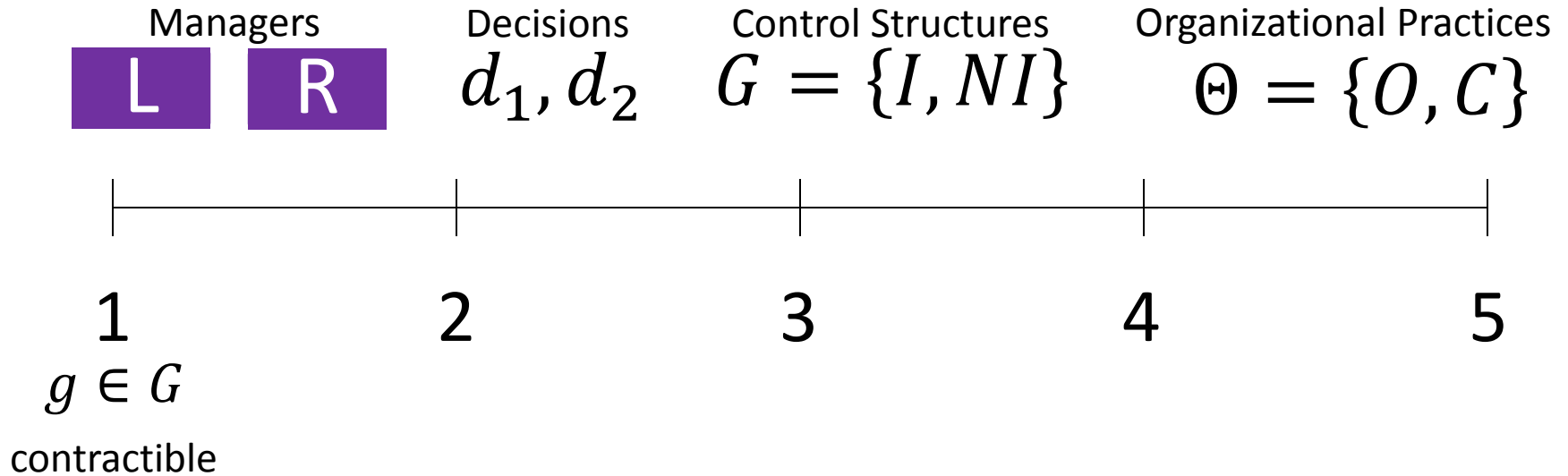
$$\Theta = \{O, C\}$$



Timing

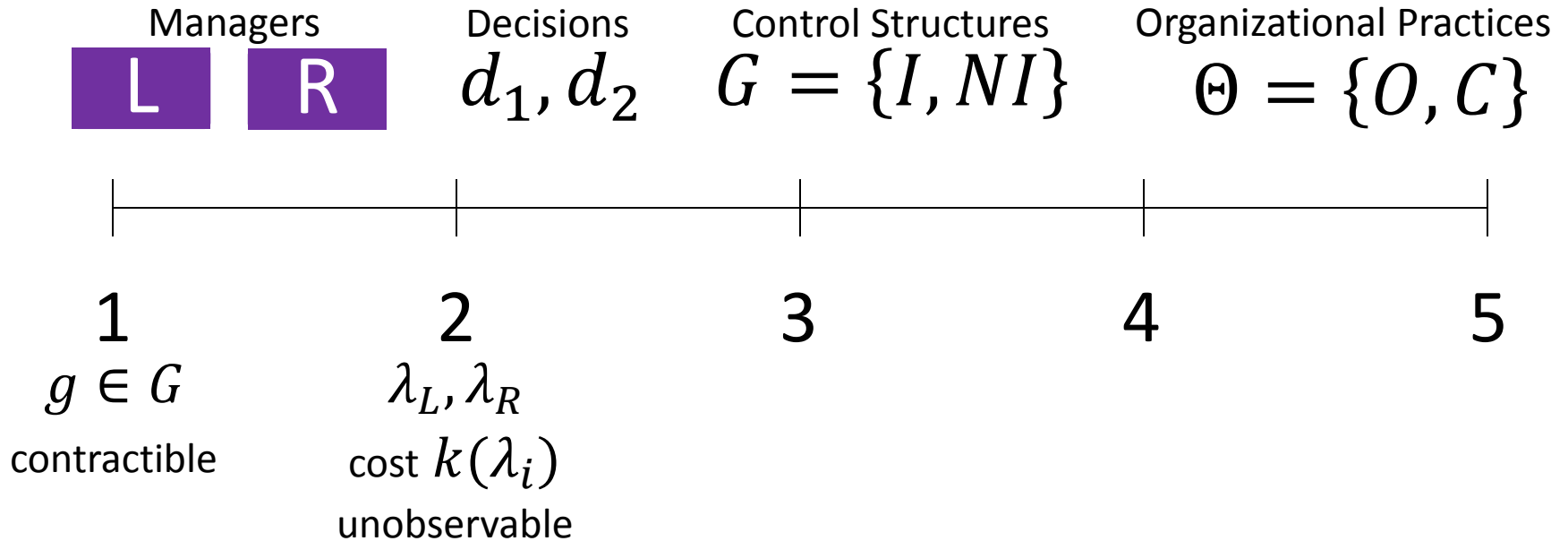


Timing



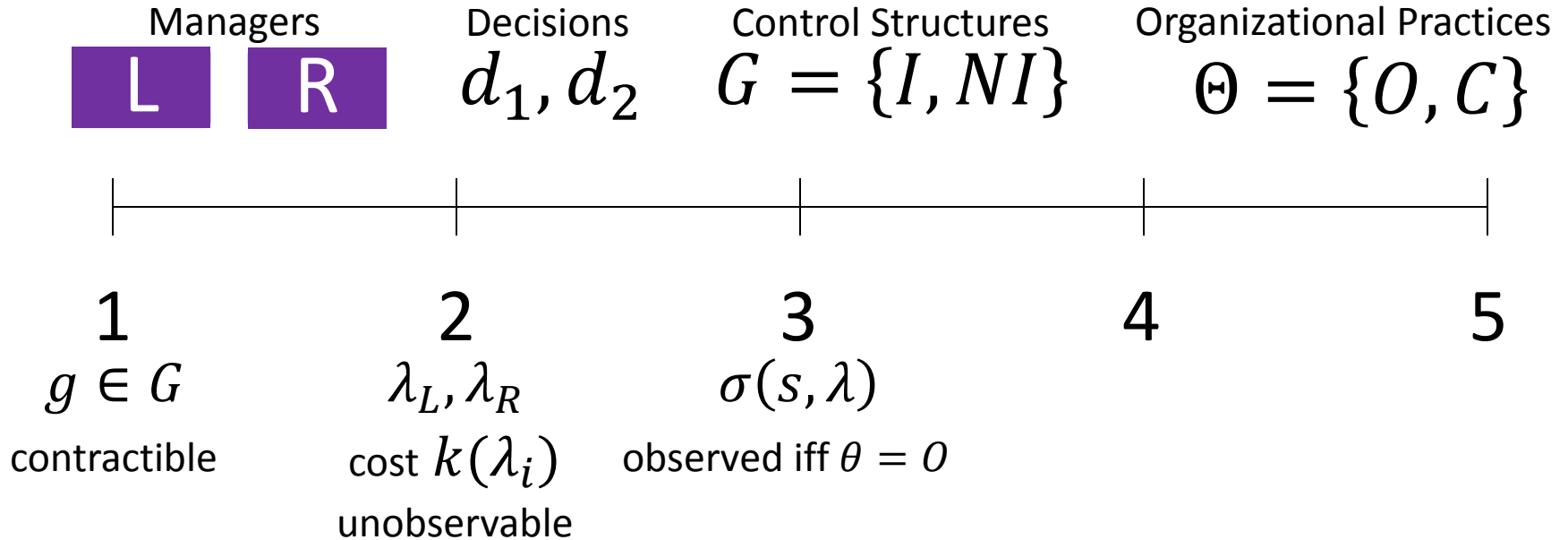
1: **L** and **R** bargain over $\theta \in \Theta$ and $g \in G$

Timing



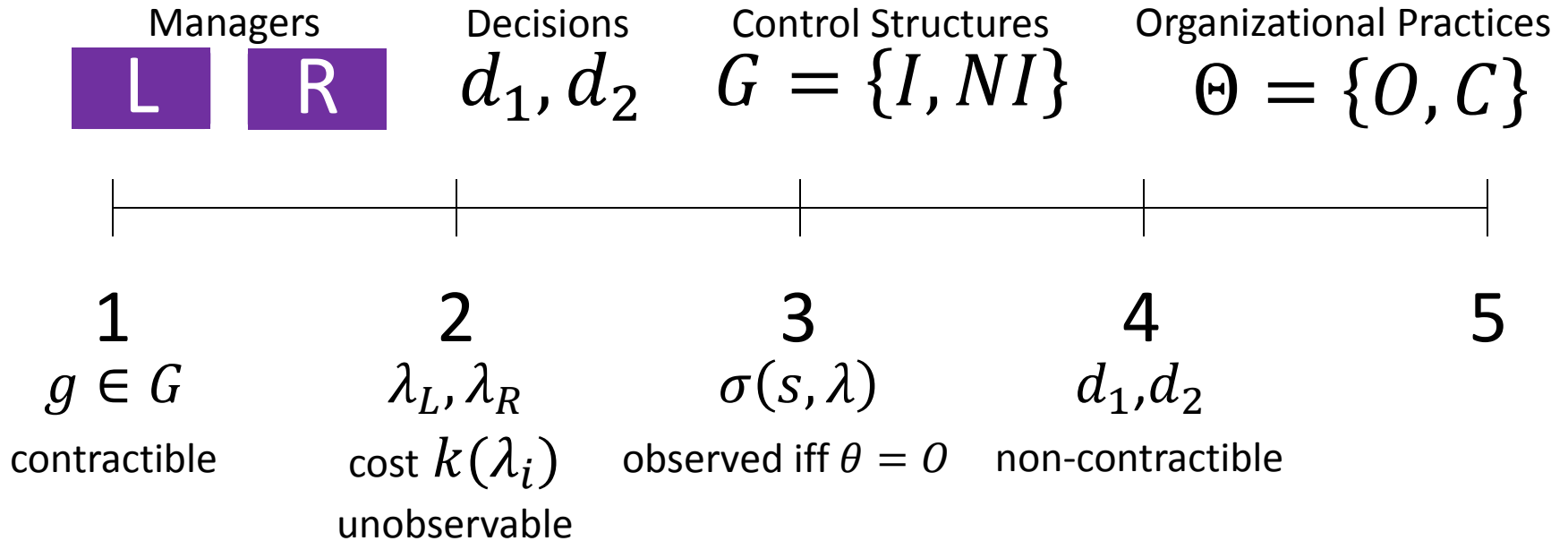
2: **L** and **R** choose influence activities λ_i (unobservable) at cost $k(\lambda_i)$

Timing



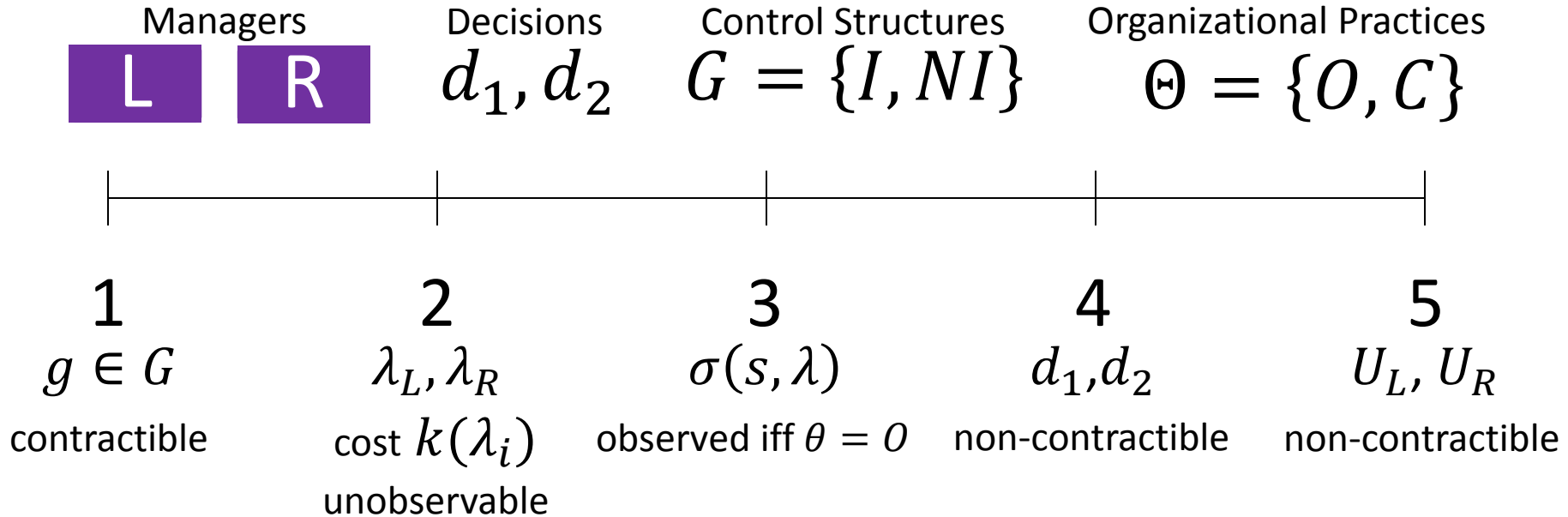
3: s drawn (unobserved), $\sigma(s, \lambda)$ observed
if $\theta = O$. Unobserved if $\theta = C$.

Timing



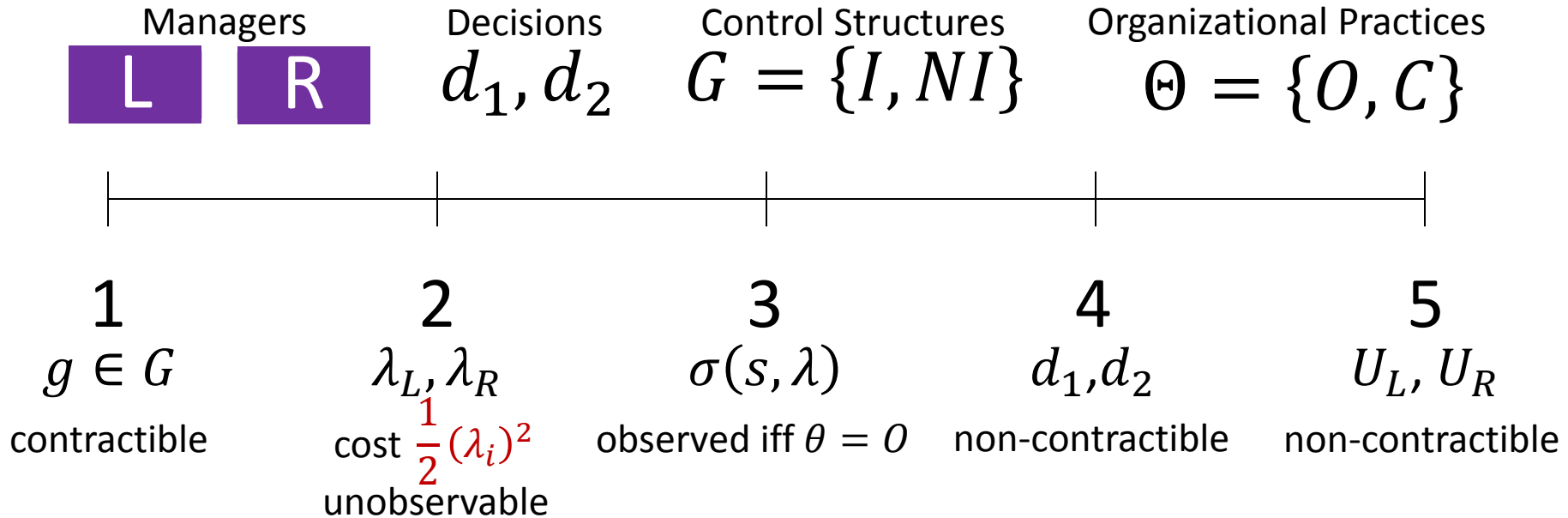
4: Manager(s) with control make d_1 and d_2 .
These decisions are not contractible.

Timing



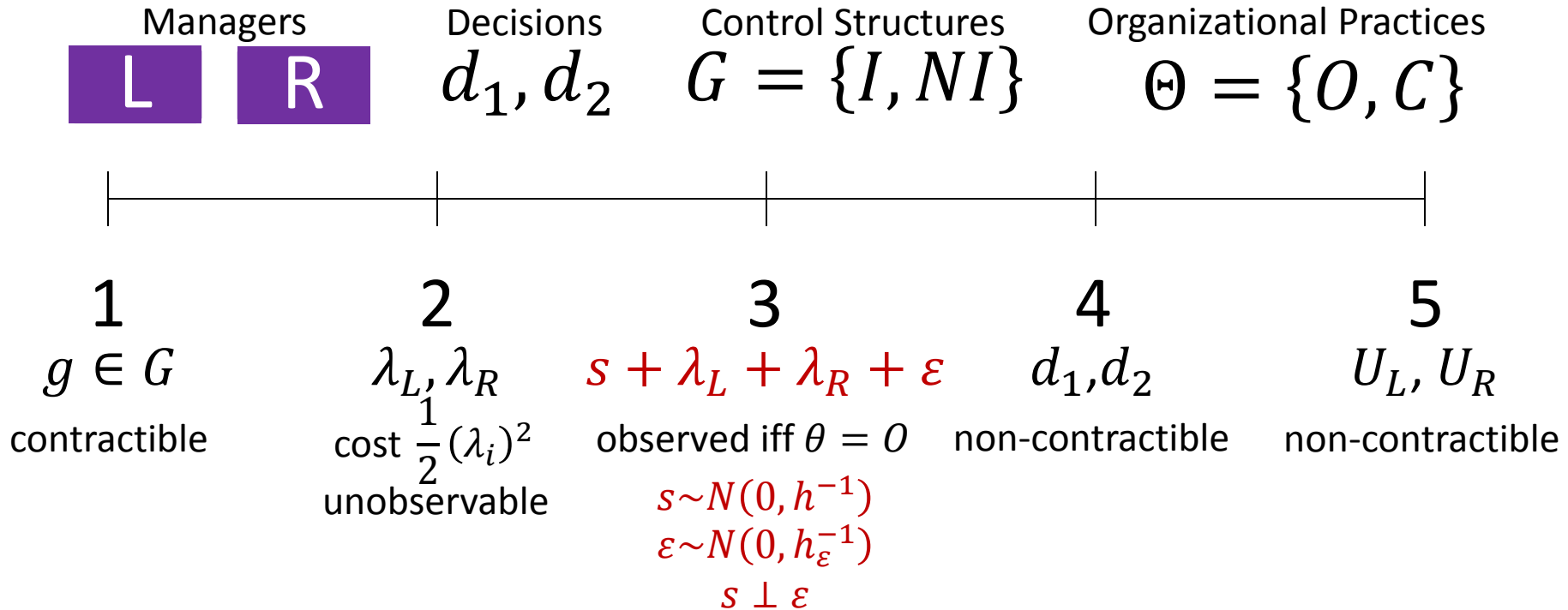
5: Managers receive gross payoffs $U_i(s, d)$.
These payoffs are not contractible.

Functional-Form Assumptions



Quadratic influence costs: $k(\lambda_i) = \frac{1}{2}(\lambda_i)^2$

Functional-Form Assumptions

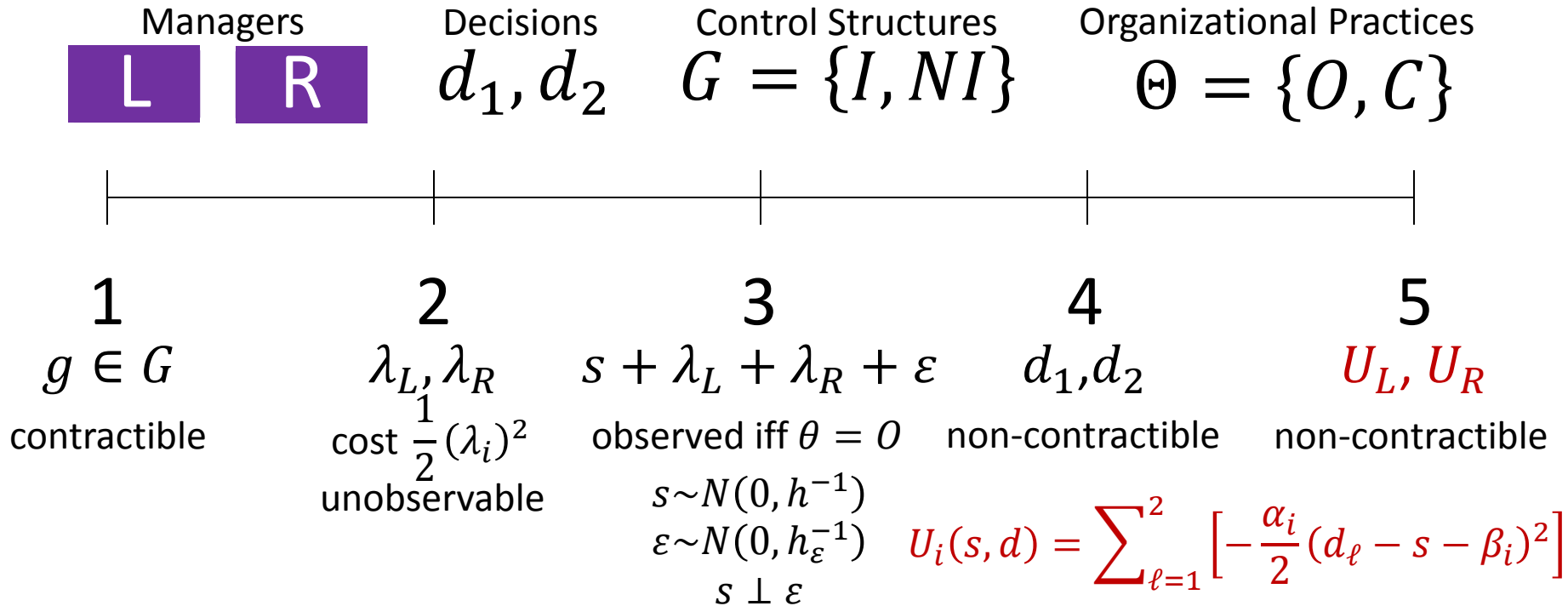


Linear signal: $\sigma(s, \lambda) = s + \lambda_L + \lambda_R + \varepsilon$

Normal distributions: $s \sim N(0, h^{-1}), \varepsilon \sim N(0, h_\varepsilon^{-1})$

Independence: s and ε independent

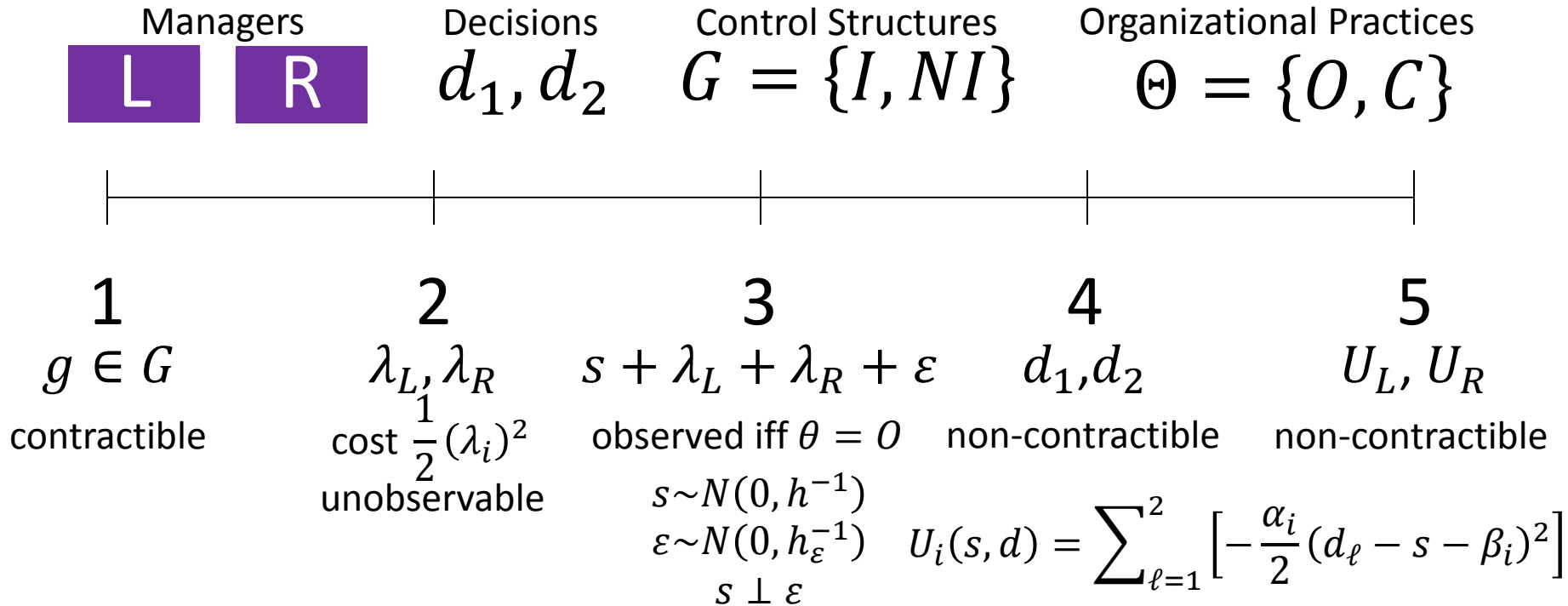
Functional-Form Assumptions



Quadratic loss:

$$U_i(s, d) = \sum_{\ell=1}^2 \left[-\frac{\alpha_i}{2} (d_\ell - s - \beta_i)^2 \right]$$

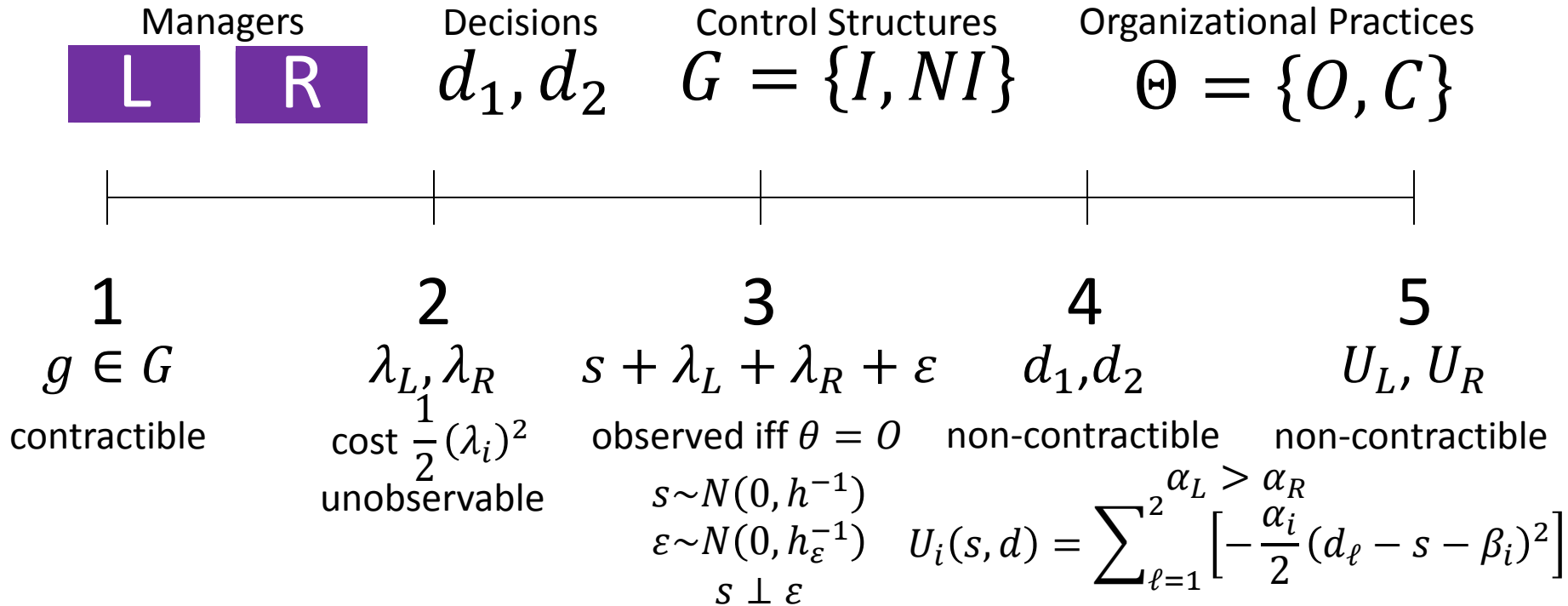
Functional-Form Assumptions



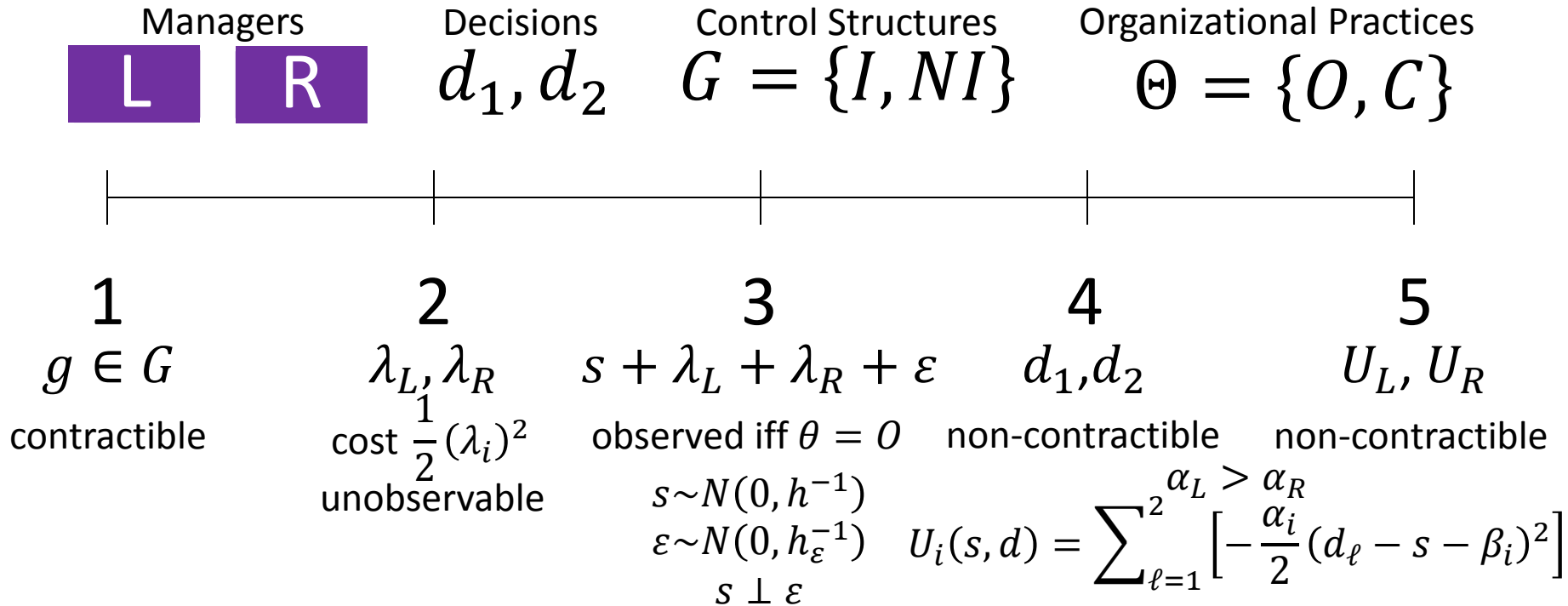
Define: $\Delta \equiv \beta_R - \beta_L > 0$

Assume: $\alpha_L > \alpha_R$

This is the Model



This is the Model



Gibbons, 2005: only one decision right, no rigid practices

THEORETICAL IMPLICATIONS

Equilibrium

Definition: Given a control structure g and organizational practices θ , a **pure-SPNE** of the resulting game is a choice of influence activities λ_L^* and λ_R^* and a decision function $d^{*g}(\sigma; \hat{\lambda})$ such that:

1. Each component of d^{*g} is made optimally by manager with control under g , given beliefs $(s|\sigma, \hat{\lambda}(i))$, which depend on conjectures
2. Influence activities are chosen optimally, given g
3. Conjectures are correct: $\hat{\lambda}(i) = \lambda^*$

Equilibrium Influence Activities

Proposition: Given g and θ , there exists a unique SPNE of the resulting game with

$$|\lambda_j^*| = 0 \quad \text{if } \theta = C$$

$$|\lambda_j^*| = N_{\neg j} \alpha_j \Delta \varphi \quad \text{if } \theta = 0$$

Equilibrium Influence Activities

Proposition: Given g and θ , there exists a unique SPNE of the resulting game with

$$|\lambda_j^*| = 0 \quad \text{if } \theta = C$$

$$|\lambda_j^*| = N_{\neg j} \alpha_j \Delta \varphi \quad \text{if } \theta = 0$$

How many decisions is the other guy is making?

How important is the signal?

How much do I care about the decisions?

How much do we disagree?

How Should Firm be Organized?

- L and R bargain over g^*, θ^* to solve:

$$\max_{(g, \theta) \in G \times \{0, C\}} W(g, \theta)$$

How Should Firm be Organized?

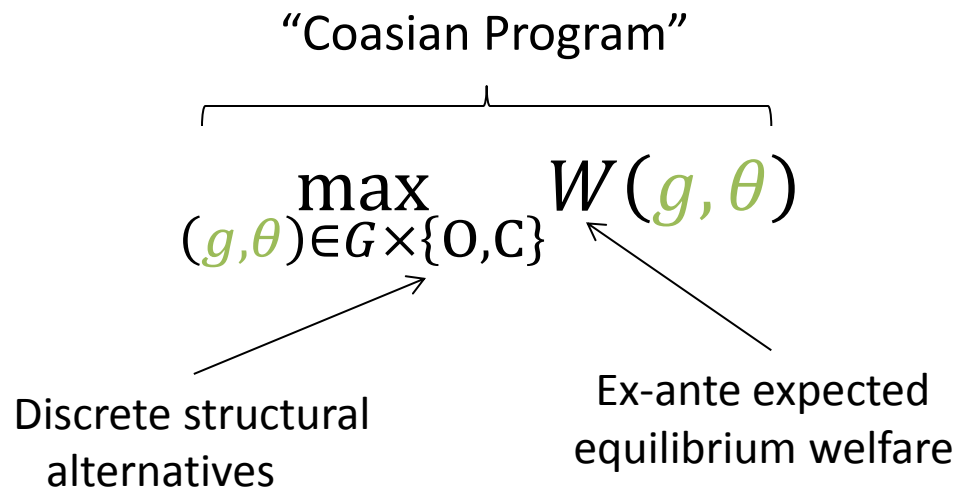
- L and R bargain over g^*, θ^* to solve:

“Coasian Program”

$$\max_{(g, \theta) \in G \times \{0, C\}} W(g, \theta)$$

How Should Firm be Organized?

- L and R bargain over g^*, θ^* to solve:



How Should Firm be Organized?

- L and R bargain over g^*, θ^* to solve:

$$\max_{(g, \theta) \in G \times \{0, C\}} - (ADAP(\theta) + INFL(g, \theta) + ALIGN(g))$$

How Should Firm be Organized?

- L and R bargain over g^*, θ^* to solve:

$$\max_{(g, \theta) \in G \times \{0, C\}} - \left(\underset{\substack{\uparrow \\ \text{decisions are based} \\ \text{on a noisy signal}}}{ADAP(\theta)} + \underset{\substack{\uparrow \\ \text{influence costs}}}{INFL(g, \theta)} + \underset{\substack{\uparrow \\ \text{decisions are not} \\ \text{ideal for someone}}}{ALIGN(g)} \right)$$

How Should Control be Allocated?

- L and R bargain over g^*, θ^* to solve:

want to minimize these

$$\max_{(g, \theta) \in G \times \{0, C\}} - \left(\underset{\substack{\uparrow \\ \text{decisions are based} \\ \text{on a noisy signal}}}{ADAP(\theta)} + \underset{\substack{\uparrow \\ \text{influence costs}}}{INFL(g, \theta)} + \underset{\substack{\uparrow \\ \text{decisions are not} \\ \text{ideal for someone}}}{ALIGN(g)} \right)$$

Influence-cost/alignment-cost trade-off:

Unified control reduces ex-post alignment costs

Divided control reduces influence costs

Complementarities

- L and R bargain over g^*, θ^* to solve:

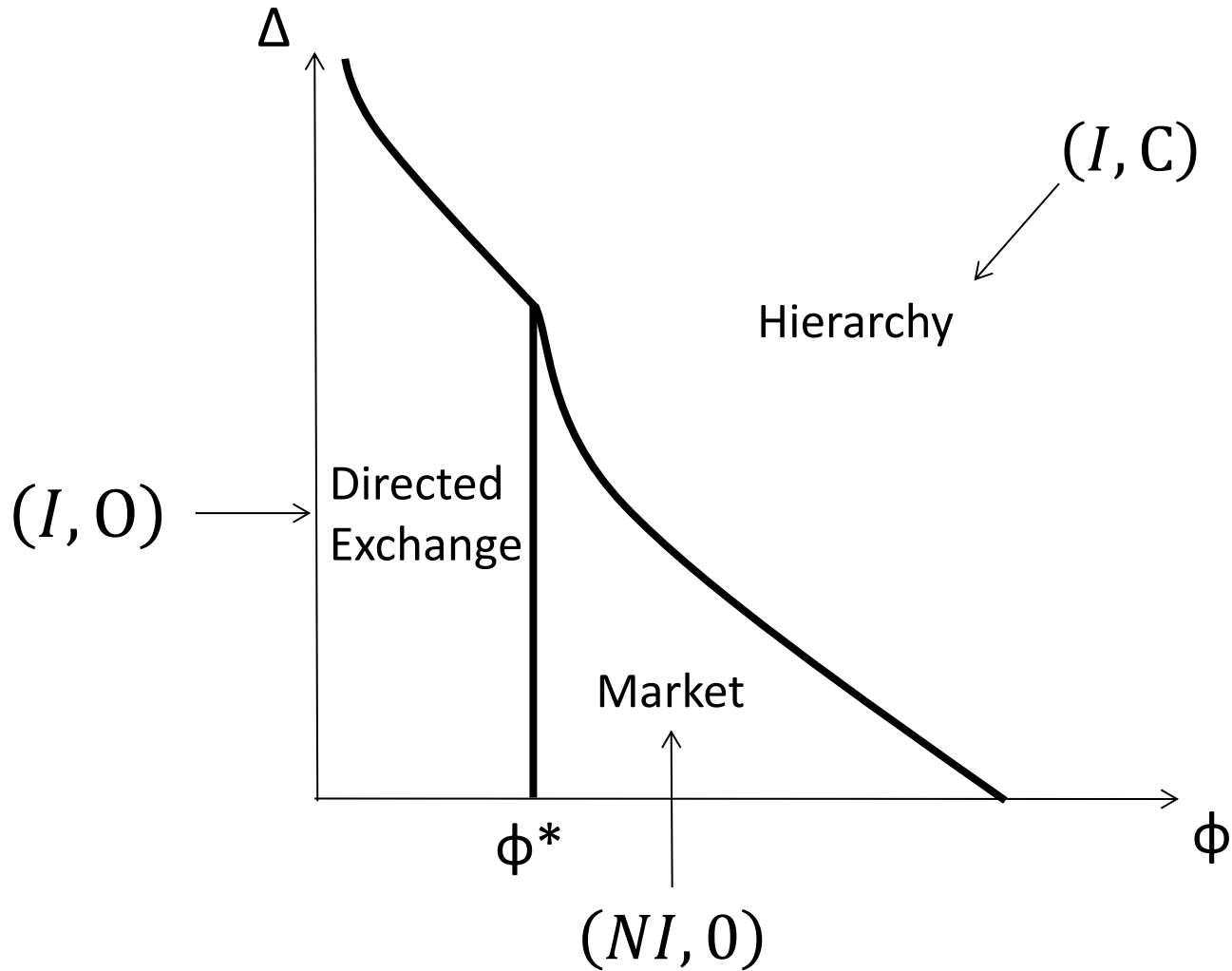
$$\max_{(g, \theta) \in G \times \{0, C\}} - \left(\underset{\substack{\uparrow \\ \text{decisions are based} \\ \text{on a noisy signal}}}{ADAP(\theta)} + \underset{\substack{\uparrow \\ \text{influence costs}}}{INFL(g, \theta)} + \underset{\substack{\uparrow \\ \text{decisions are not} \\ \text{ideal for someone}}}{ALIGN(g)} \right)$$

Rigid practices eliminate influence, so why not unify control?

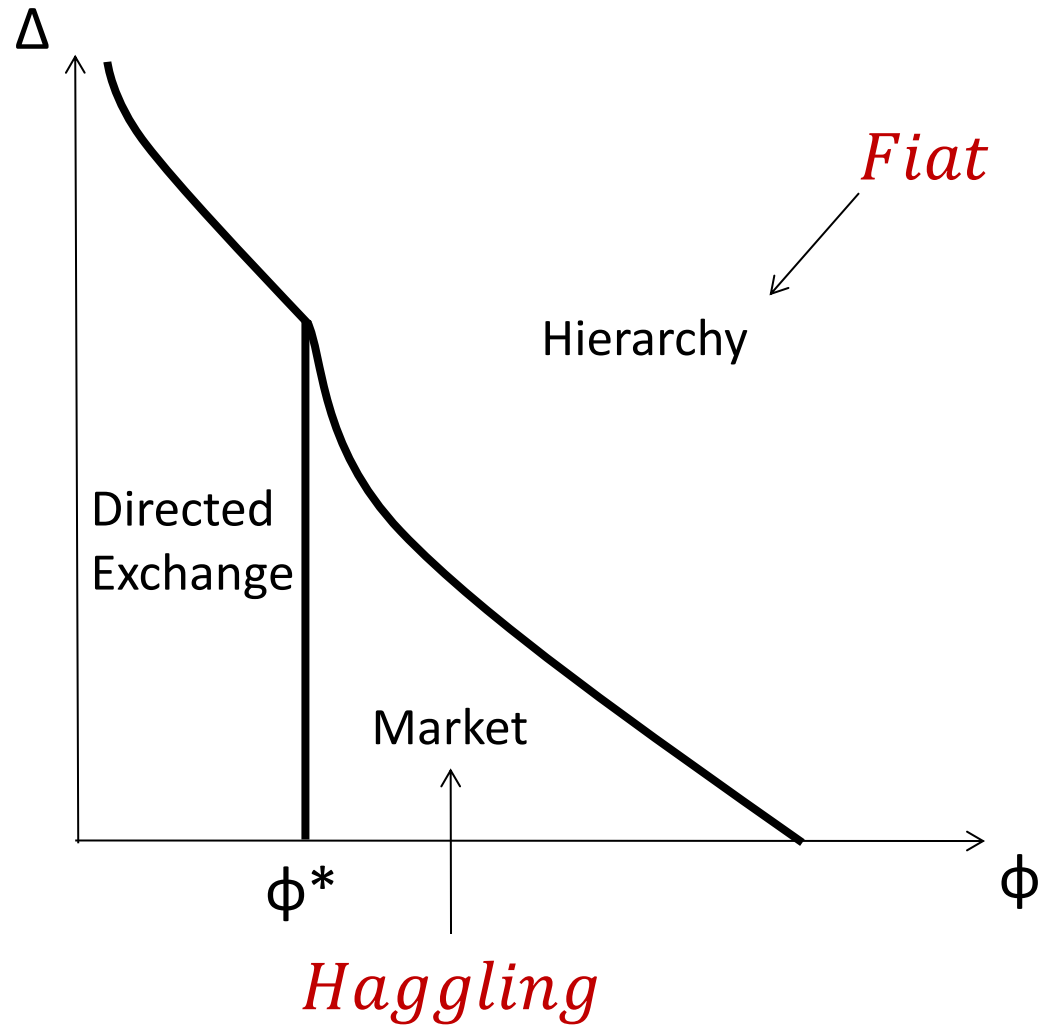
Rigid practices and integration are complements

EMPIRICAL IMPLICATIONS

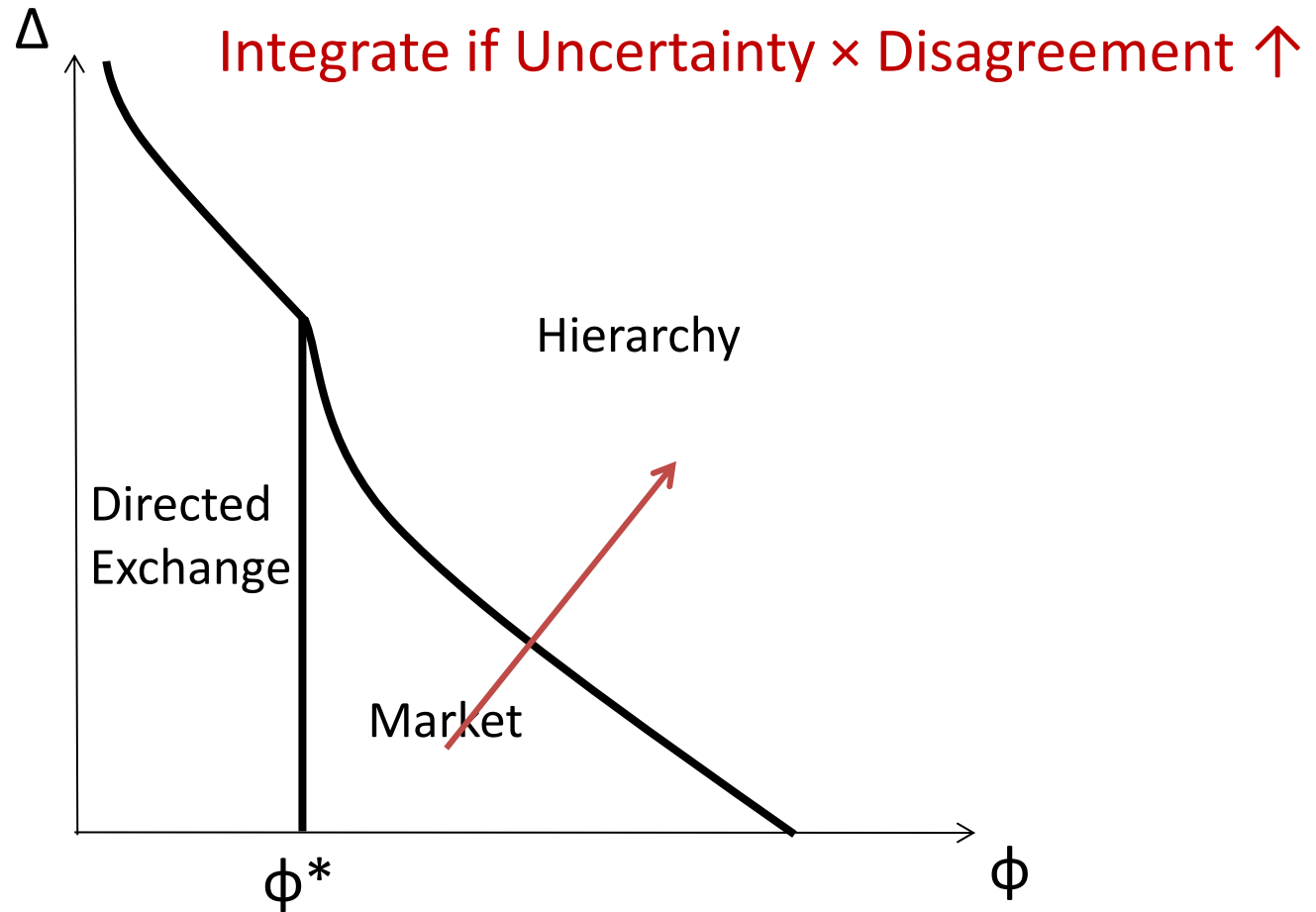
Markets or Hierarchies?



Haggling versus Fiat?




Consistent with Empirical TCE



Bias in VI Regressions

- Typical VI regression:


$$\Pr[VI_i|X_i] = \beta_0 + \beta_1 * Specific_i + \beta_2 * Uncertain_i + \varepsilon_i$$

“bureaucracy cost” hurdle 

Bias in VI Regressions

- Typical VI regression:

$$\Pr[VI_i|X_i] = \beta_0 + \beta_1 * Specific_i + \beta_2 * Uncertain_i + \varepsilon_i$$

“bureaucracy cost” hurdle 

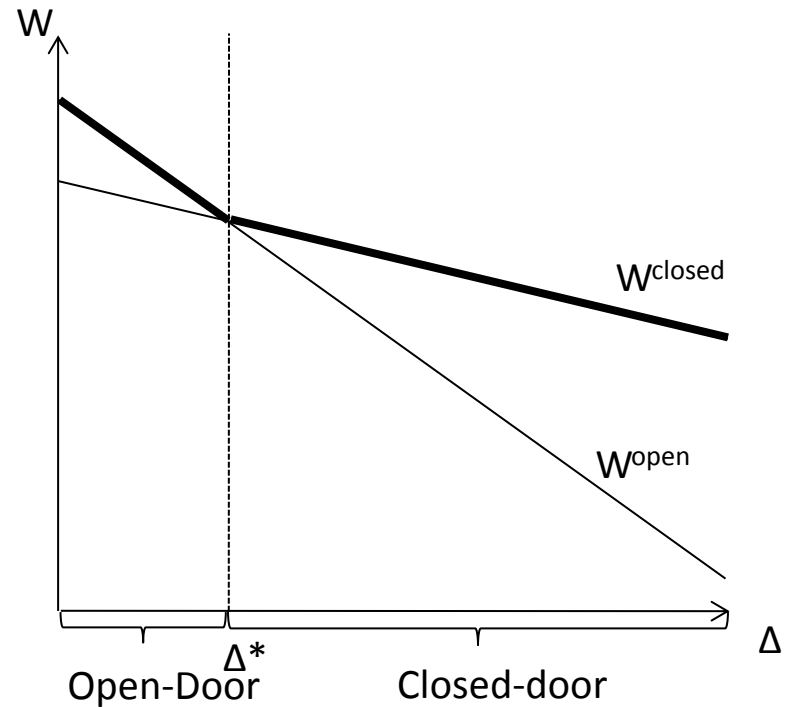
- Bureaucracy costs (ADAP) depend on uncertainty but not specificity:
 - β_1 unbiased, but β_2 biased toward zero
 - Empirical TCE finds little support for uncertainty-VI relationship (David and Han (2004), Carter and Hodgson (2006))

Why do Rigid Practices Persist?

- Bloom and Van Reenen ('07): dispersion in quality of management practices
 - Firms with better practices perform better
 - Careful to select practices that seem unambiguously beneficial, but...
 - ...many low scores consistent with influence costs:
 - No continuous improvement initiatives, seniority-based promotion policies, ...

Practices as Design

- Variant of Prendergast '03: When rigid practices perform well, flexible practices perform better; but when rigid practices perform poorly, flexible practices perform worse.



Influence in Multidivisional Orgs

- Variation on a theme: influence-cost considerations drive internal organization
- Implications of influence-cost approach:
 - $Corr(dec, \pi^*) > 0$ Consistent with recent findings in Bloom, Sadun, Van Reenen (2012)
 - $Corr(dec, \theta^*) < 0$
- Same equilibrium corr, different implications:
 - Decentralized firms do well, because those choosing *dec* operate in an easier environment

CONCLUSION

Theoretical Implications

- Unified account of TCE and Influence Costs
- Theoretical Implications:
 - Firm boundaries and organizational practices chosen to moderate influence costs
 - Bureaucracy complements integration
 - Bureaucracy can be the lesser of two evils rather than a hurdle to overcome

Empirical Implications

1. Consistent with existing TCE evidence
2. Suggests existing TCE evidence biased against finding VI-uncertainty relationship
3. Consistent with management practice-performance relationship in Bloom et. al.

Further Applications

- Internal structures
 - Decentralize to reduce influence activities
 - Centralize to coordinate
- Interaction of boundaries and product-market strategy and innovation
 - Stay small to reduce influence activities
 - Reduce scope to reduce disagreement