Organizing a Kingdom

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Mannheim
Motivation

- Common problem in organization of polities: How to govern distant locations
  - Local elites with different interests: i) Landed elite, ii) Urban elite
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  - Landed elites run towns; only landed elites in national assemblies
  - Towns self-governing; urban elites also represented in assemblies
    ⇒ This is the blueprint for federalism: towns as separate jurisdictions
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- **Main features of the model:**
  - Novel mechanism to explain institutional changes in response to economic shocks
  - Emphasize role of delegation and communication
  - Interplay between changes in local and nationwide institutions
This Paper: Main Results

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Optimal governance structure depends on economic conditions

- When towns are economically unimportant ⇒ **Integration**
  - **Administration**: Landed elite controls towns
  - **Communication**: Monarch communicates with landed elite, who passes information on to towns
  - **Upside**: communication less costly, more coordination; **Downside**: limits adaptation of towns to local conditions

- When towns become economically important ⇒ **Separation**
  - **Administration**: Towns gain self-governance
  - **Communication**: To avoid biased communication, ruler communicates directly with both landed elite and towns (in parliament)
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Related Literature and Contribution

- Institutional dynamics within a *given* institutional structure
  - Extension of the franchise as **commitment** to redistribution/public goods provision (Acemoglu and Robinson, 2000; Lizzeri and Persico, 2004)
  - This paper: Emergence of institutional structure with representatives of the “commons” to ensure effective **communication and coordination**
Related Literature and Contribution

- Institutional dynamics within a *given* institutional structure
- Rise of merchant elites
  - “Administrative power” (González de Lara, et al. 2008, Greif 2008)

⇒ This paper: i) model mechanism how economic change led to administrative power of merchants; ii) how this affected state-level institutions.
Related Literature and Contribution

- Institutional dynamics within a *given* institutional structure
- Rise of merchant elites
- Assemblies
  - Commitment device (Levi, 1988; North and Weingast, 1989; via information aggregation → Myerson, 2008; Fearon 2011)
  ⇒ This paper: (i) local self-administration affects the *composition* of assembly; (ii) assembly matters because it determines how information flows to decision-makers.
Related Literature and Contribution

- Institutional dynamics within a *given* institutional structure
- Rise of merchant elites
- Assemblies
- Models of coordinated adaptation within organizations
  - Alonso et al. (2008 *AER*); Rantakari (2008 *RESstud*)
  - This paper: i) Principal is not a social planner; ii) Principal is privately informed about common state; iii) Sequential communication; iv) Different types of coordination (internal & external).
Outline of the Talk

1. Institutional Setting
2. Theoretical Analysis
Institutional Background – England and Western Europe

Medieval England

- Norman Conquest in 1066 ⇒ ‘strong’ monarchy, imposes homogeneous formal (de jure) institutions
- “Commercial Revolution” starting in 12C ⇒ growth of towns and their economic importance ⇒ municipal self-governance
- (‘Model’) Parliament in 1295 ⇒ local communities (shire and towns) represented in general assembly
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- Similar dynamics throughout Western Europe (Van Zanden et al., 2012)
  - But particularly strong central authority in England (North et al., 2009)
Organization Before the Commercial Revolution

**Delegation** of administrative control

- Monarchs had no choice but to delegate administrative authority to local elites (Harding, 1973)
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Organization Before the Commercial Revolution (ii)

**Communication** to coordinate on matters of common interest

- Monarch summons landed elite to central assembly
- Landed elites inform urban elites in shire courts (Carpenter, 1996)
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Organization *After* the Commercial Revolution

**Delegation** of administrative control

- Self-governed towns become administratively separated from the shire
Organization **After** the Commercial Revolution

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Organization *After* the Commercial Revolution (ii)

**Communication** to coordinate on matters of common interest

- Monarch summons landed *and* town elites to parliament
Institutional Setting

Organization After the Commercial Revolution (ii)

Communication to coordinate on matters of common interest

- Monarch summons landed and town elites to parliament

- Inclusion of towns in parliaments changed nature of war effort, legislation, etc.

Diagram:
- Monarch
  - Summons
  - Delegates authority to Parliament
  - Sends representatives to Shire
  - Administration and Communication
  - Town
    - Town Elite (Administrative control over town)
    - Sends representatives
  - Landed Elite (Administrative control over shire)
  - Parliament to discuss realm-wide matters
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  - Yet, no model to study this interaction
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- Desiderata:
  - Rationalize why monarchs gave towns self-governance...
  - ...and why they summoned self-governed towns to parliament
  ⇒ Highlight economic trade-offs
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- Desiderata:
  - Rationalize why monarchs gave towns self-governance...
  - ...and why they summoned self-governed towns to parliament

⇒ Highlight economic trade-offs

- Evaluate alternative choices: What if monarch...
  - ...does not grant self-governance?
  - ...summons to parliament without self-governance?
  - ...does not summon self-governed towns?
Players

- Realm consists of two territorial units $D_i$: $D_L$ (landed) and $D_T$ (town)
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- Three Players:
  - Agent $A_i$ populates $D_i$, $i = \{L, T\}$: $A_L$ (landed elite) and $A_T$ (town elite)
  - Principal $P$ (= Ruler) runs the realm
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States and Players’ Information

- Ruler $P$ draws state of the realm $\theta_P$ (e.g., war threats)
- Agents draw local states $\theta_L$ and $\theta_T$:
  - Countryside: $A_L$ draws $\theta_L$: (e.g., weather shocks)
  - Towns: $A_T$ draws $\theta_T$: (e.g., trade opportunities)

Assumptions: $\theta_P$, $\theta_L$, and $\theta_T$ are independently distributed $\theta < \theta$ (simplifies analysis of communication)
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\[
\begin{align*}
\theta_P & \sim U [-\bar{\theta}, \bar{\theta}] \\
\theta_L & \sim U [-\theta, \theta] \\
\theta_T & \sim U [-\theta, \theta]
\end{align*}
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Baseline Model

- State of the realm $\theta_p$ is **private** information of the ruler

  $\Rightarrow$ To coordinate, ruler needs to inform agents about $\theta_p$
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- In the baseline model, the ruler does **not** make a decision
  - Ruler chooses organizational structure to best serve her own interests in **expectation**
Players and Decisions

Within each unit $D_i$, two decisions are taken:

1. **Rules/regulation**: $r_i$ for $i \in \{L, T\}$
   - E.g. $r_T$: market rules, local courts for merchant disputes
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2. **Local action** $a_i$ (economic activity, effort)
   - E.g. $a_T$: which goods to trade
   - Agent $A_i$ **always** chooses $a_i$
     - Interpretation: decision on local economic activity/effort cannot be delegated
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$\Rightarrow$ In order to coordinate local actions $a_i$, $P$ wants $A_i$ to be informed about $\theta_P$
Players’ Payoffs: Three Components

- **Adaptation** (to ideal point)
  
  - ‘Ideal point’ depends on player $i$’s preferences and realization of local state $\theta_i$ and state of the realm $\theta_P$. 
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- **Internal Coordination** (within unit)
  - Coordinate regulation $r_i$ with economic activity $a_i$
Players’ Payoffs: Three Components

- **Adaptation** (to ideal point)
  - ‘Ideal point’ depends on player \( i \)’s preferences and realization of local state \( \theta_i \) and state of the realm \( \theta_P \).

- **Internal Coordination** (within unit)
  - Coordinate regulation \( r_i \) with economic activity \( a_i \)

- **External coordination** (across units)
  - Coordinate economic actions (e.g., towns trade the goods that are produced in the countryside)
Players’ Payoffs: Adaptation

- Each agent $A_i, \ i \in \{L, T\}$ suffers an adaptation loss:

$$\left[ \gamma_i \theta_P + (1 - \gamma_i) \theta_i - a_i \right]^2$$

- $\gamma_i \in [0, 1]$: $i$’s weight on state of the realm
- $a_i$: $i$’s local economic activity
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- Ruler also cares about agents’ adaptation

$$\sum_{i \in \{L, T\}} k_i \cdot \left[ \gamma_P \theta_P + (1 - \gamma_P) \theta_i - a_i \right]^2$$

- $k_i$: economic importance of unit $i \in \{L, T\}$
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**Assumption 2**: $k_L \geq k_T \Rightarrow$ Landed economy larger than urban economy
Players’ Payoffs: Internal Coordination

- Each agent $A_i$, $i \in \{L, T\}$ suffers an internal coordination loss:

$$ (r_i - a_i)^2 $$

- $r_i$: regulation for unit $i$
- $a_i$: $i$’s local economic action

⇒ Regulation is effective (deviations cause loss)
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- Ruler internalizes both agents’ internal coordination losses

$$\sum_{i \in \{L, T\}} k_i \cdot \left( r_i - a_i \right)^2$$

- $k_i$: economic importance of unit $i \in \{L, T\}$
Players’ Payoffs: External Coordination

- Each agent $i$ suffers an *external coordination loss* $\left(a_i - a_j\right)^2$

  - Due to other agent $j \neq i$ not coordinating with $i$’s local action
    - E.g., countryside produces wool, but town trades other goods
Players’ Payoffs: External Coordination

- Each agent $i$ suffers an external coordination loss
  \[(a_i - a_j)^2\]
- Due to other agent $j \neq i$ not coordinating with $i$’s local action
  ⇒ E.g., countryside produces wool, but town trades other goods
- Ruler internalizes agents’ $j \leftrightarrow i$ coordination
  \[\sum_{i \in \{L, T\}} k_i \cdot (a_i - a_j)^2\]
- $k_i$: economic importance of unit $i \in \{L, T\}$
Payoffs: Agents

- Agent $A_i$'s ex-post loss for $i = \{L, T\}$:

$$U_i(\gamma_i) = -k_i \left\{ (1 - \rho) \left[ (\gamma_i \theta_p + (1 - \gamma_i) \theta_i) - a_i \right] \right\}^2$$

$$+ \rho \left[ (1 - \lambda) \left( r_i - a_i \right)^2 + \lambda \left( a_j - a_i \right)^2 \right]$$

- $\rho \in [0, 1]$, $\lambda \in [0, 1]$, and $\gamma_i \in [0, 1]$

- $(1 - \rho)$: relative importance of *adaptation* vs. *coordination*

- $\lambda$: relative importance of *external* vs. *internal* coordination
Payoffs: Ruler

- $P$’s ex-post loss:

$$U_P = \sum_{i=\{L,T\}} U_i(\gamma_P)$$

$$= -\sum_{i=\{L,T\}} k_i \left\{ (1 - \rho) \left[ (\gamma_P \theta_P + (1 - \gamma_P) \theta_i) - a_i \right]^2 + R’s \text{ ideal point for } i \right\} + \rho \left\{ (1 - \lambda) (r_i - a_i)^2 + \lambda (a_j - a_i)^2 \right\} + F(C_L, C_T),$$

- $C_i = \{0, 1\}$: Communication – takes value 1 if $P$ summons $A_i$ to parliament
- $F(\cdot)$: cost of direct communication b/w $P$ and agent(s) (additive, increasing in $C_i$)
Interpretation of the Setting

- Given \( \{\gamma_P, \gamma_L, \gamma_T\} \), draws of \( \{\theta_P, \theta_L, \theta_T\} \) determine how aligned all three players are regarding decisions to be taken.
Interpretation of the Setting

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- **Example 1**: All draws of \( \theta \)'s are close to each other
  - Threat to the realm (**case of necessity**): All players agree to coordinate decisions to meet the danger (e.g., to protect property and trade).

- **Example 2**: \( \theta_P \) and \( \theta_L \) are close to each other, but \( \theta_T \) distant
  - Opportunity for offensive war ('king's war') that would favor military (landed) elite, but would hurt urban elite (e.g., trade blockade).
  - Historical example: War campaigns mid-14C (Harriss, 1976).
  - Towns' resistance to taxation (both inside and outside parliament).
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Governance & Communication Structure

- **Delegation**: \( P \) decides who between \( A_L \) or \( A_T \) sets town regulation

\[ r_T \]

Examples Gov. Structure
Governance & Communication Structure

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  ![Examples Gov. Structure]

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  either $A_L$, $A_T$, or both

  - Cost $F(\cdot)$ per-agent of engaging in direct communication (i.e., summon to parliament), borne by ruler
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- **Vertical communication**: \( P \) discloses \( \theta_P \) truthfully.
  - Verifiable info. Also motivated by theories that assemblies serve as commitment for truthful communication (e.g., Myerson, 2008).
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- **Vertical communication**: $P$ discloses $\theta_P$ truthfully
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- Agents can communicate horizontally about information received from the ruler ($A_L \leftrightarrow A_T$)
  - Costless, cheap talk
  - $A_i$ sends a message $m_i$ to $A_j$
  - Evidence communicated horizontally is soft (can be manipulated)
Timing

1. $P$ chooses the governance structure ($g = \{ R_L, R_T, C_L, C_T \}$, with $R=$regulation and $C=$communication) and incurs the associated costs of communication $F(\cdot)$;

2. $P$ learns $\theta_P$. All players learn $\{\theta_L, \theta_T\}$;

3. $P$ communicates vertically with agent(s) in accordance with $g$;
   - Horizontal communication between agents takes place

4. Decision-makers simultaneously choose $\{r_i, a_i\}_{i \in \{L, T\}}$ in accordance with $g$;

5. Payoffs realize
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Note: Under strategic communication, we select the most informative equilibrium
Solving the Model

1. Solve for the optimal governance structure under complete information ($\theta_P$, $\theta_L$, and $\theta_T$ are publicly observable)

- With complete information, communication plays no role
- Focus on optimal allocation of authority:
  - When towns are small, they are integrated
  - When towns grow, they become separated
Solving the Model

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   - With complete information, communication plays no role
   - Focus on optimal allocation of authority:
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     - When towns grow, they become separated

2. Solve the case in which \(\theta_P\) is **private information** of \(P\):
   - i) Compute decisions (as a function of communication) and derive payoffs for all possible governance structures
   - ii) Compare ruler’s expected payoff under each structure
Solving the Model

1. Solve for the optimal governance structure under **complete information** \((\theta_P, \theta_L, \text{ and } \theta_T\) are publicly observable)
   - With complete information, communication plays no role
   - Focus on optimal allocation of authority:
     - When towns are small, they are integrated
     - When towns grow, they become separated

2. Solve the case in which \(\theta_P\) is **private information** of \(P\):
   - i) Compute decisions (as a function of communication) and derive payoffs for all possible governance structures
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For simplicity, assume \(F(\cdot) = \epsilon\), for \(\epsilon > 0\) as small as one likes
   - Large scope for communication
Case 1: L-Integration without Communication

Town governed by landed elites. Ruler does not summon any agent to parliament

- Agents’ decisions target $\mathbb{E} (\theta_P) = 0$
- $A_L$ exploits his control over urban administration ($r_T$) to align $A_T$’s local action ($a_T$) with his own expected ideal point
Case 2: L-Integration and $R \rightarrow A_L$ Communication

Town governed by landed elites. Ruler summons only landed elites to parliament

- Ruler communicates with towns through landed elite $A_L$
- In equilibrium, $A_L$ communicates the true $\theta_P$ and uses $r_T$ to steer $A_T$'s action $a_T$ towards $A_L$’s ideal point

Equations

\[ m_L = \theta_P \]

\[ r_L, a_L, r_T \]

\[ a_T \]
Case 3: L-Integration, $R \rightarrow A_L$ and $R \rightarrow A_T$ Commun.

Town governed by landed elites. Ruler summons both elites to parliament

- In parliament, ruler communicates $\theta_P$ to both elites
- Same regulatory and economic decisions as in Case 2
- But higher communication costs
Case 4: Separation without Communication

Town is self-governed. Ruler does not summon any agent to parliament

- Each agent runs his own unit
- Agents’ decisions target $\mathbb{E}(\theta_P) = 0$
Case 5: Separation and $R \rightarrow A_L$ Communication

Town is self-governed. Ruler summons only landed elites to parliament

- $A_L$ tries to manipulate $A_T$’s action $\Rightarrow$ inefficient cheap talk
- Historical evidence: Self-governing towns stopped attending shire courts (e.g., Mitchell 1951, Lyon 1960)
Case 6: Separation, $R \rightarrow A_L$ and $R \rightarrow A_T$ Commun.

Town is self-governed. Ruler summons both elites to parliament.

In parliament, all elites learn $\theta_P$ by directly communicating with the ruler.
Equilibrium Under Incomplete Information

- **Under \textit{L-Integration}**:  
  - $R \rightarrow A_L$ communication followed by \textbf{truthful} $A_L \rightarrow A_T$ commun.  
  - $\Rightarrow$ Ruler summons only landed elite to parliament (to save on $F(\cdot)$)  
  - Outcome favorable to landed elite
Equilibrium Under Incomplete Information

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- **Under \textit{Separation}**: 
  - $R \rightarrow A_L$ \textit{direct} communication followed by \textbf{inefficient} $A_L \rightarrow A_T$ communication (cheap talk) 
  - $\Rightarrow$ Ruler summons \underline{both} elites to parliament to increase quality of communication $\Rightarrow$ more coordination on $\theta_P$ 
  - Shift towards urban elite’s preferences.
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  - Shift towards urban elite’s preferences.

- **Remaining trade-offs as under complete information**:
  - \( \Rightarrow \) As town’s economic importance increases, it gains separation
  - In turn, under separation, town is summoned to parliament
Baseline Model: Equilibrium – Illustration

Incomplete Information

- Recall $k \equiv \frac{k_T}{k_L}$: Relative importance of town (with $k \in [0, 1]$)
- As $k$ grows $\Rightarrow$ separation and representation in parliament

Note: We do not plot governance structures without communication (these imply substantially higher losses)
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Wrapping Up: Baseline Model

- Model studies interaction between local and ‘nationwide’ institutions
  - Administrative authority (adaptation vs. coordination)
  - Communication (in Parliament) to coordinate local decision-making

Dynamics: Shock to the economy (cities grow) → Change in local institutions: Delegate administrative power to town elites → improve adaptation to local conditions

⇒ Change in ‘nationwide’ institutions: Town elites summoned to Parliament to coordinate decisions effectively

Empirical evidence

Model rationalizes empirical evidence in AMV (2022)

Trade → self-governance → summoned to parliament

New evidence: Towns closer to Calais

Stronger threat of French invasion ⇒ ruler wants to align towns’ decisions with state of the realm (thus, higher $\gamma_P$)

Data: these trading towns were less likely to obtain self-governance
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Two Extensions
Bottom-up Communication and Coalitions

- Suppose local states $\theta_L$ and $\theta_T$ are (local) agents’ private information
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Bottom-up Communication and Coalitions

- Suppose local states $\theta_L$ and $\theta_T$ are (local) agents’ private information

$\Rightarrow$ Elites communicate their local conditions to coordinate with
  - Ruler (Extension 1)
  - Agents located in other regions (Extension 2)

- Dynamics driven by relative town size $k_T/k_L$, as in baseline model
Extension 1: Bottom-up Communication

- Simplifying assumption: $\theta_P$ is public knowledge $\Rightarrow$ only bottom-up communication

- Suppose ruler takes a decision $d_P$
  - E.g., ruler controls foreign policy
  - Players have incentives to coordinate local economic actions with $d_P$
  $\Rightarrow$ Incentives to communicate about realizations of all states
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    $\Rightarrow$ no need for direct communication between $P$ and $A_T$
  - When town is self-governing, ruler interested in $\theta_T$ $\Rightarrow$ can acquire unbiased information only by communicating directly with town
Extension 2: Coalitions across Towns

- Now: $\theta_P$ is again private $\Rightarrow$ analytically simpler top-down communication
- Consider two shires (each inhabited by landed and town elites)
  - Ruler chooses governance structure for both shires
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- Institutional dynamics
  - i) Under integration of towns: local $\theta_T$ is irrelevant to decisions in the other shire $\rightarrow$ no need for direct communication between towns
  - ii) Self-governing towns: local $\theta_T$ relevant to coordination across shires $\rightarrow$ unbiased communication only when towns communicate directly
    - Potential downside for ruler: Town coalitions
Applications

- Main application: Institutional dynamics in Western Europe after 11C
  - Especially for England, where i) strong monarchs after Norman Conquest, ii) ruled over relatively large territory, iii) relatively aligned preferences over common state
  - Similar dynamics in Castile/Aragon, and France
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- Model applies generally to cases in which a ‘ruling elite’ establishes control over a sufficiently large territory
BACKUP
Coalition of Power Holders before Commercial Revolution

King, Landed Elites (Military), High Clergy
Coalition of Power Holders in 1295
Model Parliament, with town representatives
How did Medieval Parliaments Work?

- Medieval parliaments fulfilled mostly administrative functions:
  - Coordination of local territorial jurisdictions
  - Mainly, organize tax collection to wage wars (Hoyt, 1948; Harriss, 1976; Coss, 1989; Maddicott, 2010)

- What were the early parliamentary procedures?
  - Monarch summons local jurisdictions
  - These jurisdictions select representatives
  - Representatives receive information (state of realm), report local conditions, and ‘give consent’ to extra-ordinary taxation (Carpenter, 1996)
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  *Parliament as an instrument of government for the common profit of the realm, the king requiring parliament to recognise the needs of the realm and subjects using it to present the ills of the realm. (Harriss, 1976)*
Boroughs with Self-Governance (by Ownership)
Ordinary and Extra-Ordinary Taxation

**Ordinary Taxation:**
- Tax-farming system
- Administrator of the borough (landed elite / town elites) entitled to customary taxation in exchange for provision of law and order

**Extra-ordinary Taxation:**
- In *case of necessity*, Crown entitled to extra-ordinary aid from all subjects
- Crown makes its case in Parliament (Harriss, 1975; Holt, 1981)
- Shire officials collect extra-ordinary taxes (Mitchell, 1951)
Ordinary Tax Collection in Royal and Mesne Territories

- Inefficient local administration ⇒ Farm Grants
  - Particularly severe in royal territories
  - Mesne lords rarely issue Grants of Self-Governance
Tax Collection in Royal and Mesne Territories

- Farm Grants separated towns from shire’s jurisdiction
  ⇒ Difficult to enforce extra-ordinary taxation
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Administration & Communication Structure – Notation

- $P$ chooses $g = \{R_L, R_T, C_L, C_T\}$

- $R_i$ denotes the identity of the agent – either $A_L$ or $A_T$ – who controls regulation $r_L$ and $r_T$
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  - **Example 1:** $\{R_L, R_T\} = \{A_L, A_L\}$ ⇒ Town is administratively integrated and governed by $A_L$
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  - Example 2: $\{R_L, R_T\} = \{A_L, A_T\} \Rightarrow$ Town is administratively separated and governed by $A_T$
- $C_L$ and $C_T \in \{0, 1\}$ indicate whether $P$ summons $A_L$ or $A_T$ to directly communicate the state of the realm
  - Example: $\{C_L, C_T\} = \{1, 0\} \Rightarrow P$ summons $A_L$ but not $A_T$
  - More detail on communication below
Vertical Communication

Direct communication: Ruler summons agent(s) to parliament

- Ruler communicates the state of the realm $\theta_P$ to agent(s): $P \rightarrow A_i$
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  - For simplicity, $F(\cdot)$ is borne by $P$
  - Example: Information spreads more rapidly when channelled through system of local courts
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- Evidence communicated vertically is hard (cannot be manipulated)
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- Note: This setup reflects early parliaments
  - No majority voting
  - Summoned agents receive (and, in extension, exchange) information
Horizontal Communication

Indirect communication, via agent (shire courts)

- Agents can communicate horizontally about information received from the ruler ($A_L \leftrightarrow A_T$)
  - If $P$ communicates vertically with agent $A_i$ only, $A_j \neq i$ can learn about $\theta_P$ indirectly from $A_i$
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- Horizontal communication works as follows:
  - $A_i$ sends a message $m_i$ to $A_j$
  - Evidence communicated horizontally is soft (can be manipulated)
  - Horizontal communication is costless
Governance Structure 1: Town Integration
Towns are administratively controlled by landed elites $A_L$.

Diagram:
- Ruler delegates authority to $A_L$.
- $A_L$ governs $A_T$.
- $r_L, a_L, r_T$ and $a_T$ are indicated.
Governance Structure 2: Separation

Towns are administratively independent

- Ruler
  - delegates authority to $A_L$ and $A_T$
  - $r_L, a_L$ and $r_T, a_T$

- $A_L$
- $A_T$
Communication: Example 1

Indirect representation of towns

- In parliament, landed elites listen to Ruler about $\theta_P$.
- They then (strategically) communicate about $\theta_P$ to town elites.
Communication: Example 2

Direct representation of towns

- In parliament, all elites listen to ruler about $\theta_P$
Complete Information: i-Integration – F.O.C.

- Complete information $\Rightarrow \theta_P$ is publicly observable
Complete Information: i-Integration – F.O.C.

- Complete information ⇒ $\theta_P$ is publicly observable
- F.O.C. under $i$-Integration ($\{a_i, a_j\} = \{A_i, A_j\}$):
  \[
  r_i = a_i, \tag{1}
  \]
  \[
  a_i = (1 - \bar{\rho}) [\gamma_i \theta_P + (1 - \gamma_i) \theta_i] + \bar{\rho} E_i(a_j), \tag{2}
  \]
  \[
  a_j = (1 - \rho) [\gamma_j \theta_P + (1 - \gamma_j) \theta_j] + \rho \lambda E_j(a_i) + \rho (1 - \lambda) E_j(r_j), \tag{3}
  \]

for $i, j \in \{L, T\}$ and $i \neq j$. 
Complete Information: i-Integration – F.O.C.

- Complete information $\Rightarrow \theta_P$ is publicly observable
- F.O.C. under $i$-Integration ($\{a_i, a_j\} = \{A_i, A_j\}$):

\[
    r_i = a_i, \quad (1)
\]
\[
    a_i = (1 - \tilde{\rho}) [\gamma_i \theta_P + (1 - \gamma_i) \theta_i] + \tilde{\rho} E_i (a_j), \quad (2)
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    a_j = (1 - \rho) [\gamma_j \theta_P + (1 - \gamma_j) \theta_j] + \rho \lambda E_j (a_i) + \rho (1 - \lambda) E_j (r_j), \quad (3)
\]

for $i, j \in \{L, T\}$ and $i \neq j$.

- Steps to optimal solutions (select equilibrium that max $A_L$’s payoff):
  1. Solve the system of equations (1)-(2)-(3) taking $r_j$ as given;
     $\Rightarrow a_i^* (r_j)$ and $a_j^* (r_j)$;
  2. Minimize $A_L$’s loss wrt $r_j$ s.t. $a_i^* (r_j)$ and $a_j^* (r_j)$. 
Complete Information: i-Integration – Solution

Solution under *i-Integration*:

\[
\begin{align*}
    r_i &= a_i = a_j = (1 - \gamma_i) \theta_i + \gamma_i \theta_P, \\
    i's\ ideal\ point
\end{align*}
\]

\[
\begin{align*}
    r_j &= \frac{1 - \rho \lambda}{\rho (1 - \lambda)} (1 - \gamma_i) \theta_i - \frac{1 - \rho}{\rho (1 - \lambda)} (1 - \gamma_j) \theta_j + \frac{(1 - \rho \lambda) \gamma_i - (1 - \rho) \gamma_j}{\rho (1 - \lambda)} \theta_P,
\end{align*}
\]

for \( i, j \in \{L, T\} \) and \( i \neq j \), and for \( \rho (1 - \lambda) \neq 0 \).

- \( A_i \) exploits \( r_j \) to make \( A_j \) choose \( a_j \) in \( A_i \)'s interest (i.e., to achieve perfect external coordination with \( a_i \))

- **Example**: Landed elite regulates market in town to max profits from sale of its produce (which depends on local and common states)
Complete Information: i-Integration – \( P \)'s Loss

Computing \( P \)'s expected loss:

\[
L_P = \left\{ k_i (1 - \rho) (\gamma_P - \gamma_i)^2 + \right. \\
+ k_j (1 - \rho) \left[ \frac{1 - \rho \lambda}{\rho (1 - \lambda)} (1 - \gamma_i)^2 + \frac{1 - \rho}{\rho (1 - \lambda)} (1 - \gamma_j)^2 + (1 - \gamma_P)^2 \right] \right\} \frac{\theta^2}{3} + \\
+ \left\{ [k_i (1 - \rho) + k_j (1 - \rho)] (\gamma_P - \gamma_i)^2 + k_j \frac{(1 - \rho)^2}{\rho (1 - \lambda)} (\gamma_i - \gamma_j)^2 \right\} \frac{\tilde{\theta}^2}{3}.
\]
Complete Information: i-Integration – Lemma

Lemma 1

\( P \) weakly prefers L-Integration to T-Integration, that is

\[ \{a_L, a_T\} = \{L, L\} \succeq_P \{a_L, a_T\} = \{T, T\} \]
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- If choosing an \textit{integrated} structure, \( P \) prefers to allocate control over local administrations to the agent...
  - whose preferences about \( \theta_P \) are more aligned with hers (i.e., \( A_L \), since \( \gamma_P \geq \gamma_L > \gamma_T \)), and
  - located in the unit with the highest economic potential (\( k_L \geq k_T \))
Complete Information: Separation – Solution

- Under *Separation*, \( \{a_L, a_T\} = \{A_L, A_T\} \):

\[
   r_i = a_i = \frac{1}{1 + \tilde{\rho}} (1 - \gamma_i) \theta_i + \frac{\tilde{\rho}}{1 + \tilde{\rho}} (1 - \gamma_j) \theta_j + \frac{\gamma_i + \tilde{\rho} \gamma_j}{1 + \tilde{\rho}} \theta_P,
\]

for \( i, j = \{L, T\} \) and \( i \neq j \), with \( \tilde{\rho} = \frac{\lambda \rho}{1 - \rho + \lambda \rho} \).

- Each agent achieves perfect internal coordination
- Agents ‘accommodate’ each other to achieve a degree of external coordination
Complete Info: Separation vs. Integration

Loss from Town

- Assume $\rho = \lambda = \frac{1}{2}$
- Examine $P$’s losses from the town ($D_T$). Abstract for now from $D_L$
  - Losses from $D_T$ are then compared to losses from $D_L$

Lemma 2

$P$’s expected loss from the town (unit $D_T$) is weakly lower under Separation than under L-Integration.
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Lemma 2

$P$’s expected loss from the town (unit $D_T$) is weakly lower under Separation than under L-Integration.

- Note: Lemma 2 may not hold if $\gamma_P$ is too large relative to $\gamma_L$ and $\gamma_T$. In such a case, $P$ chooses L-Integration, $\forall k_T$.
- We thus assume $\gamma_P \in [\gamma_L, \min \{\overline{\gamma}, 1\}]$, with $\overline{\gamma} \equiv \frac{15\gamma_L^2+7\gamma_T^2-20\gamma_L\gamma_T}{8(\gamma_L-\gamma_T)}$
  - This is a sufficient (but not necessary) condition for Lemma 2.
Complete Information: Equilibrium

Let \( \gamma = \{\gamma_P, \gamma_L, \gamma_T\} \) and \( \theta = \{\theta, \overline{\theta}\} \)

Proposition 1

In the game of complete information, and for \( k_T < k_L \), there exists a threshold \( k(\gamma, \theta) \):

a) \( P \) chooses L-Integration for \( k_T \leq k \)

b) \( P \) chooses Separation for \( k_T > k \)
Complete Information: Equilibrium

- Let $\gamma = \{\gamma_P, \gamma_L, \gamma_T\}$ and $\theta = \{\theta, \bar{\theta}\}$

Proposition 1

*In the game of complete information, and for $k_T < k_L$, there exists a threshold $k(\gamma, \theta)$:

a) $P$ chooses L-Integration for $k_T \leq k$

b) $P$ chooses Separation for $k_T > k$

- *Separation* favors $A_T$’s ability to adapt to local conditions and internally coordinate administration ($d_{T1}$) with economic activity ($d_{T2}$) in the town

- This comes at the expense of external coordination with $A_L$, and thus with the realm (since $\gamma_P \geq \gamma_L > \gamma_T$)

$\Rightarrow$ *Separation* prevails when $k_T$ is sufficiently large
Define $k \equiv \frac{k_T}{k_L}$, with $k \in [0, 1]$. 
Case 1: L-Integration without Communication

- *No Vertical Communication* $\Rightarrow$ decisions target $\mathbb{E}(\theta_P) = 0$
Case 1: L-Integration without Communication

- **No Vertical Communication** ⇒ decisions target $\mathbb{E}(\theta_P) = 0$

- Decisions are:

$$r_L = a_L = a_T = (1 - \gamma_L) \theta_L,$$

$$r_T = \frac{1 - \rho \lambda}{\rho (1 - \lambda)} (1 - \gamma_L) \theta_L - \frac{1 - \rho}{\rho (1 - \lambda)} (1 - \gamma_T) \theta_T.$$

- Agents’ decisions do not adjust for $\theta_P$

- $A_L$ achieves perfect internal and external coordination; but not $A_T$
Case 1: L-Integration without Communication

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- Agents’ decisions do not adjust for $\theta_P$
- $A_L$ achieves perfect internal and external coordination; but not $A_T$

Note: **L-Integration** dominates **T-Integration** because $\gamma_P \geq \gamma_L > \gamma_T$
(Landed elite $A_L$ puts higher weight on state of the realm)
Case 2: L-Integration and $P \rightarrow A_L$ Communication

- Suppose $P$ communicates with $A_L$ only.
  - Horizontal communication between agents follows.
  - Let $m_L$ denote the cheap-talk message sent by $A_L$ to $A_T$. 
Case 2: L-Integration and $P \rightarrow A_L$ Communication

- Suppose $P$ communicates with $A_L$ only.
  - Horizontal communication between agents follows.
  - Let $m_L$ denote the cheap-talk message sent by $A_L$ to $A_T$.

- Under *One-Sided Communication* and horizontal communication:
  \[ r_{L1} = a_L = (1 - \tilde{\rho}) \left[ (1 - \gamma_L) \theta_L + \gamma_L \theta_P \right] + \tilde{\rho} \mathbb{E}_L (a_T | m_L), \]
  \[ a_T = (1 - \rho) \left[ (1 - \gamma_T) \theta_T + \gamma_T \mathbb{E}_T (\theta_P | m_L) \right] + \rho (1 - \lambda) \mathbb{E}_T (r_T | m_L) + \rho \lambda \mathbb{E}_T (a_L | m_L), \]

- $A_L$ sets $r_T$ to steer $a_T$ towards his ideal point
  - $A_L$’s ability to exploit $r_T$ depends on $A_T$’s beliefs about $\theta_P$, given $m_L$
Case 2: L-Integration and $P \rightarrow A_L$ Communication

Lemma 3

Suppose $P$ chooses L-Integration and communicates with $A_L$ only. Then, in the most informative equilibrium of the cheap-talk game between $A_L$ and $A_T$, $A_L$ truthfully reveals $\theta_P$ to $A_T$. 

Intuition:
By truthfully revealing $\theta_P$, $A_L$ can fully exploit $r_T$ to steer $A_T$ towards his ideal point.

More administrative control $\rightarrow$ weaker incentive to lie
Case 2: L-Integration and $P \rightarrow A_L$ Communication

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Intuition:
- By truthfully revealing $\theta_P$, $A_L$ can fully exploit $r_T$ to steer $a_T$ towards his ideal point
- More administrative control $\rightarrow$ weaker incentive to lie
Case 2: L-Integration and $P \rightarrow A_L$ Communication

- Decisions:

$$r_L = a_L = a_T = (1 - \gamma_L) \theta_L + \gamma_L \theta_P,$$

$$r_T = \frac{1 - \rho \lambda}{\rho (1 - \lambda)} (1 - \gamma_L) \theta_L - \frac{1 - \rho}{\rho (1 - \lambda)} (1 - \gamma_T) \theta_T +$$

$$+ \frac{(1 - \rho \lambda) \gamma_L - (1 - \rho) \gamma_T}{\rho (1 - \lambda)} \theta_P,$$

- Landed elite exploits its control over urban administration ($r_T$) to align town elite’s decision with his own ideal point (in terms of both $\theta_P$ and local states)
Case 3: L-Integration, $P \rightarrow A_L$ and $P \rightarrow A_T$ Commun.

- Under *Two-Sided Communication*:

  \[ r_L = a_L = a_T = (1 - \gamma_L) \theta_L + \gamma_L \theta_P, \]

  \[ r_T = \frac{1 - \rho \lambda}{\rho (1 - \lambda)} (1 - \gamma_L) \theta_L - \frac{1 - \rho}{\rho (1 - \lambda)} (1 - \gamma_T) \theta_T + \]

  \[ + \frac{(1 - \rho \lambda) \gamma_L - (1 - \rho) \gamma_T}{\rho (1 - \lambda)} \theta_P, \]

- Landed elite exploits its control over urban administration ($r_T$) to align town elite’s decision with his own ideal point (in terms of both $\theta_P$ and local states)
Case 3: L-Integration, $P \rightarrow A_L$ and $P \rightarrow A_T$ Commun.

Lemma 4

Under L-Integration, $P$ prefers One-Sided communication with $A_L$ over

1. Two-Sided communication,

2. One-Sided communication with $A_T$. 
Case 3: L-Integration, $P \rightarrow A_L$ and $P \rightarrow A_T$ Commun.

Lemma 4

Under L-Integration, $P$ prefers One-Sided communication with $A_L$ over

1. Two-Sided communication,
2. One-Sided communication with $A_T$.

1. One-Sided communication makes $A_T$ (perfectly) informed about $\theta_P$ at a lower cost than Two-Sided Communication.

2. Unlike One-Sided communication with $A_L$, One-Sided communication with $A_T$ leads to information loss $\rightarrow$ less coordination on $\theta_P$. 
Case 3: L-Integration, $P \rightarrow A_L$ and $P \rightarrow A_T$ Commun.

Lemma 5

Under L-Integration, there exists a threshold $f^\circ (\gamma_T, \cdot )$, with $f^\circ (\gamma_T, \cdot )$ increasing in $\gamma_T$, such that $P$ sets-up:

i) One-Sided communication with $A_L$ for $f \leq f^\circ$,

ii) No communication for $f > f^\circ$.

In case i), horizontal communication follows vertical communication, and both agents learn $\theta_P$. 
Case 3: L-Integration, $P \to A_L$ and $P \to A_T$ Commun.

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Under L-Integration, there exists a threshold $f^\circ (\gamma_T, \cdot)$, with $f^\circ (\gamma_T, \cdot)$ increasing in $\gamma_T$, such that $P$ sets-up:

i) One-Sided communication with $A_L$ for $f \leq f^\circ$,

ii) No communication for $f > f^\circ$.

In case i), horizontal communication follows vertical communication, and both agents learn $\theta_P$.

$\Rightarrow$ $P$ sets-up a vertical communication channel when communication is not too costly.

- Knowledge about $\theta_P$ leads to more severe mis-coordination within $D_T$.
- This adverse effect becomes weaker as agents hold more homogeneous preferences (i.e., as $\gamma_T$ approaches $\gamma_L$).
Case 4: Separation without Communication

- \textit{Separation} \implies A_T \text{ chooses } r_{T,1}

- Because no communication occurs, decisions target \( \mathbb{E} (\theta_P) = 0 \)

- Under \textit{No Vertical Communication}, decisions are:

\[
r_i = a_i = \frac{1}{1 + \tilde{\rho}} (1 - \gamma_i) \theta_i + \frac{\tilde{\rho}}{1 + \tilde{\rho}} (1 - \gamma_j) \theta_j,
\]

for \( i, j = \{L, T\} \) and \( i \neq j \)

- Landed elite and merchants trade-off \textit{adapting} to their local conditions and \textit{coordinating} with each other
Case 5: Separation and $P \rightarrow A_L$ Communication

- Suppose $P$ communicates with $A_L$ only.
  - Horizontal communication between agents follows.
  - Let $m_L$ denote the cheap-talk message sent by $A_L$ to $A_T$. 

Under One-Sided Communication (with $A_L$) we have:

$$
\begin{align*}
  r_L &= a_L = 1 + \tilde{\rho}(1 - \gamma_L)\theta_L + \tilde{\rho}1 + \tilde{\rho}(1 - \gamma_T)\theta_T + (1 - \tilde{\rho})\gamma_L\theta_P + \tilde{\rho}\gamma_T + \tilde{\rho}\gamma_L1 + \tilde{\rho}E_L\left(E_T(\theta_P|m_L)\right),
  \end{align*}
$$

(4)

$$
\begin{align*}
  r_T &= a_T = 1 + \tilde{\rho}(1 - \gamma_T)\theta_T + \tilde{\rho}1 + \tilde{\rho}(1 - \gamma_L)\theta_L + \gamma_T + \tilde{\rho}\gamma_L1 + \tilde{\rho}E_T(\theta_P|m_L).
  \end{align*}
$$

(5)

Note: This case dominates One-Sided Communication with $A_T$. 

Back to Talk 1/3
Case 5: Separation and $P \rightarrow A_L$ Communication

- Suppose $P$ communicates with $A_L$ only.
  - Horizontal communication between agents follows.
  - Let $m_L$ denote the cheap-talk message sent by $A_L$ to $A_T$.

- Under **One-Sided Communication** (with $A_L$) we have:

$$r_L = a_L = \frac{1}{1 + \tilde{\rho}} (1 - \gamma_L) \theta_L + \frac{\tilde{\rho}}{1 + \tilde{\rho}} (1 - \gamma_T) \theta_T +$$

$$+ (1 - \tilde{\rho}) \gamma_L \theta_P + \tilde{\rho} \frac{\gamma_T + \tilde{\rho} \gamma_L}{1 + \tilde{\rho}} \mathbb{E}_L \left[ \mathbb{E}_T (\theta_P | m_L) \right], \quad (4)$$

$$r_T = a_T = \frac{1}{1 + \tilde{\rho}} (1 - \gamma_T) \theta_T + \frac{\tilde{\rho}}{1 + \tilde{\rho}} (1 - \gamma_L) \theta_L +$$

$$+ \gamma_T + \tilde{\rho} \gamma_L \mathbb{E}_T (\theta_P | m_L). \quad (5)$$

- Note: This case dominates **One-Sided Communication** with $A_T$. 
Case 5: Separation and $P \rightarrow A_L$ Communication

- Solve for the most informative equilibrium of the cheap-talk game

- Let $\theta_{P,n}$, for $n \in \{-\infty, \cdots, \infty\}$, denote a generic cutoff of the partitions (Melumad and Shibano, 1991; Rantakari, 2008)

- Assume $\gamma_T \in [0, \gamma]$, with $\gamma = \frac{\bar{\theta} - \theta}{\bar{\theta} + \theta} \gamma_L$ (A6)

- Define:

  $$B \equiv \frac{\gamma_T + \bar{\rho} \gamma_L}{1 + \bar{\rho}}$$

  $$Q \equiv \frac{(1 - \gamma_T) \theta_T - (1 - \gamma_L) \theta_L}{1 + \bar{\rho}}.$$
Case 5: Separation and $P \rightarrow A_L$ Communication

Lemma 6

Under Separation and One-Sided vertical communication with $A_L$, the cutoffs of the finest incentive-compatible partition are:

$$\theta_{P,n} - \frac{Q}{\gamma_L - B} = \alpha|n| \left( \bar{\theta} - \frac{Q}{\gamma_L - B} \right), \quad \text{with} \quad n \in \{-\infty, \ldots, +\infty\}, \quad (6)$$

where

$$\alpha = \frac{B}{2\gamma_L - B + 2\sqrt{\gamma_L (\gamma_L - B)}} \in [0, 1]. \quad (7)$$
Case 5: Separation and $P \rightarrow A_L$ Communication

Lemma 6

Under Separation and One-Sided vertical communication with $A_L$, the cutoffs of the finest incentive-compatible partition are:

$$
\theta_{P,n} - \frac{Q}{\gamma_L - B} = \alpha |n| \left( \bar{\theta} - \frac{Q}{\gamma_L - B} \right), \quad \text{with} \quad n \in \{-\infty, \ldots, +\infty\}, \quad (6)
$$

where

$$
\alpha = \frac{B}{2\gamma_L - B + 2\sqrt{\gamma_L (\gamma_L - B)}} \in [0, 1]. \quad (7)
$$

- $A_L$ tempted to lie to manipulate $A_T$’s decisions.
  - $\Rightarrow$ Quality of communication increases as $\gamma_T$ approaches $\gamma_L$
- $P$’s expected payoff improves with quality of communication
  - $\Rightarrow$ Better adaptation in $D_T$ and better coordination around $\theta_P$
Case 6: Separation, $P \rightarrow A_L$ and $P \rightarrow A_T$ Commun.

- Under *Two-Sided Communication*:

$$r_i = a_i = \frac{1}{1 + \tilde{\rho}} (1 - \gamma_i) \theta_i + \frac{\tilde{\rho}}{1 + \tilde{\rho}} (1 - \gamma_j) \theta_j + \frac{\gamma_i + \tilde{\rho} \gamma_j}{1 + \tilde{\rho}} \theta_P,$$

for $i, j = \{L, T\}$ and $i \neq j$.

- Landed and urban elites trade-off *adapting* to their ideal point (in terms of both local and common states) and *coordinating* with each other.
Incomplete Information: Lemma

Lemma 7

Under Separation, there exist two thresholds, \( \hat{f}(\gamma_T, \cdot) \) and \( \tilde{f}(\gamma_T, \cdot) \), s.t.:

i) For low values of \( \gamma_T \), \( \hat{f} \leq \tilde{f} \) and \( P \) sets-up:
   a) Two-sided vertical communication for \( f \leq \hat{f} \);
   b) No vertical communication for \( f > \hat{f} \).

ii) For high values of \( \gamma_T \), \( \hat{f} > \tilde{f} \) and \( P \) sets-up:
   a) Two-sided vertical communication for \( f \leq \tilde{f} \);
   b) One-sided vertical communication for \( \tilde{f} < f \leq \hat{f} \);
   c) No vertical communication for \( f > \hat{f} \).

One-Sided Communication optimal when information loss is not severe (\( \gamma_T \) high).
Incomplete Information: Equilibrium

- Consider the case in which \( f = \epsilon \), with \( \epsilon > 0 \) as small as one likes.
Incomplete Information: Equilibrium

- Consider the case in which \( f = \epsilon \), with \( \epsilon > 0 \) as small as one likes.

- From Lemma 5 and Lemma 7, \( P \) sets-up
  - One-Sided Communication (followed by horizontal communication) under \( L\text{-Integration} \);
  - Two-Sided Communication under \( Separation \).
Incomplete Information: Equilibrium

- Let $\gamma = \{\gamma_P, \gamma_L, \gamma_T\}$ and $\theta = \{\theta, \bar{\theta}\}$

Proposition 2

*In the game of incomplete information, and for $k_T < k_L$, there exists a threshold $k(\gamma, \theta)$, such that:*

a) $P’s$ chooses *L-Integration with One-Sided vertical communication* between $P$ and $A_L$ for $k_T \leq k$;

b) $P$ chooses *Separation with Two-Sided vertical communication* for $k_T > k$.
Incomplete Information: Equilibrium

- Let $\gamma = \{\gamma_P, \gamma_L, \gamma_T\}$ and $\theta = \{\theta, \overline{\theta}\}$

Proposition 2

In the game of incomplete information, and for $k_T < k_L$, there exists a threshold $k_\gamma(\gamma, \theta)$, such that:

a) $P$'s chooses L-Integration with One-Sided vertical communication between $P$ and $A_L$ for $k_T \leq k$;

b) $P$ chooses Separation with Two-Sided vertical communication for $k_T > k$.

- Separation prevails when $k_T$ is sufficiently large
- Moving from Integration to Separation leads to a change in the structure of communication with $A_T$: From indirect to direct
Agent $A_i$’s ex-post loss for $i = \{L, T\}$:

$$L_i (\gamma_i) = k_i \left\{ (1 - \rho) \left[ (\gamma_i \theta_P + (1 - \gamma_i) \theta_i) - a_i \right]^2 + \right.$$  

$i$’s adaptation

$$+ \rho \left[ \lambda \left( a_j - a_i \right)^2 + \eta \left( d_P - a_i \right)^2 + (1 - \lambda - \eta) \left( r_i - a_i \right)^2 \right] \right\}$$

ext. coord. 1 ext. coord. 2 int. coord.
Extension: Two Regions

Cross-Shire Communication and Coalitions

- Consider case \( ii \). Simplify our setting:
  - Both local (within region) and non-local (across regions) communication are costless.
  - Hard information (not manipulable).
  - Agents located in different regions who specialize in the same activity
    
    \( a \) hold same preferences (\( \gamma_i \)) about common state, and
    
    \( b \) want to coordinate among them as well as with the agent located nearby.

- Focus on symmetric governance structures (across regions).
Extensions (cont’d)
Cross-Shire Communication and Coalitions

Suppose $P$ implements $L – Integration$ in both regions, $s = 1, 2$ ($k_T$ low)

- Decisions are independent of local conditions in $D^1_T$ and $D^2_T$
- Only relevant communication is about $\theta^1_L$ and $\theta^2_L$ (to coordinate across regions)
Extensions (cont’d)

Cross-Shire Communication and Coalitions

- Suppose $P$ implements $L - Integration$ in both regions, $s = 1, 2$ ($k_T$ low)
  - Decisions are independent of local conditions in $D^1_T$ and $D^2_T$
  - Only relevant communication is about $\theta^1_L$ and $\theta^2_L$ (to coordinate across regions)

- Does $P$ allow the landed elites located in different regions communicate?
  - Yes, if $P$’s and landed elites’ preferences are sufficiently close
  - **Intuition:**
    - Communication improves overall coordination (which also benefits $P$)
    - but elites tend to coordinate on local states which are less relevant to $P$ → move away from $P$’s preferred policy
Extensions (cont’d)

Cross-Shire Communication and Coalitions

- Suppose $P$ implements *Separation* in both regions ($k_T$ high).
  - All local conditions matter (to different players).

- Suppose $P$ wants urban elites in both regions learn (and coordinate on) each other’s local conditions.

- Can this be achieved by relying on landed elites to exchange information and report it to towns via local courts?

  - No. Landed elites have no interest in letting towns coordinate on their own local states, as this forces them to move away from their preferred policies.

- Solution is to have towns communicate directly in parliament.

- $P$ gains from towns’ direct representation only if preferences are sufficiently aligned.

Back to Talk 3/3
Extensions (cont’d)

Cross-Shire Communication and Coalitions

- Suppose $P$ implements \textit{Separation} in both regions ($k_T$ high).
  - All local conditions matter (to different players).

- Suppose $P$ wants urban elites in both regions learn (and coordinate on) each other’s local conditions.

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  - No. Landed elites have no interest in letting towns coordinate on their own local states, as this forces them to move away from their preferred policies.
  - Solution is to have towns communicate *directly* in parliament.

- $P$ gains from towns’ direct representation only if preferences are sufficiently aligned.
Players

- **Ruler**
- **Shire 1**
  - Landed Elite: $A^L_1$
  - Urban Elite: $A^T_1$
- **Shire 2**
  - Landed Elite: $A^L_2$
  - Urban Elite: $A^T_2$

Notation: $i = 1, 2$ denotes shire and $h = L, T$ landed vs urban elite.
- Each administrative unit $S^h_i$ is inhabited by $A^h_i$.
- To each $S^h_i$ are associated a regulatory decision $r^h_i$ and economic activity $a^h_i$. 
Players’ Private Information

\[ \theta_P \sim U[-\theta, \theta] \]

Shire 1

\[ \theta^L_1 \sim U[-\theta, \theta] \]
\[ A^L_1 \]

\[ \theta^T_1 \sim U[-\theta, \theta] \]
\[ A^T_1 \]

Shire 2

\[ A^L_2 \]
\[ \theta^L_2 \sim U[-\theta, \theta] \]

\[ A^T_2 \]
\[ \theta^T_2 \sim U[-\theta, \theta] \]

**Simplifying assumption:** \( A^h_i \) observes \( \{\theta^h_i, \theta^{-h}_i\} \).
Players’ Preferences

Adaptation

Each agent suffers adaptation loss.

\[
\left( \gamma^h \theta_P + \left( 1 - \gamma^h \right) \theta^h_i - a^h_i \right)^2 \quad h = L, T, \ i = 1, 2
\]

- \(a^h_i\): local economic action.
Players’ Preferences

Adaptation

- Each agent suffers adaptation loss.
- Ruler also cares about agents’ adaptation.

\[
\sum_{i=1}^{2} \sum_{h} k_{i}^{h} \left( \gamma^{P} \theta_{P} + \left(1 - \gamma^{P}\right) \theta_{i}^{h} - d_{i,2}^{h}\right)^{2}
\]
Players’ Preferences

Adaptation

- Each agent suffers adaptation loss.
- Ruler also cares about agents’ adaptation.
- Assume $\gamma^P \geq \gamma^L \geq \gamma^T$. Landed elite closer to Ruler’s preference than urban elites.
Players’ Preferences

Internal Coordination

Each agent suffers an internal coordination loss.

\[(r_i^h - a_i^h)^2 \quad h = L, T, i = 1, 2\]

- \(r_i^h\) denotes regulation
Players’ Preferences

Internal Coordination

- Each agent suffers an internal coordination loss.
- Ruler internalizes agents’ internal coordination.

\[
\sum_{i=1}^{2} \sum_{h} k_i^h (r_i^h - a_i^h)^2
\]
Players’ Preferences
Cross-shire Coordination

Landed elites wish to coordinate their local actions with each other.

\[
(a_1^L - a_2^L)^2
\]
Players’ Preferences

Cross-shire Coordination

- Urban elites also wish to coordinate their local actions with each other.

\[ (a_1^T - a_2^T)^2 \]
Players’ Preferences
Cross-shire Coordination

- Ruler internalizes agents’ external coordination.

\[ \sum_{h} \sum_{i=1}^{2} k_{i}^{h} \left( a_{L}^{h} - a_{T}^{h} \right)^{2} \]
Players’ Preferences

Within-shire Coordination

Within each shire $i$, each agent $h$ suffers loss due to other agent $h'$ not adapting to its relevant state.

$$
(\gamma^h \theta_P + (1 - \gamma^h) \theta^h_i - a_i^{h'})^2 \quad \forall i, h, h', h \neq h'
$$
Players’ Preferences

Within-shire Coordination

Ruler internalizes agents’ within-shire coordination

\[ \sum_{i=1}^{2} \sum_{h} k_i^h \left( \gamma^h \theta_P + \left(1 - \gamma^h \right) \theta_i^h - a_i^{h'} \right)^2 \quad \forall i, h, h', h \neq h' \]
Recap Preferences 1/2

- $A_i^h$’s ex-post loss:

\[ L_i^h (\gamma_i^h) = k_i^h \left\{ (1 - r_i^h) \left[ \gamma_i^h \theta_P + (1 - \gamma_i^h) \theta_i^h - a_i^h \right] \right\}^2 + \]

\[ + r_i^h \left\{ \lambda_i^h \left( d_{i2}^h - a_i^h \right)^2 + \eta_i^h \left( a_i^{-h} - \hat{\theta}_i^h \right)^2 + \left( 1 - \lambda_i^h - \eta_i^h \right) \left( r_i^h - a_i^h \right)^2 \right\}, \]

where $r_i^h \in [0, 1]$, $\lambda_i^h \in [0, 1]$, $\eta_i^h \in [0, 1]$, and $\gamma_i^h \in [0, 1]$.

- $1 - r_i^h$ captures rel. importance of adaptation vs coordination,
- $k_i^L \geq k_i^T \geq 0$ captures units’ “size/importance”, for $i = 1, 2$. 
Recap Preferences 2/2

- Ruler’s ex-post loss:

\[
L_P = \sum_{i=1}^{2} \sum_{h} L_i^h (\gamma_R) = \sum_{i=1}^{2} \sum_{h} k_i^h \left\{ (1 - r_i^h) \left[ (\gamma_R \theta_P + (1 - \gamma_P) \theta_i^h) - a_i \right]^2 + 
+ r_i^h \left[ \lambda_i^h (d_{-i2}^h - a_i^h)^2 + \eta_i^h \left( a_i^{-h} - \hat{\theta}_i^h \right)^2 + (1 - \lambda_i^h - \eta_i^h) \left( r_i^h - a_i^h \right)^2 \right] \right\}.
\]

- Recall that we assume \( \gamma^R \in [0, 1] \), with \( \gamma^R \geq \gamma^L_1 = \gamma^L_2 \geq \gamma^T_1 = \gamma^T_2 \).

\[ \Rightarrow \quad \gamma^L_1 = \gamma^L_2 \equiv \gamma^L \text{ and } \gamma^T_1 = \gamma^T_2 \equiv \gamma^T. \]
Governance Structure 1: Integration

Towns are administratively controlled by landed elites

\[ (d_{1,1}^L, d_{1,2}^L, d_{1,1}^T) \]

\[ (d_{1,2}^T) \]

\[ A_1^L \]

\[ A_1^T \]

\[ (d_{2,1}^L, d_{2,2}^L, d_{2,2}^T) \]

\[ (d_{2,2}^T) \]

\[ A_2^L \]

\[ A_2^T \]
Governance Structure 2: Separation
Towns are administratively independent from landed elite

Shire 1

\(A^L_1\)

\((d^L_{1,1}, d^L_{1,2})\)

\(A^T_1\)

\((d^T_{1,1}, d^T_{1,2})\)

Shire 2

\(A^L_2\)

\((d^L_{2,1}, d^L_{2,2})\)

\(A^T_2\)

\((d^T_{2,1}, d^T_{2,2})\)
In parliament, landed elites listen to ruler about $\theta_P$ and exchange about their local conditions with each other. They then report $\theta_P$ to urban elites.
In parliament, all elites listen to ruler about $\theta_P$. Landed elites exchange about their local conditions with each other. Urban elites do likewise.
Before Commercial Revolution

Towns embedded within shires, indirectly represented in parliament

\[ (d_{1,1}, d_{1,2}, d_{1,1}^T) \]
\[ (d_{2,1}, d_{2,2}, d_{2,1}^T) \]

\[ (d_{1,2}) \]
\[ (d_{2,2}) \]
Onset of Commercial Revolution
Municipal Autonomy and Indirect Representation

\[ \begin{align*}
\theta_p & 
\end{align*} \]
Aftermath of Commercial Revolution
Municipal Autonomy and Direct Representation

\[ \begin{align*}
&\text{Ruler} \\
&\text{Shire 1} \\
&\quad \text{A}_1^L \quad (d_{1,1}^L, d_{1,2}^L, d_{1,1}^T) \\
&\quad \text{A}_1^T \quad (d_{1,1}^T, d_{1,2}^T) \\
&\text{Shire 2} \\
&\quad \text{A}_2^L \quad (d_{2,1}^L, d_{2,2}^L, d_{2,1}^T) \\
&\quad \text{A}_2^T \quad (d_{2,1}^T, d_{2,2}^T)
\end{align*} \]
Baseline: Top-down Communication

Ruler

deleagtes authority

Elites $(A_L, A_T)$

communicates state of realm
Extension 1: Bottom-up Communication

Ruler

delegates authority

Elites $(A_L, A_T)$

communicates local conditions
Extension 2: Coalitions between Towns

Shire \((A_L, A_T)\) communicates local conditions to Shire \((A_L, A_T)\). The Ruler delegates authority to Shire \((A_L, A_T)\) and communicates the state of the realm. The Shire \((A_L, A_T)\) communicates local conditions to the Ruler.
Backup Determinants of Governance Structures 1/4

- **Decision-Making:**
  - Fix \( i \) preferences for the common state \( \{\gamma_P, \gamma_i, \gamma_j\} \), and \( ii \) the communication structure.
  - As the ‘size’ of the town approaches that of the surrounding countryside, the benefit to the monarch of transitioning from a *Shire-Integrated* to *Farm Grants* increases.
  - Role of the Commercial Revolution.

Now fix units’ sizes \( \{k_i, k_j\} \), monarch’s and landed elite’s preferences \( \{\gamma_P, \gamma_i\} \), and the communication structure. As merchants’ preference \( \gamma_j \) for the common state decreases (i.e., heterogeneity increases), the benefit to the monarch of *Farm Grants* also decreases.

Role of homogeneity of preferences (e.g., England vs France?).
Backup Determinants of Governance Structures 1/4

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  - Role of homogeneity of preferences (e.g., England vs France?).
Communication:

- Fix units’ sizes \( \{k_i, k_j\} \) and the allocation of decision-making authority – via absence/presence of \textit{Farm Grants}.
- As \textit{all} players’ preferences for the common state \( \{\gamma_P, \gamma_i, \gamma_j\} \) increase, the benefit to everyone of communicating – either via the shire-court or in parliament – also increases.
Communication:

- Fix units’ sizes \( \{k_i, k_j\} \) and the allocation of decision-making authority – via absence/presence of Farm Grants.

- As all players’ preferences for the common state \( \{\gamma_P, \gamma_i, \gamma_j\} \) increase, the benefit to everyone of communicating – either via the shire-court or in parliament – also increases.

- Now fix preferences \( \{\gamma_P, \gamma_i, \gamma_j\} \), the size of the ‘countryside’ \( k_i \), and the allocation of decision-making authority (whether Farm Grants are in place).

- As the size of the town \( k_j \) increases, the benefit to merchants of listening to either the shire representative or the monarch also increases.
What is the effect of the Commercial Revolution on i) jurisdictional boundaries and ii) the composition of parliament?

How do Farm Grants and communication jointly evolve as town’s size increases?

We assume that landed elites and merchants hold heterogeneous preferences over the common state ($\gamma_i > \gamma_j$).

A1 holds: Under *Farm Grants*, shire-court not effective at transferring information about realization of common state top-down, from the monarch to the merchants.
Set town’s size $k_j$ as small as one likes:

- **Decision-Making**: *Shire-Integration* prevails.
- **Communication**: Provided *all* players care enough about the common state, information about the realization of $\theta_P$ flows top-down via a system of shire-representation and shire-courts.

With the Commercial Revolution, as town’s size $k_j$ increases:

- **Decision-Making**: Towns obtain *Farm Grants*, provided monarch’s and merchants’ preferences about the common state are not too divergent.
- **Communication**: Communication in the shire-court collapses. When town’s size is sufficiently large, monarch restores communication with merchants by directly summoning town’s representatives to parliament, alongside shire-representatives.
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Checking Central Predictions in the Data for England

**Town Self-Governance**

<table>
<thead>
<tr>
<th>With Trade Geography</th>
<th>Without Trade Geography</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of Boroughs</td>
<td></td>
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</tr>
<tr>
<td>0.7</td>
<td>0.2</td>
<td></td>
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</tbody>
</table>

**Towns Representation in Parliament**

<table>
<thead>
<tr>
<th>Self-Governing</th>
<th>Not Self-Governing</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share of Boroughs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0.8</td>
<td>0.1</td>
<td></td>
</tr>
</tbody>
</table>

p-value for difference: <0.001