Dynamic
Property
Rights

Huang

Introduction

Model Setup

Evolution
Path

Evidence and
Discussions

Legal Protection of Property Rights: A Dynamic Evolution Model

Fali Huang

Singapore Management University

NASM2024 Vanderbilt

Motivation: State Predation

- Secure property rights are critical for economic growth (North and Thomas 1973).
- **Protection against state predation** is more fundamental than protection against private predation (Acemoglu et al. 2005).
- But **who can discipline the state** that by nature has to be the monopolist of coercive power?

- The only robust solution is to create a cyclical chain of institutions that form a self-sustaining equilibrium (Weingast 1997, North et al. 2009).

- This paper provides a simple analytical framework to study such a general equilibrium of institutions.

- It explores the inherent links between different formats of property rights protection from a historical perspective.

This Paper: Dynamic Property Rights

- It endogenizes four distinct formats of property rights protection:
    - coercive capacity, political power, legal rights, private protection (informal rent-seeking).
- Focusing on the rising importance of legal protection in history as a result of changing factor composition.
- In the literature, these elements are not simultaneously studied in a single model, neither together with economic growth nor with factor composition.
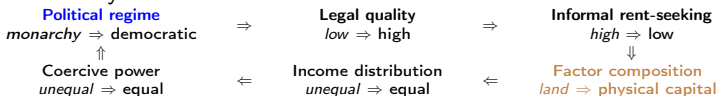
Preview of Results

1 Model: A dynamic evolution of institutions:

Political regime	$\Rightarrow$	**Legal quality**	$\Rightarrow$	**Informal rent-seeking**
monarchy $\Rightarrow$ **democratic**		*low* $\Rightarrow$ **high**		*high* $\Rightarrow$ **low**
$\Uparrow$				$\Downarrow$
Coercive power	$\Leftarrow$	**Income distribution**	$\Leftarrow$	**Factor composition**
unequal $\Rightarrow$ **equal**		*unequal* $\Rightarrow$ **equal**		*land* $\Rightarrow$ **physical capital**

2 A natural hierarchy of institutions:

- Informal rent-seeking is high when legal quality is low.

- Legal quality can't be high when the masses have limited political rights.
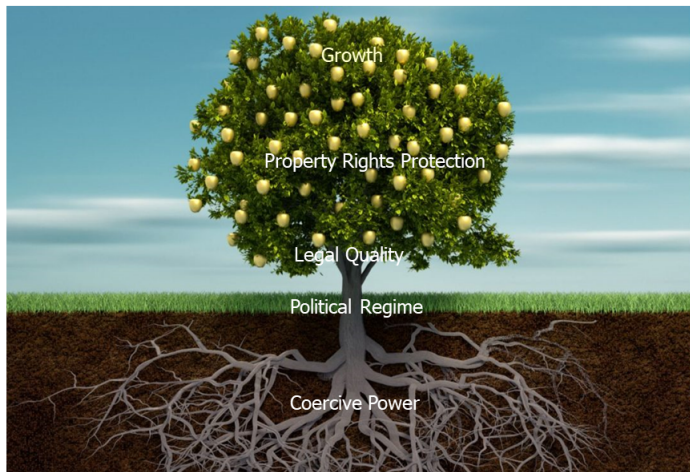
- Political rights can't be high when factor owners can't defend their interests by economic and coercive means.

This model shows legal quality adapts to evolving factor composition.

- When land is the main production factor, property security is low because
  - land can be easily expropriated without reducing productivity,
  - a small group can accumulate and manage big lands.
- Security becomes higher with physical capital (technical know-how and business networks) because
  - its owners are more diverse,
  - easier to defend against confiscation,
  - its stock is increasing faster than land.

    $\implies$ **Erosion** of property security occurs when vulnerability to expropriation increases, even under democracy.

The Economy

Dynamic
Property
Rights

Huang

Introduction

Model Setup

Evolution
Path

Evidence and
Discussions

- Overlapping generations with a fixed population size.
- Log-linear preferences:

$$u_{ti} = (1-\beta)\log c_{ti} + \beta \log(z + b_{ti}),$$

  where c_{ti} is adulthood consumption of individual i in generation t, b_{ti} is her bequest for offspring.
  Optimal bequest: $b_{ti} = \max\{\beta(I_{ti} - Z), 0\}$ where $Z \equiv z(1-\beta)/\beta$.

- **Endowment:** Each endowed with land L_i. Capital k_{ti} can be accumulated from savings.
- **Final Output Production** $I_{ti} = A_t(L_i + k_{ti})$
- Knowledge stock grows exogenously: $A_{t+1} = A_t(1+g)$.

- The coercive capability of a group of N_j individuals is

$$v_t = \psi(N_j) \sum_{i=1}^{N_j} I_{ti}, \tag{1}$$

$\psi(N_j)$ is group organizing effectiveness, $\psi' < 0$.

- The initial political regime is established by *might-is-right*, where the dominant group becomes the first ruler and imposes tax on others.
- Transition of political regimes follows a reduced-form version of the political equilibrium in Huang (2012):
  - The current political regime continues when $x_t \leq x^*$,
  - replaced by a new regime if $x_t > x^*$,
  - where x_t is **relative coercive power** of Challenging group over the Ruler: $x_t \equiv \frac{v_t^C}{v_t^R}$.

- Why an independent legal system?
    - The highest possible expropriation rates of land τ_l and capital τ_k: $\tau_k < \tau_l$.
    - The optimal tax rate τ_0 is lower: $\tau_0 < \tau_k < \tau_l$.
    - τ_0 **may not be credible due to dynamic inconsistency**.
    - The ruler uses an independent legal system to enforce τ_0.
- The legal quality q_t with maintaining cost $c(q_t)$ is chosen to maximize the ruler's expected total revenue (income, tax, rent-seeking).
    - With probability q_t, tax rate τ_0 is enforced by law.
    - With $1 - q_t$, law is ineffective and a rent-seeking game is played.

Private Protection in a Rent-Seeking Game

Dynamic
Property
Rights

Huang

Introduction

Model Setup

Evolution
Path

Evidence and
Discussions

- Expenditure in rent-seeking capacities by individual i is s_{ti}.
- The ruler has a relative advantage in rent-seeking: $\rho > 1$.
- Let $\mu_{tR} \equiv \frac{\rho s_{tR}}{s_{tR} + s_{ti}}$ be the ruler's rate of success in the rent-seeking game with individual i, where s_{tR} is the ruler's expenditure in rent-seeking.
    - Then with probability μ_{tR}, the ruler succeeds in expropriation $\theta \tau_i I_{ti}$,
    - while with probability $(1 - \mu_{tR})$, it loses $\theta \tau_R I_{tR}$.

1. **Political Regime Stage:** Ruled agents decide whether to obey the current political regime (if $x_t \leq x^*$) or to revolt (if $x_t > x^*$).

2. **Legal Investment Stage:** The ruler chooses the optimal legal quality q_t^* to maximize its total revenue.

3. **Rent-Seeking Stage:** Individuals choose their optimal rent-seeking expenditure: s_{ti}^*, s_{tR}^*.

The equilibrium is solved by backward induction.

(1) Weak Law under Monarchy with Land

- **Proposition 1.** *With only land, monarchy continues without any revolt if* $L_R \geq \frac{1}{1+\phi x^*} L$.
- **Proposition 2.** *The optimal legal quality is*

$$q_t^* = \begin{cases} 0 & \text{if } \omega_m A_t \leq c'(0) \\ c'^{(-1)}(\omega_R A_t) & \text{if } \omega_m A_t > c'(0) \end{cases},$$

which decreases in ρ.

- $q_t^* = 0$ *if monarch's advantage in rent-seeking, ρ, is large, otherwise $q_t^* > 0$ and increasing over time.*
- *Rent-seeking expenditure relative to exploitable income decreases in q_t^*.*

$\implies$ Stable monarchy with dominant owernship of land, strong political power, weak law, high probability of confiscation.

- Physical capital investment starts in a certain period T_k when landlords have positive bequests: $k_{ti} = b_{t-1,i}$.

- Monarch does not invest in capital (due to lack of time or expertise).

- The average potential expropriation rate τ_{ti} for any individual's income is a mixture of τ_l and τ_k such that

$$\tau_{ti} I_{ti} \equiv (\tau_l L_i + \tau_k k_{ti}) A_t.$$

Lemma 1. *τ_{ti} is decreasing over time* due to $\tau_k < \tau_l$ and K_t increasing.

(2) Legal Quality High with Physical Capital

Proposition 3. *The optimal legal quality under monarchy* with $K_t > 0$ is

$$q_t^{**} = \begin{cases} 0 & \text{if } \omega_t A_t \leq c'(0) \\ c'^{(-1)}(\omega_t A_t) & \text{if } \omega_t A_t > c'(0) \end{cases},$$

where $\omega_t A_t = \omega_R A_t + \theta \mu^2 (\tau_l - \tau_t) K_t$.

- *The marginal benefit of improving legal quality is higher when K_t is larger, and thus the legal quality q_t^{**} is higher than before and keeps improving over time.*

- *Rent-seeking expenditure relative to exploitable income is lower than before due to higher legal quality.*

Physical capital K_t as a new engine of growth propells the economy to grow faster than before.

Such economic development eventually leads to political change.

Proposition 4. *Monarchy continues with no revolt until* T_D, *where* T_D *is determined by*

$$K_{T_D} = (1 + \phi x^*)L_R - L, \qquad (2)$$

while revolt occurs at the first period after T_D, *which leads to democracy where all factor owners share political power.*

- Under democracy, all have identical land and physical capital (with heterogeneity treated in extensions).

- There is no exploitative tax anymore, but all pay tax τ_0 for legal investment and other public goods.

- Each factor owner has a probability $p \in (0,1)$ to be selected as the ruler, whose role is similar to the median voter in the majority voting model.

- Once a ruler is selected through a random process, the decision-making sequence is the same as before.

- The only change is that the legal quality q_t^* has to be decided *ex ante*, before the identity of the ruler is revealed in the voting process.

(3) Legal Quality Higher under Democracy

- Is legal quality in democracy q_t^{*D} higher?
- Yes, but only when p is sufficiently small.
- Elite capture: The elected ruler's ex post optimal choice of legal quality is always lower than that of the citizens, and even lower than that of monarch. This again creats dynamic inconsistency in legal quality choice.
- *The relationship between q_t^{*D} and ρ changes:*
    - Positive under democracy, negative under monarchy.
- $\implies$ A strong rule of law q_t^{*D} and a strong government ρ coexist only when political power is more equally distributed.

The Evolution Path of Legal Quality

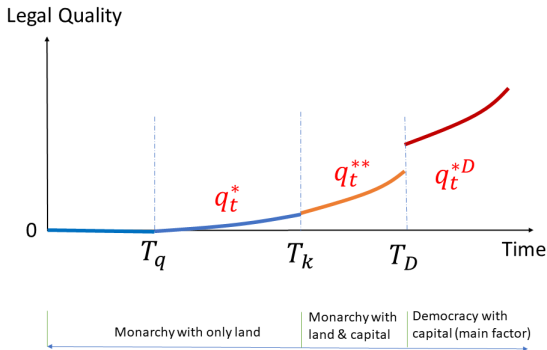The increase of legal quality over time is driven by three interconnected sources in the benchmark model.

Historical Evidence: England

- T_k: With more surpluses from agriculture, towns started to grow from the 10th century. (Monarchy with physical capital)

- $[T_k, T_D)$: The English barons confronted King John in 1215, the result of which was Magna Carta, pushing the common law court towards better protection of private property rights. The Crown, however, invested in many other ways trying to sidestep the common court and expropriate citizens' properties.(Monarchy, better law)

- T_D: The Glorious Revolution in 1688 established the dominant role of parliament in policies.(Political change)

- $t > T_D$: Security of property rights was much improved, which greatly facilitated investment and production that later on triggered the Industrial Revolution.(Democracy)

- (1) Co-Optation: Land inequality under monarchy may result in co-optation of large landlords, which delays democratization and reduces legal quality regarding capital.

- (2) Rich vs Poor: When large landlords also invest in capital, then co-optation is not feasible, where high inequality in land may hasten the transition from monarchy to oligarchy but delay transition to full democracy.

- (3) Democracy Degeneration: Erosion of property security under democracy and degeneration back to oligarchy are possible if wealth inequality becomes high and vulnerability to expropriation increases (for various reasons).

- Many important dimensions are not explicitly modeled in this paper.
  - The interactions between state predation and private predation such as contract enforcement.
  - The interactions between the state's fiscal capacity and the rule of law.
  - The unique effects of human capital on property rights protection formats.

Concluding Remarks

Dynamic
Property
Rights

Huang

Introduction

Model Setup

Evolution
Path

Evidence and
Discussions

- Vulnerability to expropriation varies by production factors.
- Property rights security is fundamentally shaped by evolving factor composition.
- Property security is low when land (or other natural resources) is the main production factor, and high when physical capital gains importance.
- The capability to transform economic and other resources into coercive/political power is also crucial.
- Institutional hierarchy exists: Coercive Capability > Political Power > Legal Rights > Private Protection.

Table 1: Effects of Strong and Weak Democracies on Rule of Law

Rule of Law Indicators (2005-2010)	(1) Bertelsmann Stiftung	(2) Freedom House	(3) Worldwide Governance Indicator	(4) Christian Welzel	(5) Quality of Governance
Strong Democracy	3.046***	6.856***	0.880***	0.177***	0.117***
	(0.268)	(0.593)	(0.165)	(0.033)	(0.040)
Weak Democracy	2.110***	4.837***	0.332*	0.065*	0.015
	(0.352)	(0.786)	(0.185)	(0.037)	(0.038)
Coef. Test (p-value): $\beta_S = \beta_W$	0.0098	0.0174	0.0061	0.0051	0.0097
Observations	95	127	127	125	104
Adjusted R^2	0.585	0.641	0.411	0.399	0.415