Law And Economics

Property Law

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Property Rights

- Delineate boundaries: what individuals can (and cannot) do with the *assets under their control*.
  - Tangible assets.
  - Intangible assets.

- Some questions:
  - How are PR defined?
  - What is their impact on economic incentives?
  - How are PR originally assigned?
  - How are PR protected?

How are Property Rights Defined?

- Bundle of rights:
  - Right to *use*, *consume*.
  - Right to *develop*, *transform*.
  - Right to *exclude*, *destroy*.
  - Right to *lease*, *loan*.
  - Right to *dispose*, *sell*, *donate*.

- Rights are enforced by Law.
  - But sometimes there is conflict: externalities.

Property Rights and Incentives

- Property rights improve efficiency:
  - Internalize externalities.
  - Incentives for production.

- Even if the 'final' allocation is not affected by the initial allocation of property rights, initial allocation affects wealth distribution.

How are Property Rights Originally Assigned?

- "This morning in a remote meadow in Wyoming, a mule was born. To whom does that mule belong?"
  - The owner of the mule's mother.
  - The lumber company that has leased the land.
  - The federal government because property is a national forest.

How are Property Rights Originally Assigned?

- Gold mines in California:
  - When would was first discovered (1848) enforcement was private.
  - 1872: General Mining Law:
    - Individuals allowed to explore federal lands in search of minerals.
    - Might 'stake a claim' (fees to maintain the claim)
    - If perform development of $500 or more individual might file for a patent to obtain title to surface and mineral rights of the land.
    - Fixed cost of $ 5 per acre (lode) or $ 2.5 (placer).

How are Property Rights Originally Assigned?

- Homestead Laws:
  - 'First-come, first served' allocation.
  - Conditions: Promise to reside for 5 years.
  - In all, 10% of US territory was given away in this way to 1.6 million people.
- Are these ways to allocate assets efficient?
- Other potentially interesting cases?
  - Radio Frequency Spectrum.
  - Space.

First Possession

- 'Finder's keepers'
- Inefficient:
  - Tragedy of the commons.
  - Race effect (more on this when we talk about intellectual property rights.)
- Oil example:
  - Rule applied to the stock.
  - Rule applied to the flow (capture).

How are PR enforced: the Origins of the State

- In most economic models, property rights are assumed.
- *Essential* function of the state:
  - monopoly of violence.
  - Taxation.
  - Protection of the property rights of those taxed.
  - 'Stationary bandits': not different than the role of the Mafia.
  - This was central for modern economic growth.
  - Empirical challenge: statistics where first created by states.

How are States Formed?

- Miners example:
  - Prior to government, private enforcement.
  - Associations.
    - Economies of scale.
    - Free riding problem
  - Turf wars.
  - Eventual transition to monopoly.
    - Efficient (scale and destructive competition).
    - Risk of abuse.

How are States Formed?

- Eastern Congo:
  - 'failed state'.
  - Armed groups proliferated in the East.
  - Robberies and control of individual villages.
- Impact of large sudden increases in price of certain minerals.
  - Introduction of Playstation II, increased demand for coltan.
  - If monopolies of violence are more likely to emerge in locations with higher potential revenues from taxation, one would expect positive shocks to cause a rise in use of organized crime in villages with higher concentration of minerals.

Price of Coltan

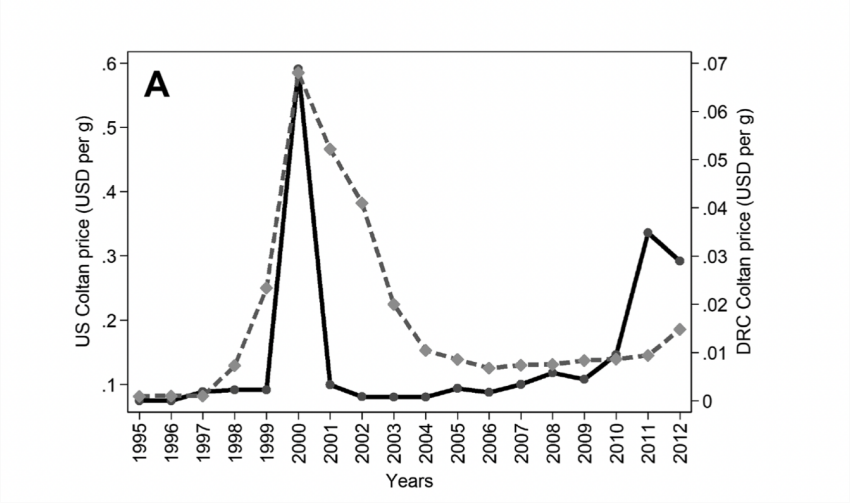

Figure 1: Price of Coltan.

Price of Gold

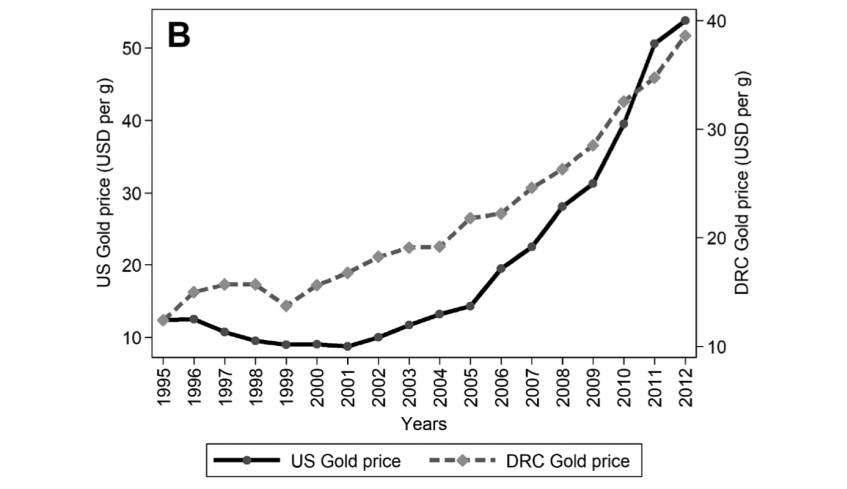

Figure 2: Price of Gold.

Findings

- Paper finds that increase in the price of minerals induce the formation of growth-promoting monopolies of violence, but only if these minerals are '*easy to tax*'.
  - Coltan: it is bulky, so it cannot be easily hidden.
  - Gold: Easy to conceal.
- Once established, monopolies started to
  - collect taxes,
  - provide security,
  - administer justice.
- Higher economic activity.

Findings

		Mine				
Variables	Municipality Attacked (1)	Customs Tax (2)	Entry Fees (3)	Stationary Bandit (4)	Security Service (5)	Extensive-Margin Index (6)
Coltan$_j$ × p_{ct}	.15***	.06**	.01	.07***	.06**	.16***
	(.03)	(.02)	(.02)	(.03)	(.02)	(.06)
Gold$_j$ × p_{gt}	−.02	−.04	.04*	.05	.05	.10
	(.03)	(.02)	(.03)	(.04)	(.04)	(.07)
Observations	4,158	4,046	4,052	3,991	4,032	3,903
R^2	.39	.59	.69	.60	.62	.65

Figure 3: Effects of Price on Mines

Property Rights as a Solution to the Externality Problem

Coase Theorem revisited: *When property rights are well-defined and transaction costs are low, the allocation of resources will be efficient regardless of the initial assignment of property rights.*

- This says that: under these circumstances, final allocation is efficient for any initial allocation of property rights.
- This does not say: the final allocation is efficient independently of whether property rights are assigned or not.

Hawk and Dove Game with Asymmetric Values

- One way to think about unassigned property rights: Hawk and Dove Game.

	H	D
H	$\frac{1}{2}V_1 - K,\ \frac{1}{2}V_2 - K$	$V_1,\ 0$
D	$0,\ V_2$	$\frac{1}{2}V_1,\ \frac{1}{2}V_2$

- Three cases:
  - $2K < \min\{V_1, V_2\}$
  - $2K \in (\min\{V_1, V_2\}, \max\{V_1, V_2\})$
  - $2K > \max\{V_1, V_2\}$

Property Rights and Liability Rules

Bargaining

- Suppose that there is a cake to split and we have the same preferences. If we can't agree the cake goes bad.
  - Rubinstein: game-theoretical approach. Alternating offers.
  - Nash: Axiomatic approach. What would be a reasonable outcome?

- **Bargaining Problem**: pair (U, d) with $U \subseteq R^2$ and $d \in U$.
- A **Bargaining Solution** is a map f from the set of bargaining problems to U.

Bargaining

- Nash Axioms:
  - **Pareto Efficiency**: $f(U,d)$ in the Pareto frontier. (there is no $u \in U$ such that $u > f(U,d)$).
  - **Symmetry**: U symmetric and $d_1 = d_2$, then $f_1(U,d) = f_2(U,d)$.
  - **Invariance to Linear Transformations**. (This reflects the fact that utility is invariant.)
  - **Independence of Irrelevant Alternatives**. Let $U' \subseteq U$. If $f(U,d) \in U'$ then $f(U',d) = f(U,d)$.

Bargaining

Let the *Nash solution* $f^*(U, d)$ be the solution to

$$\max_{u \in U \cap D} (u_1 - d_1) \cdot (u_2 - d_2)$$

Where D is the set of pairs greater than d.

Proposition

The Nash Bargaining solution f^* is the unique bargaining solution that satisfies the four axioms.

Property Rules and Liability Rules

- Difference lies in consent: permission or forgiveness.
  - Property Rights require ex ante bargaining.
  - Liability involves ex post compensation.

- Deterministic case:
  - 'Producer' can pay $100 to prevent causing a damage of $120 to the 'Recipient'.
  - Farmer and Rancher with bridge.

Numerical Example

- Two enforcement rules and two assignments: four cases.

Enforcement / Assignment	Producer	Recipient
Property Rule	I	II
Liability Rule	III	IV

Property Rule Cases

- **Case I**: Rancher's property rights are protected.
  - Rancher has no incentives to destroy the bridge.
  - Farmer has incentives to buy the right from the producer.
  - Nash solution: Recipient pays 110 for the right.
  - Allocation is efficient.

- **Case II**: Producer will not be able to buy the right.
  - Will destroy the bridge.

Liability Cases

- **Case III**: Rancher's right are protected by Liability rule.
  - Rancher does not have incentives to destroy the bridge.
  - Farmer will destroy the bridge and pay the damages ($ 100) to the rancher.

- **Case IV**: Farmer's rights are protected by Liability rule.
  - If the Rancher does not destroy the bridge, he will have to pay damages for the crops.
  - Rancher will destroy the bridge.

Property Rule Cases (damage is efficient)

Instead of \$100 the benefit of the bridge for the Rancher is \$ 140.

- **Case I**: Rancher's property rights are protected.
  - Rancher has no incentives to destroy the bridge.
  - Farmer will not be willing to buy the right from the producer.

- **Case II**: Rancher wants to buy the right from the farmer.
  - Nash solution: price of \$ 130.

Liability Cases (damage is efficient)

- **Case III**: Rancher's right are protected by Liability rule.
  - Rancher does not have incentives to destroy the bridge.
  - Farmer will not be willing to pay the damages ($ 140), so he doesn't destroy the bridge either.

- **Case IV**: Farmer's rights are protected by Liability rule.
  - If the Rancher does not destroy the bridge, he will have to pay damages for the crops.
  - Rancher will prefer this to destroy the bridge.

Property Rules and Liability Rules

The previous example abstracts from two important issues:

- Transaction Costs.
- Information Asymmetry.

Transfers of Property