Oligarchies, Dictatorships and Political Transitions

Political Economics: Week 7

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Personal Rule

- Autocratic authoritarianism: a very ancient form of government that is far from extinct.
  - Infamously common in Africa: Congo (Zaire) under Mobutu, Liberia under Taylor, Uganda under Amin, Zimbabwe under Mugabe ...
  - Caribbean examples: the Dominican Republic under Trujillo, Haiti under the Duvaliers, Nicaragua under the Somozas.
- Kleptocracy: the ruler and his close associates extract very large rents that they personally consume (or hoard). Corruption at every level of government is typically rampant.
- Personalization of politics: formal institutions are non-existent or irrelevant, and power rests on individual relationships of clientelism.
- Although clientelism is often rooted in ethnic divisions, loyalty is based on patronage. The dictator is not the representative of a constituency whose interests are being advanced by the government.

Political Survival and Economic Performance

- Olson (1993) advanced the Hobbesian argument that tyranny (a "stationary bandit") is better than anarchy ("roving bandits"): public affairs are run efficiently because they coincide with the tyrant's private affairs.
- In practice, neo-patrimonial states have displayed an abysmal economic performance, with hardly any growth and most of the population living in extreme poverty.
- Despite these failures of governance and inefficient patronage, personal regimes can be strikingly long-lived.
- How do the kleptocrats survive if their rule is beneficial to a small clique and detrimental to everyone else, including both the impoverished masses and the arbitrarily taxed and regulated producers?
- Why do the kleptocrats extract rents in a staggeringly efficiency-reducing manner?

The Politics of Fear

Padró i Miquel (2007) presents a model of neo-patrimonialism in ethnically divided African countries.

1. Ethnic division: a ruler needs the support of his ethnic group in an ethnically divided society.
2. Weak institutions: ruler replacement leads to political instability and increases the likelihood of a switch of power between ethnic groups.
3. Bureaucratic incapacity: taxation can only vary by economic activity, while transfers can directly target groups.

$\Rightarrow$ A ruler can enjoy support from his ethnic followers despite extracting rents from them: they support a kleptocrat from their own group because they fear a kleptocrat from a rival group even more.

Economic Environment

- An infinitely repeated economy with unit mass of citizens.
- Two ethnic groups A and B: the size of the former is π^A.
- Each group is defined by two types of characteristics.
  1. Ascriptive characteristics such as skin colour (maybe geographical distribution or language) that are identifiable and impossible to change.
  2. A comparative advantage in a different economic activity, a or b.
- A group G citizen earns ω^G in activity g and $\omega^G - \theta^G$ in the other.
- $\theta^G \in \left[0, \omega^G\right]$ measures the extent to which a group is specialized in a specific activity, e.g., because it cultivates tree crops.
- Every period each group decides what activity to engage in.
- The indicator variable z_t^G measures if group G is engaged in its comparative-disadvantage activity in period t.

Government Intervention

- At any time, power is in the hands of a leader L^G from group G.
- The economy has two states, $S_t \in \{A, B\}$ denoting which group captures power in period t.
- Income taxes have been historically unfeasible in poor countries. The state collects revenue from indirect taxation, which can target sectors, but not groups as such.
- The tax level that L^G levies on activity k is τ^{Gk}.
- On the expenditure side, patronage spending can be perfectly targeted to groups, or individuals.
- The patronage that L^G provides to group J is η^{GJ}. This provides utility $R\left(\eta^{GJ}\right)$ to group J, with

$$R(0) = 0,\ R'(0) = 1,\ R'(\eta) > 0 \text{ and } R''(\eta) < 0 \text{ for all } \eta.$$

The other group derives no utility from η^{GJ}.

Payoffs

- The instantaneous utility of a member of group A in state S is

$$C\left(S, z^A\right) = \left(1 - z^A\right)\left(\omega^A - \tau^{Sa}\right) + z^A\left(\omega^A - \theta^A - \tau^{Sb}\right) + R\left(\eta^{SA}\right)$$

- Citizens in group G have welfare $\mathbb{E}\sum_{t-0}^{\infty}\delta^t C_t^G$.
- The leader maximizes the funds he can divert for his personal use.
- When L^A is in power, his instantaneous utility is

$$\begin{aligned} U^A &= \tau^{Aa}\left[\pi^A\left(1 - z^A\right) + \left(1 - \pi^A\right)z^B\right] \\ &\quad + \tau^{Ab}\left[\pi^A z^A + \left(1 - \pi^A\right)\left(1 - z^B\right)\right] \\ &\quad - \pi^A\eta^{AA} - \left(1 - \pi^A\right)\eta^{AB}. \end{aligned}$$

- When L^A is not in power, his instantaneous utility is nil.
- L^G maximizes $\mathbb{E}\sum_{t-0}^{\infty}\delta^t U_t^G$.

Weak Institutions

- If the incumbent leader L^G retains the support of his ethnic group, he maintains his position with probability $\bar{\gamma}^G$. With probability $1-\bar{\gamma}^G$, members of the opposite group succeed at ousting the leader and installing one of their own kin.
- If the supporters of an incumbent decide to subvert his authority, he loses his grip on power with certainty. A period of anarchy follows in which the state does not perform its functions.
- Anarchy makes it easier for the opposite group to seize power: this happens with probability $1-\underline{\gamma}^G$. $\underline{\gamma}^G < \bar{\gamma}^G$ is the probability that group G retains power despite overthrowing its own leader.
- The difference $\bar{\gamma}^G - \underline{\gamma}^G > 0$ captures the importance of personal rule.

Timeline

Given state S_t, the timing of the stage game is the following:

1. Leader L^S announces the policy vector $P_t = \left(\tau_t^{Sa}, \tau_t^{Sb}, \eta_t^{SA}, \eta_t^{SB}\right)$.
2. The citizens of group S_t decide to support, $s_t = 1$, or not, $s_t = 0$.
3. Both groups decide which activity to engage in, z_t^A, z_t^B.
4. If $s_t = 1$, P_t is implemented and payoffs realized. The next period starts with $S_{t+1} = S_t$ with probability $\bar{\gamma}^S$ and $S_{t+1} \neq S_t$ with probability $1 - \bar{\gamma}^S$.
5. If $s_t = 0$, the leader is ousted immediately and the anarchy vector $P_r = (0, 0, 0, 0)$ is implemented. The next period starts with $S_{t+1} = S_t$ with probability $\underline{\gamma}^S$ and $S_{t+1} \neq S_t$ with probability $1 - \underline{\gamma}^S$.

- Groups do not suffer from a collective-action problem, which would worsen kleptocracy even further.

Equilibrium Concept

- As usual in this literature, the equilibrium concept is Markov Perfect Equilibrium: strategies are only contingent on the payoff-relevant state of the world and the prior actions taken within the same period.
- The strategy of L^G is $P^G = \left(\tau^{Ga}, \tau_t^{Gb}, \eta_t^{GA}, \eta_t^{GB}\right) \in \mathbb{R}_+^4$ when $S_t = G$.
- The strategy of group G is $\sigma^G\left(S, P^S\right)$ and determines two actions $\left(s^G, z^G\right)$. If $S_t = G$, group G can choose whether to support or subvert the authority of L^G, $s^G \in \{0, 1\}$. Independently of the state, $z^G \in \{0, 1\}$ as a function of the policy proposal.
- The transition probability function $T\left(S_{t+1} | S_t, \sigma^S\right)$ assigns to $S_{t+1} = S_t$ probability $\bar{\gamma}^S$ if $s_t^S = 1$, and probability $\underline{\gamma}^S$ if $s_t^S = 0$.

Equilibrium Values

- A pure-strategy equilibrium is a combination of strategies

$$\left\{\tilde{P}^A, \tilde{P}^B, \tilde{\sigma}^A\left(S, P^S\right), \tilde{\sigma}^S\left(S, P^S\right)\right\}.$$

- In equilibrium, each group has state-contingent welfare

$$\begin{aligned} V^G(S) &= C^G\left(\tilde{P}^S, \tilde{\sigma}^A\left(S, \tilde{P}^S\right), \tilde{\sigma}^B\left(S, \tilde{P}^S\right)\right) \\ &\quad + \delta \sum_{S' \in \{A,B\}} V^G\left(S'\right) T\left(S' | S, \tilde{\sigma}^S\left(S, \tilde{P}^S\right)\right). \end{aligned}$$

- The incumbent politician has welfare

$$\begin{aligned} W^S(S) &= U^S\left(\tilde{P}^S, \tilde{\sigma}^A\left(S, \tilde{P}^S\right), \tilde{\sigma}^B\left(S, \tilde{P}^S\right)\right) \\ &\quad + \delta W^S(S) T\left(S | S, \tilde{\sigma}^S\left(S, \tilde{P}^S\right)\right). \end{aligned}$$

- If a politician is deposed, he obtains zero rents forever after.

Best Responses

- The leader's ethnic group plays a best response to every possible policy proposal of his:

$$\tilde{\sigma}^S\left(S,P^S\right)=\arg\max_{\sigma^S}\left\{C^S\left(P^S,\sigma^S\right)+\delta\sum_{S'}V^S\left(S'\right)T\left(\sigma^S\right)\right\}.$$

- The best response of the excluded ethnic group takes into account the subversion choice of the leader's supporters:

$$\tilde{\sigma}^G\left(S,P^S\right)=\arg\max_{\sigma^G}\left\{C^G\left(P^S,\sigma^G,\tilde{\sigma}^S\left(S,P^S\right)\right)\right\}\text{ for }G\neq S.$$

- The leader's policy choice takes into account the responses of both ethnic groups:

$$\tilde{P}^S=\arg\max_{P^S}\left\{\begin{array}{c}U^S\left(P^S,\tilde{\sigma}^A\left(S,P^S\right),\tilde{\sigma}^B\left(S,P^S\right)\right)\\+\delta W^S\left(S\right)T\left(S|S,\tilde{\sigma}^S\left(S,P^S\right)\right)\end{array}\right\}.$$

Incentive Compatibility

Without loss of generality $S_t = A$.

1. The ruler always wants to induce his group to support him ($\tilde{s} = 1$), or else his utility would immediately drop to zero.
2. The ruler always wants to induce both groups to engage in their comparative-advantage activity, or else he would lose resources he can benefit from.

- The tax burden on group A is limited by

$$\tau^{Aa} \leq \theta^A + \tau^{Ab}.$$

- The tax burden on group B is limited by

$$\tau^{Ab} \leq \theta^B + \tau^{Aa}.$$

The Support Condition

- By supporting L^A given his policy proposal P^A, group A obtains

$$\omega^A - \tau^{Aa} + R\left(\eta^{AA}\right) + \delta\left[\bar{\gamma}^A V^A(A) + \left(1 - \bar{\gamma}^A\right) V^A(B)\right].$$

- By subverting L^A, the group instead obtains

$$\omega^A + \delta\left[\underline{\gamma}^A V^A(A) + \left(1 - \underline{\gamma}^A\right) V^A(B)\right].$$

- Thus L^A can retain the support of group A so long as

$$\tau^{Aa} - R\left(\eta^{AA}\right) \leq \delta\left(\bar{\gamma}^A - \underline{\gamma}^A\right)\left[V^A(A) - V^A(B)\right] \equiv \Phi^A.$$

- The more the group fears the leadership of the other group ($V^A(A) > V^A(B)$) and the more destabilizing regime change ($\bar{\gamma}^A > \underline{\gamma}^A$), the more a rule can reduce the utility of his own supporters.

The Policymaking Problem

- Ruler L^A solves

$$\max_{(\tau^{Aa},\tau^{Ab},\eta^{AA},\eta^{AB})\in\mathbb{R}^4_+} \left\{\pi^A\left(\tau^{Aa}-\eta^{AA}\right)+\left(1-\pi^A\right)\left(\tau^{Ab}-\eta^{AB}\right)\right\}$$

subject to

$$\tau^{Aa} \leq \theta^A + \tau^{Ab}$$

$$\tau^{Ab} \leq \theta^B + \tau^{Aa}$$

$$\tau^{Aa} - R\left(\eta^{AA}\right) \leq \Phi^A.$$

- Markov perfection implies that today's policy choices have no effect on future utility $W^A(A)$, so long as the last constraint is satisfied and thus the probability of remaining in power is $\bar{\gamma}^A$.

Personally Optimal Policy

1. The excluded group receives no patronage: $\tilde{\eta}^{AB} = 0$.
2. The ruler's group is exploited to the point of subversion:

$$\tilde{\tau}^{Aa} - R\left(\tilde{\eta}^{AA}\right) = \Phi^{A}.$$

3. The excluded group is taxed to the point at which it would abandon its comparative-advantage activity:

$$\tilde{\tau}^{Ab} = \theta^{B} + \tilde{\tau}^{Aa} = \theta^{B} + \Phi^{A} + R\left(\tilde{\eta}^{AA}\right).$$

4. The ruler's group is over-taxed and over-provided with patronage (compared to the social optimum $R'\left(\eta^{*}\right) = 1$), because this enables maximal rent-extraction from the excluded group:

$$\begin{aligned} \tilde{\eta}^{AA} &= \arg\max_{\eta^{AA} \geq 0} \left\{ \Phi^{A} + R\left(\eta^{AA}\right) - \pi^{A}\eta^{AA} + \left(1 - \pi^{A}\right)\theta^{B} \right\}, \\ &\quad \text{such that } R'\left(\tilde{\eta}^{AA}\right) = \pi^{A}. \end{aligned}$$

Equilibrium Discrimination

- Patronage is independent of future outcomes, but taxation is determined in a dynamic equilibrium.
- If taxes are set to $\left(\tau^{Aa}, \tau^{Ba}\right)$, the value function for group A is

$$V^A(A) = \omega^A - \tau^{Aa} + R\left(\tilde{\eta}^{AA}\right) + \delta\left[\bar{\gamma}^A V^A(A) + \left(1 - \bar{\gamma}^A\right) V^A(B)\right],$$

$$V^A(B) = \omega^A - \tau^{Ba} + \delta\left[\left(1 - \bar{\gamma}^B\right) V^A(A) + \bar{\gamma}^B V^A(B)\right].$$

- Thus group A's relative fear of a ruler L^B is

$$V^A(A) - V^A(B) = \frac{\tau^{Ba} - \tau^{Aa} + R\left(\tilde{\eta}^{AA}\right)}{1 - \delta\left(\bar{\gamma}^A + \bar{\gamma}^B - 1\right)}.$$

- Symmetrically, group B's fear depends on $\left(\tau^{Ab}, \tau^{Bb}\right)$.

Rational Expectations

- Given expectations Φ^A, L^A sets taxes

$$\tau^{Aa} = \Phi^A + R\left(\tilde{\eta}^{AA}\right) \text{ and } \tau^{Ab} = \theta^B + \Phi^A + R\left(\tilde{\eta}^{AA}\right).$$

  Symmetrically, Φ^B determines $\left(\tau^{Ba}, \tau^{Bb}\right)$.
- Expectations $\left(\Phi^A, \Phi^B\right)$ imply taxes $\left(\tau^{Aa}, \tau^{Ab}, \tau^{Ba}, \tau^{Bb}\right)$, and so

$$V^A(A) - V^A(B) = \frac{\theta^A + \Phi^B + R\left(\tilde{\eta}^{BB}\right) - \Phi^A}{1 - \delta\left(\bar{\gamma}^A + \bar{\gamma}^B - 1\right)}.$$

- In equilibrium expectations must be rational, i.e., consistent with

$$\frac{\Phi^A}{\delta\left(\bar{\gamma}^A - \underline{\gamma}^A\right)} = V^A(A) - V^A(B),$$

  and symmetrically for B.

Equilibrium Taxation

- To simplify notation, let

$$\Psi^G \equiv \frac{\delta\left(\bar{\gamma}^G - \underline{\gamma}^G\right)}{1-\delta\left(\bar{\gamma}^A + \bar{\gamma}^B - 1\right)} > 0.$$

- In the unique Markov-perfect equilibrium,

$$\begin{aligned}\Phi^A &= \frac{\Psi^A\left[\left(1+\Psi^B\right)\theta^A + \Psi^B\theta^B\right]}{1+\Psi^A+\Psi^B} \\ &+ \frac{\Psi^A\left[\Psi^B R\left(\tilde{\eta}^{AA}\right) + \left(1+\Psi^B\right)R\left(\tilde{\eta}^{BB}\right)\right]}{1+\Psi^A+\Psi^B}.\end{aligned}$$

- This measures the extent to which ruler L^A exploits his own group:

$$\Phi^A = \tau^{Aa} - R\left(\eta^{AA}\right)$$

equals the group's utility loss from rule by L^A compared to anarchy.

Comparative Statics

- The smaller the ruler's basis of support, the more distorted the provision of patronage: $\partial \eta^{AA} / \partial \pi^{A} < 0$.
- Greater frictions anywhere in the economy allow greater exploitation of every group: $\partial \Phi^{A} / \partial \theta^{A} > 0$ and also $\partial \Phi^{A} / \partial \theta^{B} > 0$.
  - If group B is vulnerable, L^{B} can levy high taxes: group A is affected by this, and thus becomes vulnerable by contagion.
  - L^{A} can exploit group A's induced vulnerability and exploit group B even more.
  - Fear thus acts as a multiplier, amplifying the effects of a single inefficiency across all groups.
- Distortion increases in the weakness of institutions: $\partial \Phi^{A} / \partial \bar{\gamma}^{G} > 0$ and $\partial \Phi^{A} / \partial \underline{\gamma}^{G} < 0$ for $G \in \{A, B\}$.
  - Institutions are weaker when the incumbent is more entrenched, and when the succession process is more unstable.

A Model of African Neopatrimonialism

1. The model endogenously generates inefficient policies.
   1. Excessive taxation.
   2. Excessive, inefficient patronage spending

   $\Rightarrow$ Consistent with the pattern of statism and inefficient agricultural policies in tropical Africa (Bates 1981).
2. The model predicts a strong bias in the allocation of public spending, and tax discrimination of the excluded groups.
   - Restricting access to bureaucratic posts, the military, or education to members of favoured ethnic groups.
   - Reportedly a major source of resentment among African ethnic groups.
3. The model predicts radical policy changes when power passes from one group to the other.
   - Ethnic purges of the bureaucracy.
4. The model explains a kleptocracy that exploits its own supporters.

Class Conflict

- A society divided into social classes with distinct economic interests.
- Power can be controlled, *de iure* or *de facto*, by one group.
- The ruling class can pursue three broad types of inefficient policies:

1. Rent extraction: imposing distortionary taxes to generate revenue that can be redistributed to the politically powerful.
2. Consolidation of economic power: stifling competition in goods and factor markets to preserve and increase the market power of the elite and thus its profits.
3. Consolidation of political power: weakening other groups to prevent them from becoming competitors in the political arena.

Democracy v. Elite Domination

- Democracy is not a panacea, and particularly suffers from rent extraction.
  1. Rent extraction by imperfectly accountable politicians.
  2. Rent extraction by voters: tyranny of the majority.
- An oligarchic government controlled by the economic elite may in fact be better at avoiding inefficient redistribution.
  1. Muted common-agency problem.
  2. Self-interested commitment to private property rights.
- However, rent extraction is probably the least of all inefficiencies. It is inefficient only because of technological imperfection: the ruler's ideal would be efficiency-maximization coupled with non-distortionary transfers.
- Conversely, power consolidation of either type is a negative-sum game. Worse, it can be designed to prevent growth, if growth threatens the existing balance of power.

Economic Environment

- An infinitely repeated economy with unit mass of risk-neutral citizens.
- A unique, nonstorable final good y.
- Expected utility of agent j at time 0:

$$U_0^j = \mathbb{E}_0 \sum_{t=0}^{\infty} \beta^t c_t^j,$$

  where $c_t^j \in \mathbb{R}$ is consumption by agent j at time t, and $\beta < 1$.
- Each agent can be employed as a worker of become an entrepreneur.
- Agents have heterogeneous entrepreneurial skills

$$a_t^j \in \left\{ A^L, A^H \right\} \text{ with } A^L < A^H$$

  and a status $s_t^j \in \{0, 1\}$ which indicates ownership of a firm.
- Incumbents $j : s_t^j = 1$ are members of the elite.

Production

- Every period, each agent makes an occupational choice $e_t^j \in \{0, 1\}$.
- Each entrepreneur $j : e_t^j = 1$ must employ a constant number of workers λ but can choose investment $k_t^j \in \mathbb{R}_+$. Output is

$$y_t^j = \frac{1}{1-\alpha} \left(\lambda a_t^j\right)^{\alpha} \left(k_t^j\right)^{1-\alpha},$$

  and capital fully depreciates every period.
- The entrepreneur is also a worker, so the opportunity cost of entrepreneurship is nil.
- Crucially, the entrepreneur must manage his own firm, and cannot delegate management to a more skilled individual.
- Consumption can be negative, to avoid having to model capital markets.

Policy Choices

- There are three policy choices, which are made differently depending on the political regime.

1. A tax rate $\tau_t \in [0, 1]$ on output.
2. A lump-sum transfer $T_t \in [0, \infty)$ to every agent.
3. Barriers to entry that create a cost $B_t \in [0, \infty)$ of creating a new firm.

- Entrepreneurs can hide their output to avoid taxation, at the cost of losing a fraction $\delta \in (0, 1)$ of it. Thus in practice taxes are restricted to $\tau_t \in [0, \delta]$.
- The cost of entry B_t is pure waste. For notational simplicity $b_t \equiv B_t / \lambda$.

Profits

- Given wage w_t and tax rate τ_t, an entrepreneur with skill a_t^j earns

$$\pi\left(k_t^j | a_t^j, w_t, \tau_t\right) = \frac{1-\tau_t}{1-\alpha}\left(\lambda a_t^j\right)^{\alpha}\left(k_t^j\right)^{1-\alpha} - \lambda w_t - k_t^j.$$

- Profit-maximizing investment is

$$k_t^j\left(a_t^j, \tau_t\right) = (1-\tau_t)^{\frac{1}{\alpha}}\lambda a_t^j.$$

- The instantaneous gain from entrepreneurship for an agent with skill $a_t^j = A^z$ for $z \in \{L, H\}$ is

$$\Pi^z\left(w_t, \tau_t\right) = \lambda\left[\frac{\alpha}{1-\alpha}(1-\tau_t)^{\frac{1}{\alpha}}A^z - w_t\right].$$

- The labour-market clearing condition is

$$\lambda\int_0^1 e_t^j dj = 1,$$

so there is a total mass $1/\lambda$ of entrepreneurs in every period.

Laws of Motion for State Variables

- The transition rule for incumbency is

$$s_{t+1}^j = e_t^j \text{ with } s_0^j = 0 \text{ for all } j.$$

  One cannot remain an incumbent without operating a firm.
- The evolution skill is given by the Markov transition probabilities

$$\Pr\left(a_{t+1}^j = A^H | a_t^j = A^H\right) = \sigma^H \text{ and } \Pr\left(a_{t+1}^j = A^H | a_t^j = A^L\right) = \sigma^H.$$

- Skills are persistent, but not perfectly persistent:

$$0 < \sigma^L \leq \sigma^H < 1.$$

- The fraction of agents with high skill in the stationary distribution is

$$M \equiv \frac{\sigma^L}{1 - \sigma^H + \sigma^L} \text{ such that } (1 - M)\sigma^L = M\left(1 - \sigma^H\right).$$

- Assume that $M\lambda > 1$: with no entry barriers, high-skill entrepreneurs demand the entire labour supply.

Timeline

Within each period:

1. Entrepreneurial skills a_t^j are realized.
2. The entry barrier for new entrepreneurs b_t is set.
3. Agents choose occupation e_t^j, and entrepreneurs choose investment k_t^j.
4. The labour-market-clearing wage w_t is determined.
5. The tax rate on entrepreneurs τ_t is set.
6. Entrepreneurs make hiding decisions h_t^j.

- Since taxes τ_t are set after investment k_t^j is sunk, workers are tempted ex post to expropriate entrepreneurs and redistribute their income up to the feasible maximum δ.

Economic Equilibrium

- Let $q^t = \{b_n, w_n, \tau_n\}_{n=t}^{\infty}$ denote the sequence of future policies and wages. For an agent with skill level $z \in \{L, H\}$, let $V^z(q^t)$ denote the value of being an entrepreneur and $W^z(q^t)$ that of being a worker, in both cases net of lump-sum transfer payments.
- For a worker
$$W^z(q^t) = w_t + \beta CW^Z(q^{t+1}).$$
- The expected continuation value for a worker is
$$\begin{aligned} CW^Z(q^{t+1}) &= \sigma^z \max\left\{W^H(q^{t+1}), V^H(q^{t+1}) - \lambda b_{t+1}\right\} \\ &\quad + (1-\sigma^z)\max\left\{W^L(q^{t+1}), V^L(q^{t+1}) - \lambda b_{t+1}\right\}. \end{aligned}$$
- This reflects the exogenous transition of ability, and the endogenous occupational choice.

The Value of Entrepreneurship

- For an entrepreneur

$$V^z\left(q^t\right) = w_t + \Pi^z\left(w_t, \tau_t\right) + \beta CV^Z\left(q^{t+1}\right).$$

- The expected continuation value for an entrepreneur is

$$\begin{aligned} CV^Z\left(q^{t+1}\right) &= \sigma^z \max\left\{W^H\left(q^{t+1}\right), V^H\left(q^{t+1}\right)\right\} \\ &\quad + \left(1-\sigma^z\right)\max\left\{W^L\left(q^{t+1}\right), V^L\left(q^{t+1}\right)\right\}. \end{aligned}$$

- The net value of entrepreneurship is

$$NV\left(q^t | a_t^j = A^z, s_t^j = s\right) = V^z\left(q^t\right) - W^z\left(q^t\right) - \left(1-s\right)\lambda b_t.$$

- It is greater for more skilled agents with the same status s, and for incumbents than potential entrants with the same level of ability.
- Is it greater for low-skill incumbents or high-skill potential entrants?

Two Types of Equilibria

1. Entry equilibrium: all entrepreneurs have high ability $a_t^j = A^H$.
2. Sclerotic equilibrium: all incumbents with $s_t^j = 1$ remain entrepreneurs irrespective of their ability.

- Agent j with $a_t^j = A^z$ and $s_t^j = s$ is indifferent between occupations if

$$\begin{aligned} w_t &= \frac{\alpha}{1-\alpha}\left(1-\tau_t\right)^{\frac{1}{\alpha}} A^z - \left(1-s\right) b_t \\ &\quad + \frac{\beta}{\lambda}\left[CV^z\left(q^{t+1}\right) - CW^z\left(q^{t+1}\right)\right] \end{aligned}$$

  and prefers entrepreneurship for all lower wages.
- Let w_t^H be the indifference wage for high-skill potential entrants, and w_t^L for low-skill incumbents.

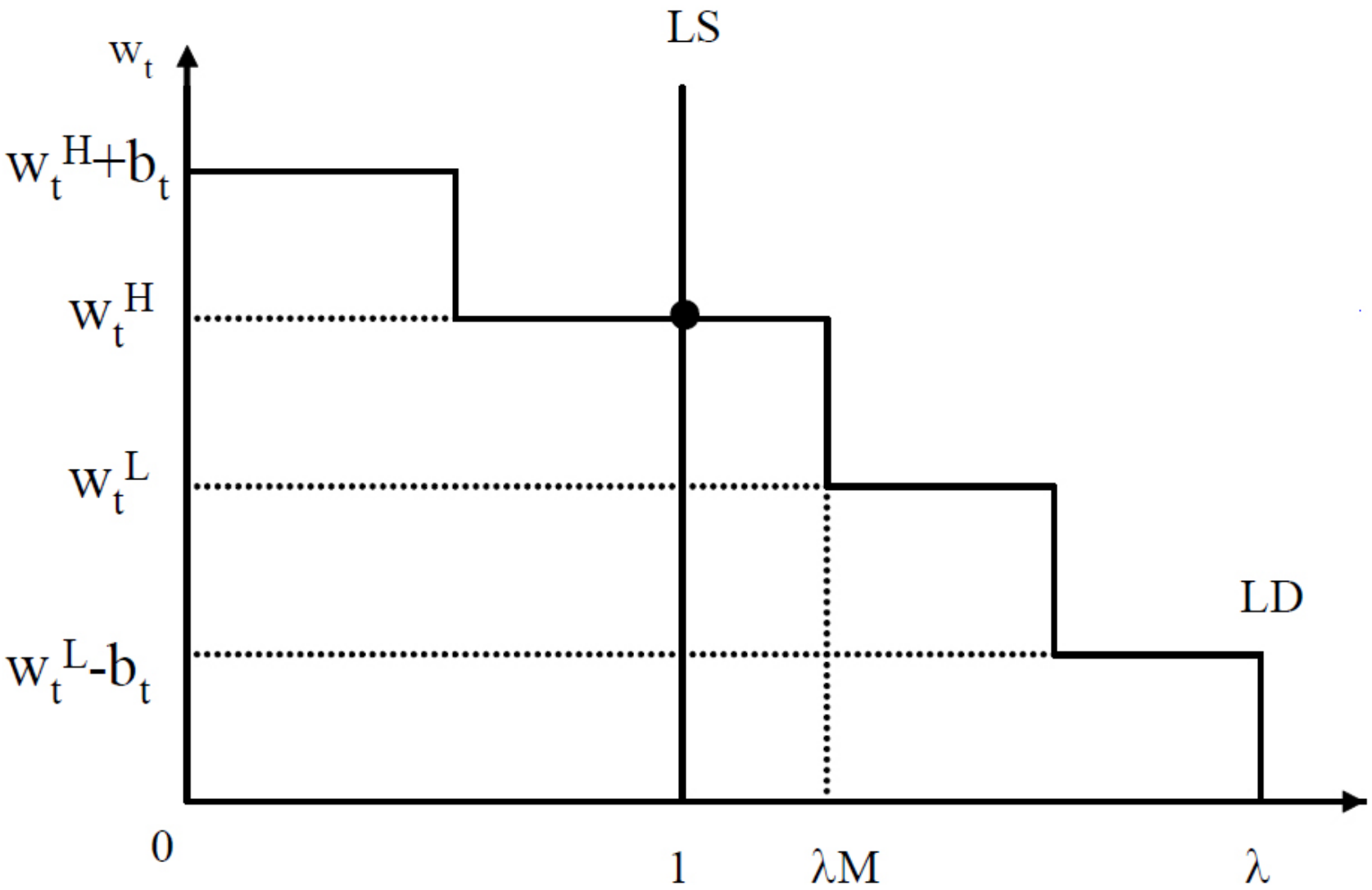
Selection of Entrepreneurs

- An entry equilibrium occurs for $w_t = w_t^H > w_t^L$.
  1. If high-skill potential entrants do enter, then low-skill incumbents must quit.
  2. Not all high-skill entrants can be entrepreneurs given the available labour supply.
- In an entry equilibrium, the fraction of high-skill entrepreneurs is $\mu_t = 1$.
- A sclerotic equilibrium occurs for $w_t^L > w_t^H = w_t$.
  - To pin down the wage, assume that a fraction ε of agents die every period, and take the limit as $\varepsilon \to 0$.
- In a sclerotic equilibrium, the fraction of high-skill entrepreneurs is

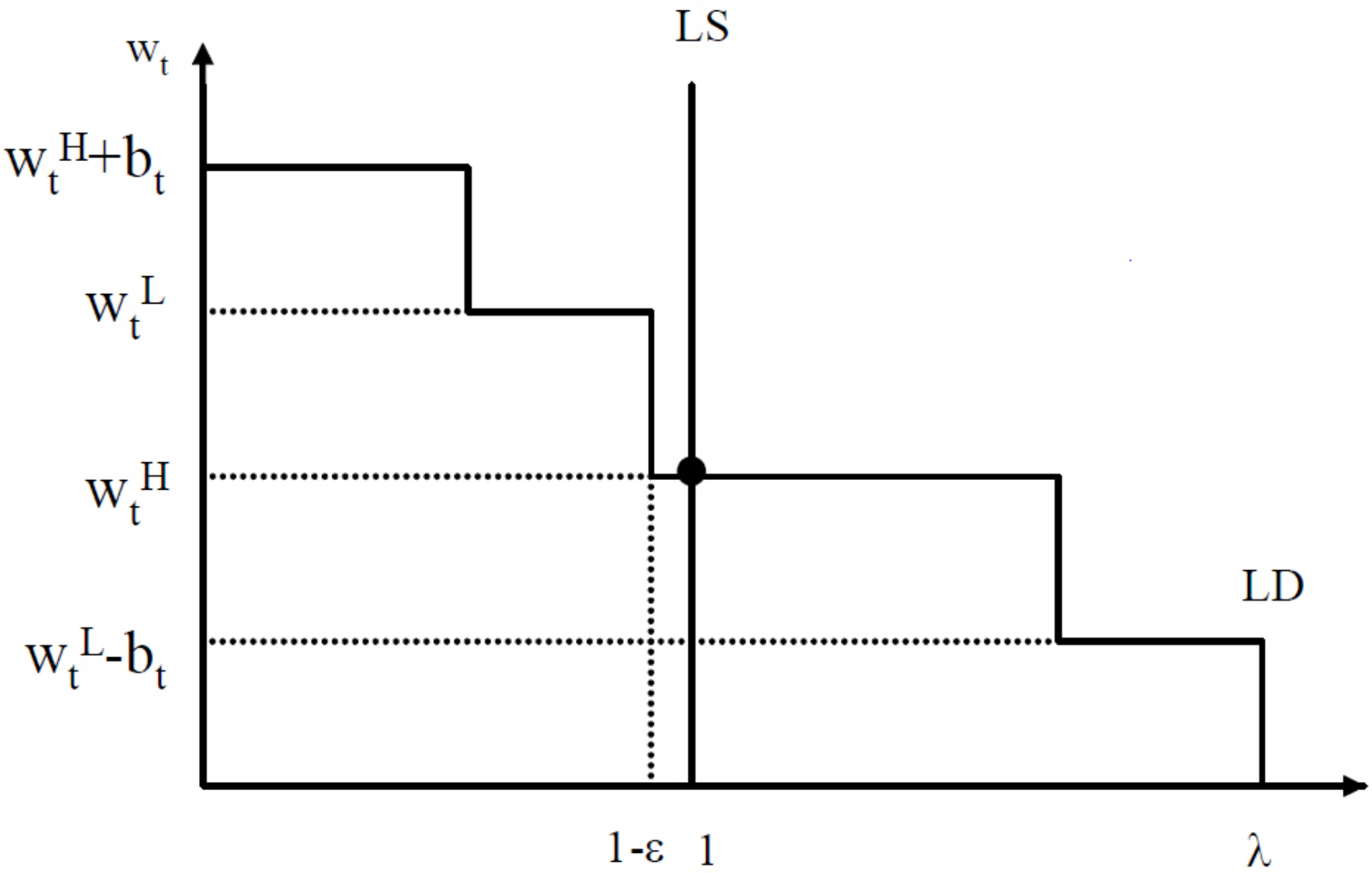
$$\mu_t = \sigma^H \mu_{t-1} + \sigma^L \left(1 - \mu_{t-1}\right).$$

- The natural starting point is $\mu_0 = 1$.

Entry Equilibrium



Sclerotic Equilibrium



Democratic Equilibrium

- Democracy is modelled by a median-voter model: $\lambda > 2$ ensures that all decisions are taken by the representative worker.
- In the absence of a commitment mechanism, taxes are set at the highest feasible level $\tau_t = \delta$, to maximize ex post redistribution from entrepreneurs to workers
- No barriers to entry are created, $b_t = 0$, since incumbents are in the minority and workers' wages are decreasing in b_t.
- Only high-skill agents become entrepreneurs, so $\mu_t = 1$.
- All agents have invariant welfare (before transfers)

$$V^H = W^H = W^L = \frac{w^D}{1-\beta}.$$

- The wage and total output are constant

$$w^D = Y^D = \frac{\alpha}{1-\alpha}\left(1-\delta\right)^{\frac{1}{\alpha}} A^z.$$

Oligarchic Equilibrium

- Oligarchy means that the franchise is restricted to entrepreneurs:
  1. b_t is chosen by the median voter among incumbents with $s_t = 1$;
  2. τ_t is chosen by the median voter among entrepreneurs with $e_t = 1$.
- So long as

$$\lambda \geq \frac{1}{2}\frac{A^H}{A^L} + \frac{1}{2},$$

  all entrepreneur prefer $\tau_t = 0$ regardless of skill.
- Intuitively, heterogeneity among entrepreneurs must not be so large that some of them prefer (like workers) ex post redistribution.
- All entrepreneurs prefer prohibitive barriers to entry, $b_t \longrightarrow \infty$, which keep potential entrants out of the market and thereby drive the wage down to $w_t = 0$.

Oligarchic Sclerosis

- The oligarchy ensures that there is no renewal of entrepreneurs.
- Output is

$$Y_t^O = \frac{\mu_t A^H + (1 - \mu_t) A^L}{1 - \alpha}.$$

- Sclerosis implies

$$\mu_t = \sigma^H \mu_{t-1} + \sigma^L \left(1 - \mu_{t-1}\right).$$

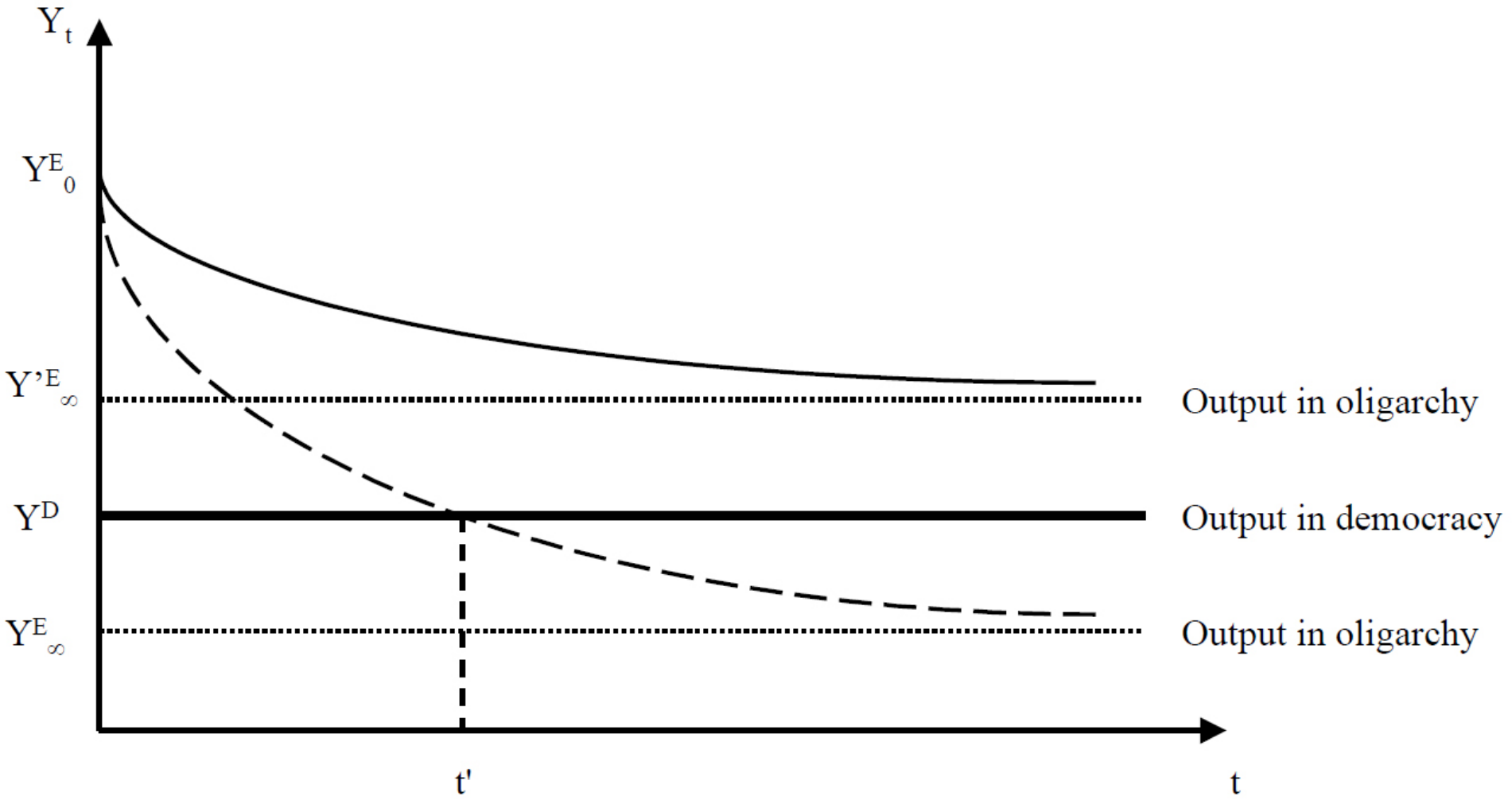
- Starting from the natural aristocracy $\mu_0 = 1$, the quality of the oligarchy progressively decreases to the steady-state value M.
- Thus output is also a decreasing sequence starting at the first-best $Y^* = A^H / (1 - \alpha)$ and decreasing to the steady state value

$$Y_\infty = \frac{M A^H + (1 - M) A^L}{1 - \alpha}.$$

Comparison between Democracy and Oligarchy

- For all $\delta > 0$, oligarchy initially generates higher output than democracy, provided that selection into the elite occurs on the basis of entrepreneurial skill.
- Oligarchy also generates much higher inequality.
  - In democracy, there is perfect equality because entry into entrepreneurship is perfectly competitive and there is an excess supply of high-skill potential entrants.
  - Under the oligarchy, the elite exploits the workers, whose income is zero, and its profits coincide with output.
- In the long run, democracy generates higher income than oligarchy:
  1. When δ is low, so populist redistribution away from entrepreneurs is kept in check.
  2. When A^H / A^L is high, so selection of the best entrepreneurs is important.
  3. When M is low, so the eventually random oligarchs are unlikely to be highly skilled; or identically when σ^H is low, so ability is impermanent among incumbents.

Output in Democracy and Oligarchy



American Colonies

- Caribbean plantation colonies: oligarchies dominated by plantation owners, largely populated by slaves.
  - Extremely rich throughout the XVIII century.
  - Highly secure property rights for the elite.
  - Failure of growth in the XIX century—many are very poor today.
- Compare with North American British colonies: approximately democratic, with political power in the hands of smallholders.
  - Open to new technologies and new entrepreneurs.
  - Not too populist, very moderate democratic redistribution.
- The model can be extended to consider explicitly a new technology:
  - A democracy immediately adopts it.
  - In an oligarchy, some elite members may be highly skilled with the old but not the new technology, which leads to reduced technology adoption.
  - The gap between democracy and oligarchy jumps with the arrival of new technologies.

The Emergence of Democracy

- Modern democracies start developing in the XIX and XX centuries, with progressive extensions of the franchise.
  - In the United Kingdom, the Reform Act of 1832 is considered the first step, but it brought the electorate to a mere 14% of the adult male population; this rose to 32% in 1867 and 56% in 1885. Universal male suffrage was obtained in 1918, and equal voting rights for women in 1928. Plural voting was abolished as late as 1948.
- Expansion of the franchise coincided with higher and more progressive taxation, greater investment in public education, and decreasing inequality.
- Why did the elite relinquish its exclusive grip on power?
- Why did it have to provide institutional change rather than mere policy change?

Economic Environment

- An infinitely repeated economy with a unit continuum of agents.
- A unique consumption good y which is taken as the numeraire.
- All agents have linear preferences over income and a discount factors $\beta \in (0,1)$.
- A fraction $\lambda > 1/2$ of the citizens are poor; the remaining $1-\lambda$ constitute a rich elite.
- Each poor agent has capital h^p and each rich agent has $h^r > h^p \geq 1$.
- Output is produced with a market and a hidden technology:

$$Y_t^m = H_t^m \text{ and } Y_t^h = (1-\hat{\tau})\, H_t^h \text{ with } \hat{\tau} \in (0,1)\,.$$

Factor-market clearing implies

$$H_t^m + H_t^h = H \equiv \int_i h^i di.$$

- Economic policy is given by a tax rate $\tau_t \in [0, \hat{\tau}]$ on market income, which finances lump-sum transfers $T_t = \tau_t H_t^m$.

Revolution

- The poor are initially disenfranchised, but they have the ability to start a revolution.
- In a revolution, the rich are completely expropriated, and a fraction $1-\mu_t$ of the capital stock is destroyed in the process.
- If a revolution occurs at t, each formerly poor agent earns $\mu_t H/\lambda$ in every subsequent period.
- In every period, with probability q there is an opportunity for revolution $\mu_t = \mu^h > 0$; with probability $1-q$ a profitable revolution is impossible ($\mu_t = \mu^l = 0$).
- Coordination problems in starting and carrying out a revolution are formally assumed away, and suggestively captured by μ_t.

De Facto and De Iure Political Power

- When $\mu_t = \mu^h$, the poor have (some) de facto political power. The rich are willing to provide redistribution to avoid a revolution.
- However, promises of future redistribution suffer from a commitment problem. The rich have no direct incentive (and at most a limited reputational incentive) to abide by their promises to the poor when $\mu_t = 0$ and the latter have no de facto power.
- As an alternative, the elite can offer institutional change which alters the allocation of de iure political power.
- Democratization is irreversible and allows the median voter, a poor agent, to set the tax rate at $\hat{\tau}$ forever, leading to after-tax incomes

$$(1-\hat{\tau})\, h^p + \hat{\tau} H \text{ and } (1-\hat{\tau})\, h^r + \hat{\tau} H$$

in every subsequent period.

Timeline

In every period in which the elite holds power, the sequence of events is the following.

1. The feasibility of revolution μ_t is realized.
2. The rich decide whether or not to extend the franchise, $\phi_t \in \{0,1\}$. If they do not, they set the tax rate τ_t.
3. The poor decide whether or not to start a revolution, $\rho_t \in \{0,1\}$. If they do, they share the remaining capital. If they do not but the franchise has been extended, they set the tax rate τ_t.
4. The capital stock is allocated between market and home production, and incomes are realized.

Absorbing States

1. The poor can start a revolution that yields payoffs

$$V^p(R, \mu_t) = \frac{\mu_t H}{\lambda(1-\beta)} \text{ and } V^r(R) = 0.$$

2. The rich can extend the franchise, which yields payoffs

$$V^p(D) = \frac{h^p + \hat{\tau}(H - h^p)}{1-\beta} \text{ and } V^r(D) = \frac{h^r + \hat{\tau}(H - h^r)}{1-\beta}.$$

- Revolution is the worst possible outcome for the rich, so they will do anything in their power to avoid it.
- The most they can do is to extend the franchise, which suffices if

$$V^p\left(R, \mu^H\right) \leq V^p(D) \Longleftrightarrow \frac{\mu^H H}{\lambda} \leq h^p + \hat{\tau}(H - h^p).$$

Markov Perfect Strategies

- In a Markov perfect equilibrium, the strategy of the rich depends only on the present state μ_t.
- Whenever $\mu_t = 0$, the poor are powerless and the optimal Markov perfect strategy is

$$\phi(\mu_t = 0) = \tau(\mu_t = 0) = 0.$$

- When $\mu_t = \mu^H$, one possibility is for the rich to offer a tax rate

$$\tau\left(\mu_t = \mu^H\right) \in [0, \hat{\tau}].$$

- Is there an equilibrium in which this strategy avoids revolution without democratization?

The Value of Redistribution

- Suppose there is an equilibrium with no democratization and no revolution, but with taxes $\tau \in [0, \hat{\tau}]$ whenever $\mu_t = \mu^H$.
- The value function of class $c \in \{p, r\}$ is defined by

$$V_\tau^c(0) = h^c + \beta \left[q V_\tau^c\left(\mu^H\right) + (1-q) V_\tau^c(0) \right],$$

$$V_\tau^c\left(\mu^H\right) = (1-\tau) h^c + \tau H + \beta \left[q V_\tau^c\left(\mu^H\right) + (1-q) V_\tau^c(0) \right].$$

- Solving these recursive definitions yields

$$V_\tau^c(0) = \frac{h^c + \beta q \tau (H - h^c)}{1-\beta},$$

$$V_\tau^c\left(\mu^H\right) = \frac{h^c + [1 - \beta(1-q)] \tau (H - h^c)}{1-\beta}.$$

Equilibrium Without Democratization

- The rich naturally prefer the lowest tax rate τ that avoids revolution.
- The revolution constraint is not binding if

$$V^p\left(R,\mu^H\right) \leq V_0^p\left(\mu^H\right) \Longleftrightarrow \mu^H \leq \frac{\lambda h^p}{H} \equiv \eta^p,$$

where η^p is the total income share of the poor.

$\Rightarrow$ When either inequality or the revolutionary power of the poor is low, the oligarchy is stable without redistribution: $\tau_t = \phi_t = \rho_t = 0 \forall t$.

- The revolution constrains is satisfied by redistribution if

$$V^p\left(R,\mu^H\right) \leq V_{\hat{\tau}}^p\left(\mu^H\right) \Longleftrightarrow \mu^H \leq \eta^p + (1-\beta+\beta q)\,\hat{\tau}\,(1-\eta^p)\,.$$

Democratization

- Democratization is necessary and sufficient to avoid revolution if

$$V_{\hat{\tau}}^{p}\left(\mu^{H}\right) < V^{p}\left(R, \mu^{H}\right) \leq V^{p}\left(D\right)$$

$$\eta^{p} + \left(1 - \beta + \beta q\right)\hat{\tau}\left(1 - \eta^{p}\right) < \mu^{H} \leq \eta^{p} + \hat{\tau}\left(1 - \eta^{p}\right).$$

- When q is low, the power of the poor is fleeting: therefore redistribution is not a credible offer, and the rich must choose between democratization or revolution.
- When q is high, the elite can preserve power and a lower overall tax burden, because its commitment problem is lower.
- In the XIX century, Germany had the most developed socialist party, and it developed the basis of a welfare state without extending the franchise like Britain and France.

Inequality and Democratization

- When inequality is low (η^p is high), social unrest is feeble: the revolution constraint need not bind, and when it does it can be satisfied with temporary redistribution.
- When inequality is very high, revolution is inevitable.
- It is possible to construct a dynamic model in which this generates a Kuznets curve.
  1. The rich accumulate capital while the poor live hand to mouth: inequality increases.
  2. Inequality reaches a level that triggers democratization.
  3. The resulting redistribution enables the poor to accumulate capital: inequality decreases.
- Revolution is also more likely when formal institutions have little effect on the distribution of economic power, i.e., when $\hat{\tau}$ is low and democracy does not provide sufficient peaceful redistribution.

Education and Democracy

- Cross-sectional evidence on education and democracy presents and extremely high correlation, even using long lags.
- The timing suggests that education causes democratization.
- In a sample of 65 countries, an OLS regression with $R^2 = .67$ yields:

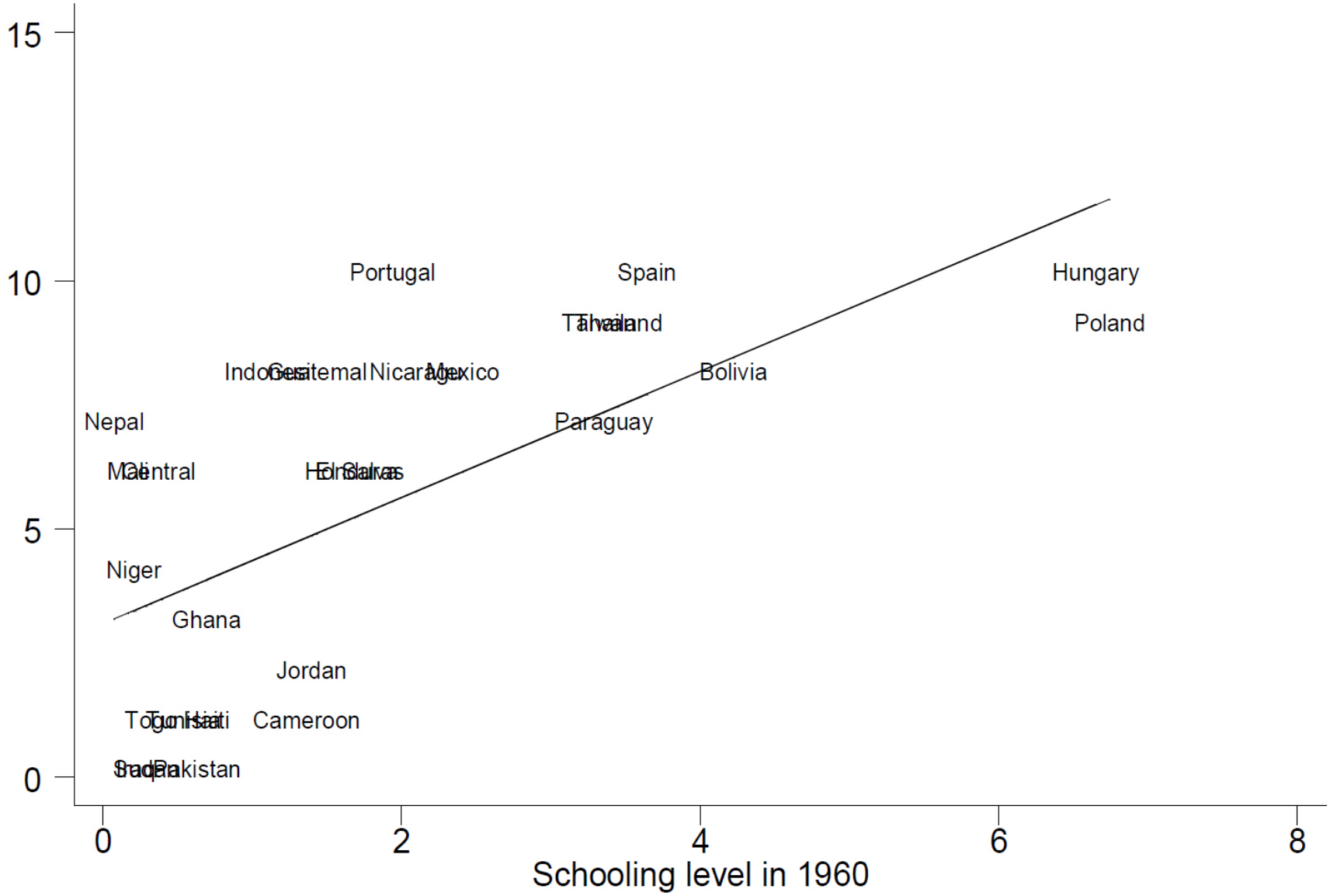
$$\Delta_{2000-1960}\ \text{Dem} = \underset{(.48)}{4.13} - \underset{(.09)}{.98}\ \text{Dem}_{\ 1960} + \underset{(.15)}{.84}\ \text{Edu}_{\ 1960}.$$

- Conversely, with 68 countries and $R^2 = .03$:

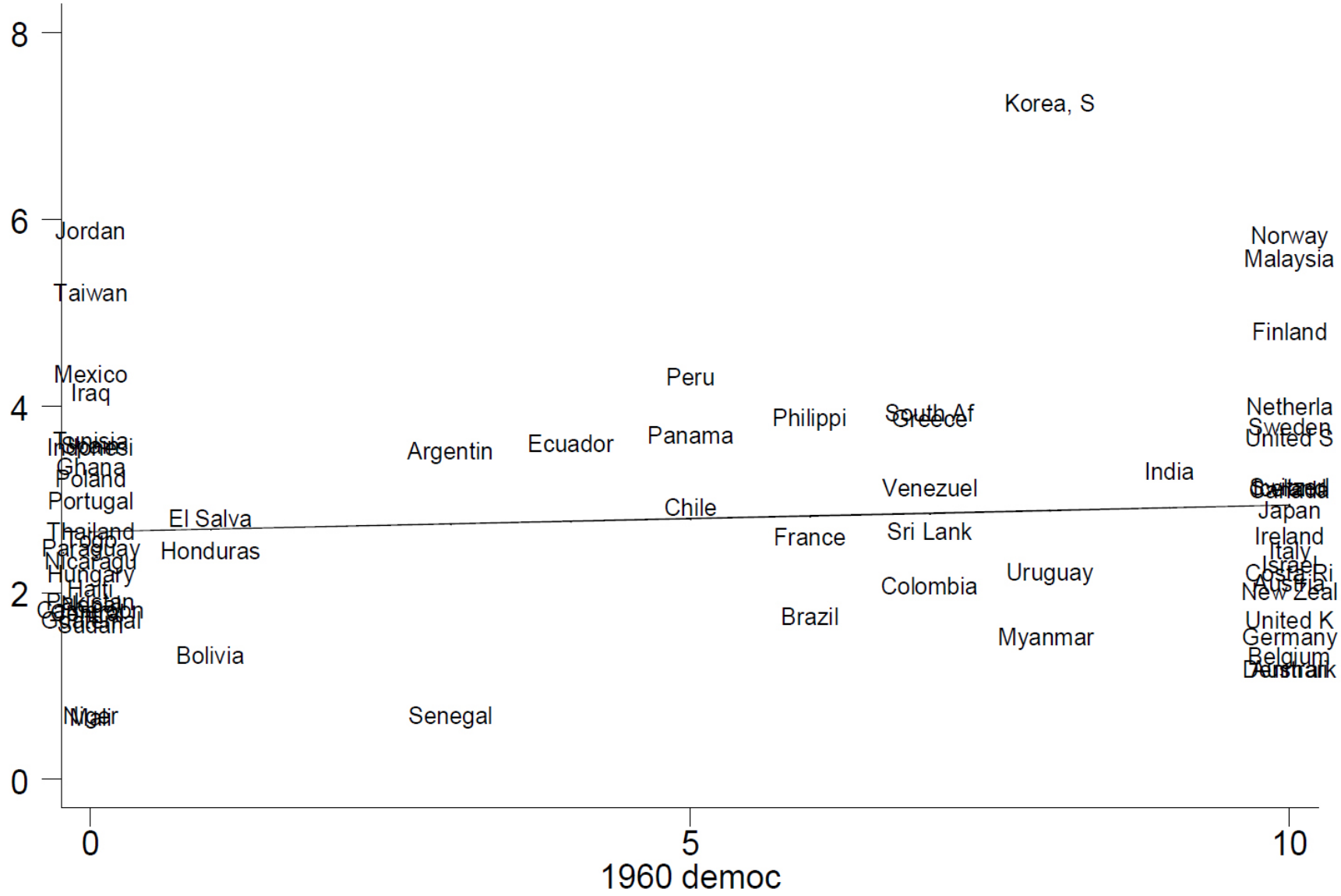
$$\Delta_{2000-1960}\ \text{Edu} = \underset{(.28)}{2.80} + \underset{(.09)}{.08}\ \text{Edu}_{\ 1960} - \underset{(.05)}{.07}\ \text{Dem}_{\ 1960}.$$

- Fixed effects make for tricky econometrics, because education is highly persistent.
  1. Acemoglu, Johnson, Robinson and Yared (2005): Arellano–Bond (1991) first-difference GMM, no significant effect.
  2. Bobba and Coviello (2007), Castelló-Climent (2008): Blundell–Bond (1998) system GMM, significant positive effect.

Schooling and the Growth of Democracy, 1960–2000



Democracy and the Growth of Schooling, 1960–2000



Education and Civic Participation

- Education positively predicts participation in social groups across countries.
- In the (U.S.) General Social Survey, college graduates are 27% more likely than high-school drop-outs to vote in local elections and 29% more likely to say that they help solve local problems.
- Glaeser and Sacerdote (2001) show that college graduates are more likely to join formal groups for 15 out of 16 group types: the exception is trade-union membership.
- 50% of American college graduates attend church more than several times per year; only 36% of high school graduates attend that often.
- Evidence from the DDB Needham Lifestyles Survey, 1975–1999, highlights the pervasive association of schooling with many forms of social engagement.

Education and Social Engagement

	(1) Attended church or other place of worship	(2) Attended a class or seminar	(3) Worked on a community project	(4) Wrote a letter to the editor	(5) Contacted a public official	(6) Are you a registered voter?	(7) Gave someone the finger while driving
Dependent variable mean	22.7	4.8	2.4	0.5	2.1	88%	2.1
High School grad	0.1794	0.181	0.1209	0.0353	0.1044	0.4673	−0.1413
	(12.22)**	(7.01)**	(8.69)**	(1.88)	(2.15)*	(7.89)**	(3.01)**
College grad	0.1593	0.4011	0.1997	0.0865	0.1828	0.1632	−0.159
	(14.45)**	(23.18)**	(19.10)**	(6.50)**	(4.65)**	(4.63)**	(5.84)**
Survey year	−0.018	−0.0169	−0.0069	0.0002			0.04
	(14.38)**	(3.27)**	(5.85)**	(0.10)			(1.69)
Female	0.2515	0.0282	0.0733	0.005	−0.1546	0.1167	−0.2101
	(27.66)**	(1.92)	(8.51)**	(0.45)	(4.77)**	(3.77)**	(8.74)**
Age	0.0103	−0.0111	0.0056	0.0016	0.0027	0.0119	−0.0122
	(36.12)**	(24.02)**	(20.55)**	(4.66)**	(2.50)*	(12.18)**	(16.34)**
Black	0.0983	−0.0549	0.0095	0.0138	−0.1619	0.1167	
	(4.61)**	(1.84)	(0.47)	(0.57)	(1.64)	(2.10)*	
Asian	−0.303	0.1815	−0.0641	0.0607	0.0778	−0.533	
	(5.61)**	(2.74)**	(1.25)	(1.06)	(0.15)	(4.61)**	
Other	−0.1549	0.0918	0.0688	0.3124	−0.1327	−0.0172	
	(2.76)**	(1.27)	(1.29)	(5.01)**	(0.46)	(0.12)	
Log income in 2000 dollars	0.02	−0.0659	0.052	−0.0181	0.0063	0.1299	−0.0038
	(3.08)**	(6.17)**	(8.45)**	(2.29)*	(0.20)	(5.84)**	(0.22)
Missing income data	−0.0243	−0.0149	0.0085	0.0295	−0.1134	0.0164	0.0143
	(1.04)	(0.48)	(0.39)	(1.14)	(0.83)	(0.19)	(0.27)
Constant	34.7132	34.6147	12.7943	−0.4271	−0.2611	−2.4316	−79.0522
	(14.01)**	(3.37)**	(5.44)**	(0.09)	(0.85)	(10.15)**	(1.67)
Observations	47459	18888	47808	30710	3229	3617	6747
R^2	0.05	0.07	0.02	0	0.02	0.08	0.05

Education and Military Engagement

- Education and training are closely linked to military discipline and group coherence under fire (Hanson, 2002, Keegan, 1976).
- Costa and Kahn (2003) show that illiteracy strongly predicts desertion among Union soldiers in the American Civil War.
- Ferguson (1999) uses the ratio of prisoners of war to total casualties across countries in World War I as a measure of soldiers' willingness to surrender.
- Across major combatant countries, this ratio was lowest for the United Kingdom, the United States, and Germany (1.4%, 6.7% and 9% respectively), and highest for Russians, Austro-Hungarians and Italians (51.8%, 31.8% and 25.8%).

$\Rightarrow$ A reasonable correlation with schooling.

Why Are Education and Civic Participation Correlated?

- One view is that indoctrination about political participation is a component of education.
  - Developed democracies certainly have civics classes.
  - Yet education increases all forms of participation, many of them apolitical.
  - State schools do not promote church-going in the US or the UK, let alone in France.
  - In Eastern Europe and the former USSR, educated citizens had received communist indoctrination, yet they animated anti-communist democratic revolutions.
- Another possibility is selection: the more socially capable people get more education.
  - Millian, Moretti, and Oleopolos (2004) find that exogenous increases in education due to compulsory schooling laws raise voter turnout.
  - Dee (2004) finds that increased availability of junior and community colleges increases subsequent voting.

Education as Socialization

- Much of lower education is socialization: teaching people how to interact successfully and productively with others.
- Successful interaction requires people to control and innate anti-social tendencies, and become more productive participants in group activities (Bowles and Gintis, 1976).
- Education raises the benefit from social participation because it facilitates seamless information exchange.
  - Educated people are better able to express what they know, to inform, and to persuade
  - They are also better able to acquire new information, to understand, and to learn.
- The interpersonal exchange of information is crucial to group coordination.
- Social connection also provides indirect benefits: group members acquire new information that is useful for private purposes.

Student Participation

- Liberal movements and revolutions in Europe in the XIX century.
- Throughout the XX century: the overthrow of Perón in Argentina in 1955, the Hungarian Revolution in 1956, the downfall of Pérez Jiménez in Venezuela in 1958, the resignation of the Kishi government in Japan and the toppling of the Rhee government in Korea in 1960, the resistance to Diem in Vietnam in 1963, the anti-Sukarno movement in Indonesia 1966, the Prague Spring in 1968, the downfall of Ayub Khan in Pakistan in 1969, the Tianenmen student protest in 1989.
- The "colour revolutions" in the XXI century: e.g., Ukraine 2004.
- Students also participated in support of anti-democratic leaders: Mussolini, Hitler, Che Guevara, Khomeini.
- Easier to deduce that students like political participation rather than that they love democracy.

Setup of the Model

- A country with a unit mass of citizens, with homogeneous human capital $h \geq 0$.
- A regime is a set G_i of insiders, whose measure is $g_i \in [0,1]$.
- The larger g_i, the more democratic the regime.
- An exogenous status quo G_0 and an exogenous challenger G_1.
- An endogenous mass $s_i \in [0, g_i]$ of insiders support regime $i \in \{0,1\}$.
- The challenge is successful and leads to regime change if

$$\varepsilon_0 s_0 \leq \varepsilon_1 s_1 .$$

- The stochastic productivity shocks ε_i have a ratio $\rho \equiv \varepsilon_0 / \varepsilon_1$ with continuous distribution $Z(\rho)$ on $\mathbb{R}^+$.

Participation and Regime Size

- Participation in support of either regime requires an effort cost c that is i.i.d. across individuals with distribution $F(c)$ on $\mathbb{R}^+$.
- Each individual is of measure zero and so does not impact the probability that either regime succeeds. Hence participation is not due to the probability of being pivotal.
- The regime leadership provides top-down incentives, by punishing insiders who do not fight for the regime, or identically rewarding those who do.
- Smaller regimes are better at avoiding free-riding and providing strong incentives to their few members. Insiders who fail to support the regime suffer an expected utility loss

$$p(g_i) > 0 \text{ such that } p'(g_i) < 0 \text{ for all } g_i \in [0,1].$$

Participation and Education

- Other participants provide bottom-up incentives: these do no depend on the aggregate size of the regime, but on the rate of participation $a_i \in [0,1]$, which captures the share of an insider's friends that are turning out to support the regime.
- More educated people are better able to motivate their peers to participate, and more likely to be motivated themselves. Participation provides a benefit $b(a_i h)$ such that

$$b(0) = 0 \text{ and } b'(a_i h) > 0,\ b''(a_i h) < 0 \text{ for all } a_i h \geq 0.$$

- In equilibrium, there is a bandwagon effect: the more people participate, the greater the incentives for participation that each of them receives.
- A group equilibrium is defined as a fixed point

$$a_i = F(p(g_i) + b(a_i h)).$$

Group Equilibrium

- In general, strategic complementarity may lead to multiple equilibria.
- We rule them out by assuming that
  1. The cost c has a sufficiently wide support that $a_i \in (0,1)$ almost surely.
  2. The density $f(c)$ is monotone non-increasing: $f'(c) \leq 0$.
- There exists a unique group equilibrium

$$a(g_i, h) \in (0,1) \text{ such that } \partial a/\partial g_i < 0 \text{ and } \partial a/\partial h > 0.$$

- The second assumption means that the cost of inducing participation is weakly convex: the more supporters a regime already has, the more difficult it is to attract others.
- The comparative statics reflect respectively increasing top-down and bottom-up incentives.

Overlapping Regimes

- Given two regimes G_0 and G_1, a share $\hat{g}_0$ of citizens only belongs to the former, and $\hat{g}_1$ only to the latter.
- A fraction $\gamma \equiv g_0 - \hat{g}_0 = g_1 - \hat{g}_1$ can belong to both.
- Each citizen belonging to both regime will in fact affiliate with, and receive incentives from, only one of them, with equal probability.
- However, the regime still has to waste incentive resources on its entire membership, perhaps because they need to monitor a random sample of members in order to discover who is immune to their incentive mechanism.
- The actual basin of support of regime i is

$$\bar{g}_i \equiv g_i - \frac{\gamma}{2} = \hat{g} + \frac{\gamma}{2} = \frac{g_i + \hat{g}_i}{2}.$$

- All individuals who do not belong to either regime watch the competition from the sidelines, since they do not have a stake in the outcome.

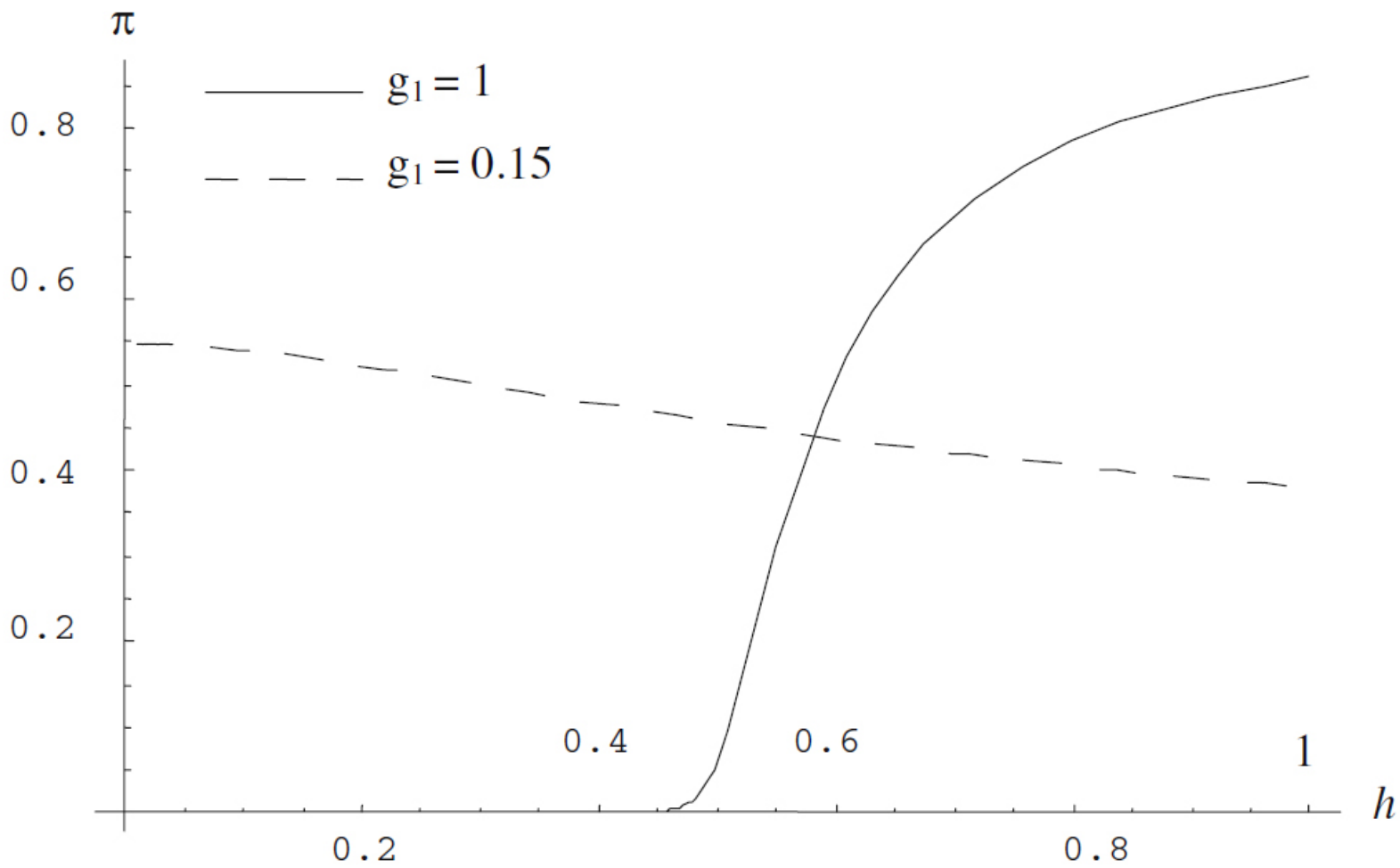
Human Capital and Political Competition

Theorem

Consider a contest between two regimes G_0 and G_1. The probability that the more democratic regime (G_1 if and only if $g_1 > g_0$) succeeds is monotone increasing in the level of human capital h.

- A straightforward case of comparative advantage.
- All regimes rely on incentives provided by the leadership, and incentives provided by other participants.
- An increase in human capital makes peer persuasion more effective.
- Thus an increase in human capital affects disproportionately the turnout of groups for which top-down monitoring is less important, i.e., more democratic groups.

Human Capital and Democracy



The probability that a $g_0 = 30\%$ oligarchy is replaced by a smaller $g_1 = 15\%$ oligarchy or by perfect democracy ($g_1 = 100\%$).

The Most Dangerous Challenger

Theorem

The size $g_1^* \in (0, 1]$ of the challenger regime most likely to overthrow G_0 is monotone (weakly) increasing in the level of human capital h.

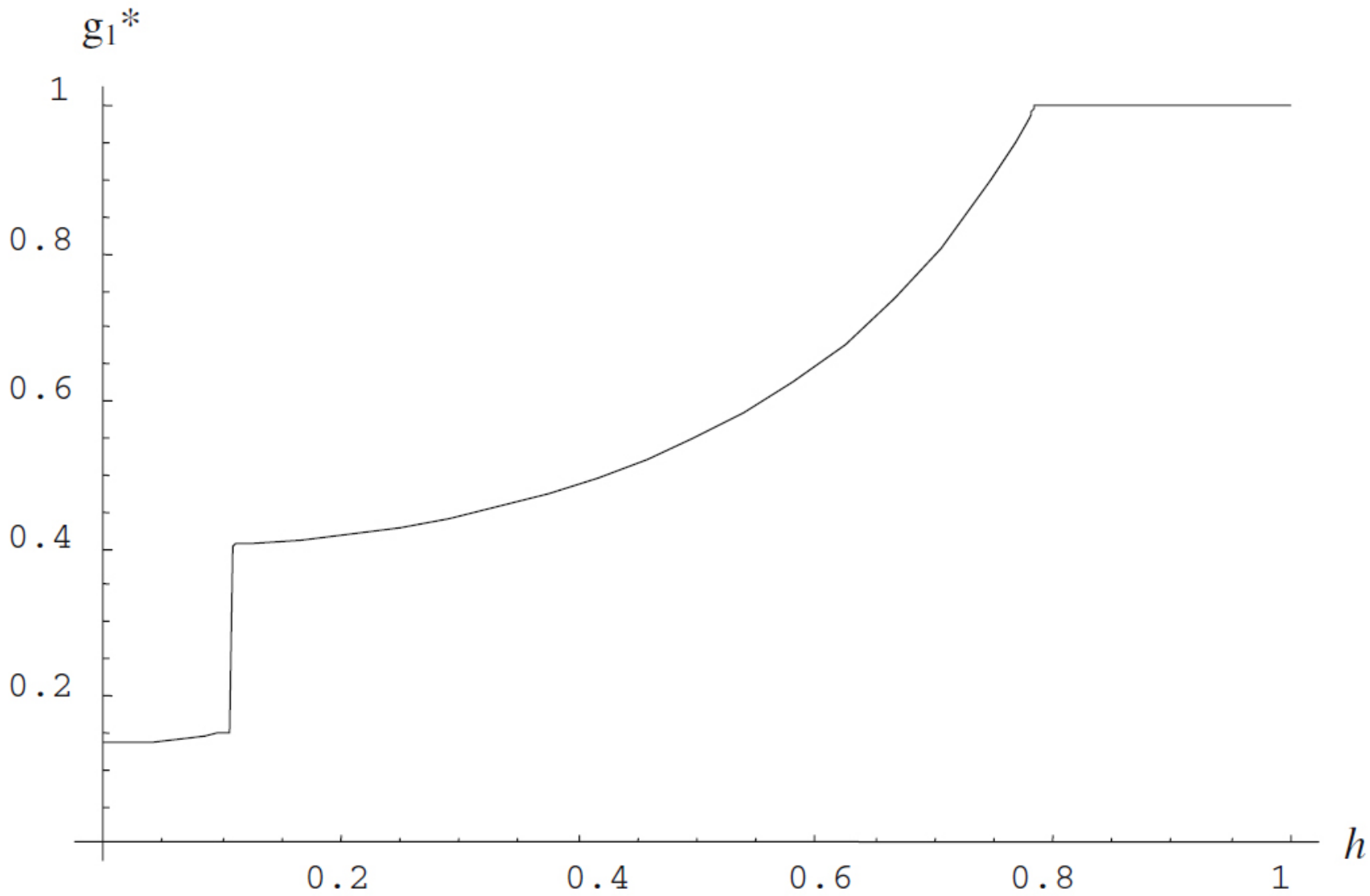
- Should the challenger include members of the existing regime?
  1. Benefit: draining support for the incumbent.
  2. Cost: diluting its own top-down incentives.

  $\Rightarrow$ The smaller regime is the more affected by overlapping support.

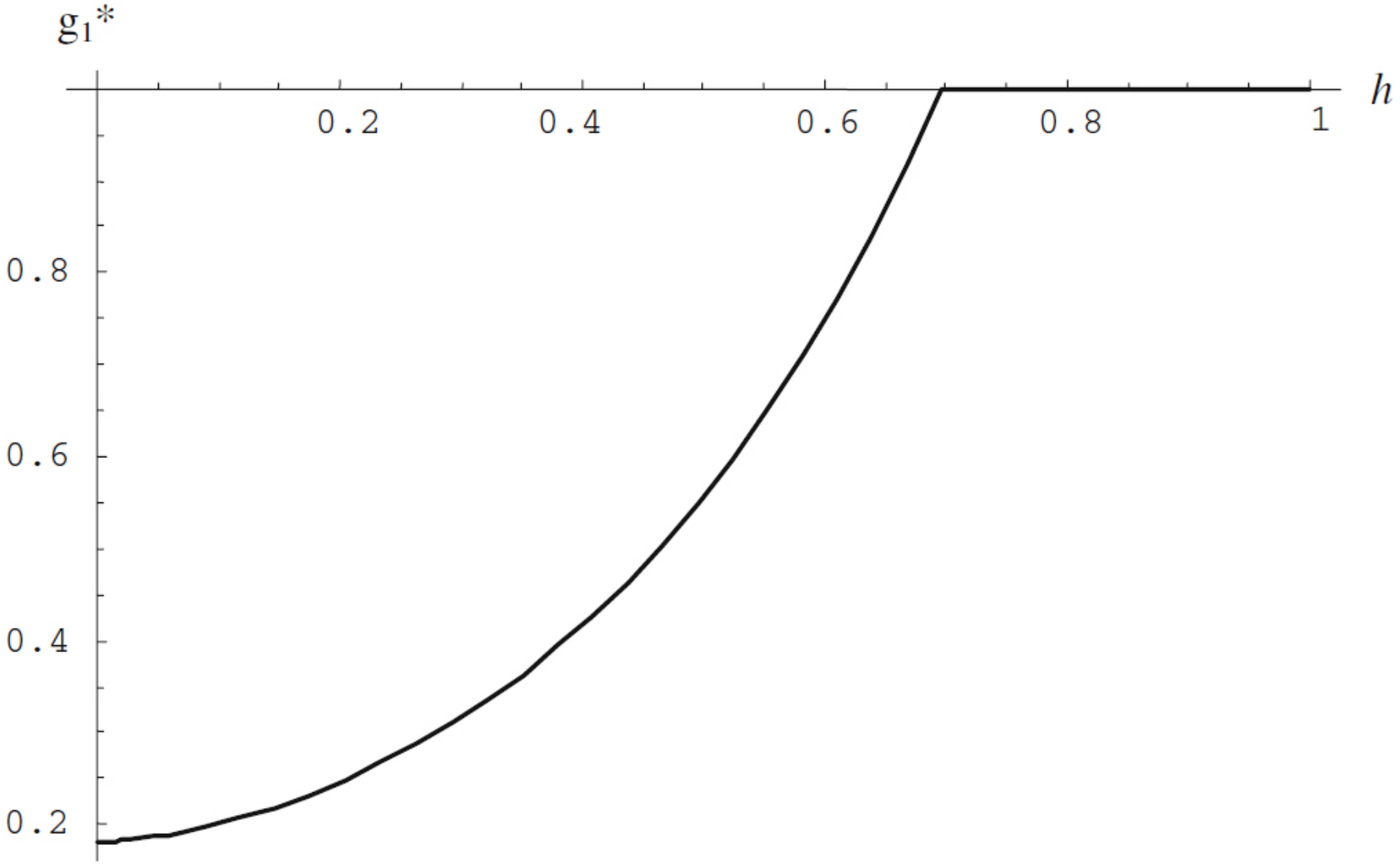
Corollary

It the most dangerous challenger is less democratic than the incumbent $(g_1^* < g_0)$, it is minimally overlapping. If the most dangerous challenger is more democratic than the incumbent $(g_1^* > g_0)$, it is strictly more inclusive: $G_0 \subset G_1^*$.

The Most Dangerous Challenge to a 30% Oligarchy



The Most Dangerous Challenge to Full Democracy



Education and Regime Survival

- A democracy should invest in education because, aside from its other benefits, it helps protect against oligarchic coups.
  - The early U.S. public-school movement made such arguments.
- Why should dictators tolerate, or even promote, education?

1. Sometimes they do not!
2. Trade-off between internal and external challenges: the government may need educated citizens to ensure that the economy and the armed forces are strong enough to withstand foreign threats.
3. Efficient rent-seeking: the dictator may benefit from economic growth, and may be willing to accept a higher risk of being deposed in exchange for larger revenues while in power.
4. Low human capital does not insure against regime change: an oligarchy may well prefer the risk of being diluted into a democracy to that of being replaced by rival oligarchs.