

"Political Losers as a Barrier to Economic Development"

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Why do societies fail to adopt the best available technologies?

- Example: large diffusion lags in adoption of railways during 19th century
- known to be key technology driving industrial revolution
- some countries (UK, US and Germany) adopted very quickly
- other European (Russia, Austria-Hungary) countries did so much more slowly

- Some kind of institutional failure?

Economic losers hypothesis

- Existing powerful “interest groups” block new technologies to protect their rents
 - ↳ monopoly producers
 - ↳ trade unions (e.g. the Luddites)
 - ↳ land owners

- Problems with this story
 - ↳ few instances where major economic change was blocked by economic losers
 - ↳ assumes that certain groups have the political power to block innovation
 - ↳ why not simply tax the returns?

Political losers hypothesis

- It is groups whose political power is eroded by progress that will block technological advance
 - ↳ if agents are economic losers but lack political power they cannot impede progress
 - ↳ if they have and maintain political power, they have no incentive to block progress
 - ⇒ it is those who have political power and fear losing it that have the ability and incentives to block
- Related to the endogeneity of political institutions (North, 1981)
 - ↳ powerful groups block change if there is no credible commitment to compensate them afterwards

A Simple Static Model

- Three groups of agents

- ↳ a group of consumers
- ↳ an incumbent monopolist
- ↳ a potential rival

- Two goods

- ↳ capital, x : produced competitively with price normalized to 1
- ↳ manufactured good, y : produced by incumbent or rival, with price p

- Citizens have an exogenous initial endowment of capital m and utility function

$$u = x + \frac{y^\alpha}{\alpha}.$$

- Manufacturing production technology:

$$y = zx$$

where

$$\pi = \begin{cases} z_0 & \text{if incumbent produces} \\ z_1 & \text{if rival produces: } z_1 > z_0 \end{cases}$$

- Producers face a sales tax, τ

Citizen's optimization problem

- Choose x and y to maximize

$$x + \frac{y^\alpha}{\alpha} \text{ subject to } py + x \leq m$$

↪ can be written as

$$\max_y m - py + \frac{y^\alpha}{\alpha}$$

- FOC is

$$-p + y^{\alpha-1} = 0$$

↪ implied demand function is then

$$y(p) = p^{-\frac{1}{1-\alpha}}$$

Monopolists profit maximization problem

- Choose p to maximize profits:

$$py(p)(1 - \tau) - x = py(p)(1 - \tau) - \frac{y(p)}{\pi} = (1 - \tau)p^{1 - \frac{1}{1 - \alpha}} - \frac{p^{-\frac{1}{1 - \alpha}}}{z}$$

- FOC is

$$\left(1 - \frac{1}{1 - \alpha}\right) (1 - \tau)p^{-\frac{1}{1 - \alpha}} + \left(\frac{1}{1 - \alpha}\right) \frac{1}{z} p^{-\frac{1}{1 - \alpha} - 1} = 0$$

↪ optimal price is a constant mark-up over marginal cost

$$p^* = \frac{1}{\alpha(1 - \tau)z}$$

- Implied monopoly profits:

$$\Pi(z, \tau) = (1 - \alpha) (\alpha z)^{\frac{\alpha}{1 - \alpha}} (1 - \tau)^{\frac{1}{1 - \alpha}}$$

Political Power

- Incumbent monopoly owners initially control political system
 - ↪ can extract “political rents” from citizens, $T \in [0, \bar{T}] \rightarrow$ value of \bar{T} reflects political power
 - ↪ can set sales tax $\tau \Rightarrow$ possible to allow rival to enter and tax it
 - ↪ can block new technology by incurring cost C
- Political power depends on economic position

$$\text{Probability of retaining power} = \begin{cases} q & \text{if new technology is not introduced} \\ s & \text{if new technology is introduced, } s \leq q \end{cases}$$

Payoffs

- If the monopolist does not block and loses power

$$V(NB, NP) = 0$$

- If monopoly owner blocks new technology, B , and retains power, P , it will choose $\tau = 0$ and $T = \bar{T}$:

$$\begin{aligned} V(B, P) &= \bar{T} + \Pi(z_0, 0) \\ &= \bar{T} + (1 - \alpha) (\alpha z_0)^{\frac{\alpha}{1-\alpha}} \end{aligned}$$

- If the monopoly owner blocks the technology, but loses power, NP , it can no longer levy taxes:

$$V(B, NP) = \Pi(z_0, 0) = (1 - \alpha) (\alpha z_0)^{\frac{\alpha}{1-\alpha}}$$

- If the monopolist retains political power, but does not block, NB , it can still tax the rival and earn revenue

$$\begin{aligned} R &= \tau p y \\ &= \tau [\alpha(1 - \tau) z_1]^{\frac{\alpha}{1-\alpha}} \end{aligned}$$

↪ choosing τ to maximize this revenue yields

$$\tau^* = 1 - \alpha$$

and so the maximum sales tax revenue is

$$R^* = (1 - \alpha) [\alpha^2 z_1]^{\frac{\alpha}{1-\alpha}}$$

↪ It follows that

$$V(NB, P) = \bar{T} + (1 - \alpha) [\alpha^2 z_1]^{\frac{\alpha}{1-\alpha}}$$

Expected Returns

- Expected value of blocking technology:

$$\begin{aligned}EV(B) &= qV(B, P) + (1 - q)V(B, NP) - C \\&= q \left[\bar{T} + (1 - \alpha) (\alpha z_0)^{\frac{\alpha}{1-\alpha}} \right] + (1 - q) \left[(1 - \alpha) (\alpha z_0)^{\frac{\alpha}{1-\alpha}} \right] - C \\&= q\bar{T} + (1 - \alpha) (\alpha z_0)^{\frac{\alpha}{1-\alpha}} - C\end{aligned}$$

- Expected value of not blocking technology:

$$\begin{aligned}EV(NB) &= sV(NB, P) + (1 - s)V(NB, NP) \\&= s \left[\bar{T} + (1 - \alpha) [\alpha^2 z_1]^{\frac{\alpha}{1-\alpha}} \right]\end{aligned}$$

- It follows that monopoly owner will block if and only if

$$(q - s)\bar{T} + (1 - \alpha) (\alpha z_0)^{\frac{\alpha}{1-\alpha}} - s(1 - \alpha) [\alpha^2 z_1]^{\frac{\alpha}{1-\alpha}} > C$$

Implications

- Suppose $\alpha z_1 > z_0 \Rightarrow R^* > \Pi(z_0)$.
- ↳ if $q = s = 1$, incumbent owners would never want to block progress
- ↳ would allow introduction of technology and collect taxes from citizens and rival
- ↳ if $s < 1$, then blocking may occur because political power is threatened by innovation

- More generally, incumbents will block progress when:
 - (1) $q - s$ is high: likelihood of staying in power when it blocks is relatively high
 - (2) \bar{T} is high: political rents from staying in power are large
 - (3) z_0 is high: profits from blocking are greater
 - (4) z_1 is low: sales tax revenue from rival is small

Application to Industrial Revolution in Europe (1800)

- Initially land owners had political power, but would be economic losers from industrialization
 - ↳ migration to urban centres eventually drove up wages
 - ↳ increased and freer trade led to falling land values and rents
- Why didn't the landed elites block progress in Britain and Germany?
 - ↳ no longer feudal systems \Rightarrow political rents, \bar{T} , relatively small
 - ↳ landed groups anticipated security of political power $\Rightarrow q - s$ small
- Why did the landed elites block progress in Russia and Austria-Hungary?
 - ↳ more to lose due to their almost feudal (monarchist) system $\Rightarrow \bar{T}$ large
 - ↳ existing political institutions could not adapt to "social forces" unleashed by industrialization $\Rightarrow q - s$ large