10 A Theory of Inefficient Institutions

Why do inefficient policies and economic institutions emerge and persist? Economic institutions are collective choices of the society that have redistributional implications. As a consequence, there is typically a conflict of interests among individuals and groups over the most preferred institution. We study a simple model where an existing elite who has control over the political power uses it for its own advantage, even when this is costly for the society. In this way, we will isolate various sources of inefficiencies.

10.1 A Unified Model: Acemoglu (2005)

Consider an infinite horizon economy with **population**:

$$1 + \theta^e + \theta^m$$

where 1 = workers, θ^e = elite and θ^m = middle class. The **expected utility** of an agent i (worker, middle class or elite) is:

$$U^i = E \sum_{t=0}^{\infty} \beta^t c_t^i$$

Each member i of the elite and the middle class has access to the production function:

$$y_t^i = \frac{1}{1-\alpha} \left(A^i\right)^{\alpha} \left(k_t^i\right)^{1-\alpha} \left(l_t^i\right)^{\alpha}, \quad i = e, m$$

capital k fully depreciate and y_t^i is non-storeable. Given that one unit of y_t^i can be transformed into one unit of k, the price of k is one. The elite and middle class differ in productivity: $A^e \neq A^m$. Also, we impose an upper limit: $l_t^i \leq \lambda$, with $\lambda\theta^i < 1$ (that is, neither of the two groups will create excess demand for labor by itself).

Policy variables:

1. Tax rates on production:

$$\overline{\tau} \geq \tau^e, \tau^m \geq 0$$

Note: taxes cannot be negative, but also have an upper bound (due to, e.g., tax evasion).

2. Income from natural resources: R

3. Non-negative lump sum transfers: T^w, T^e, T^m

Government budget constraint:

$$T^w + \theta^e T^e + \theta^m T^m \leq \phi \int \tau_t^i y_t^i di + R$$

where $\phi \in [0,1]$ measures the efficiency of the state at collecting taxes (a fraction $1-\phi$ of tax revenue is wasted).

Economic Equilibrium

For a given sequence of policies, an equilibrium is a sequence of investment and employment levels that maximizes producers' profits and a sequence of wages that clear the labor market. Each producer takes wages and policies as given and solve:

$$\max_{k,l} \frac{1-\tau_t^i}{1-\alpha} \left(A^i\right)^\alpha \left(k_t^i\right)^{1-\alpha} \left(l_t^i\right)^\alpha - w_t l_t^i - k_t^i$$

Note that, given full depreciation, the problem is static.

From the FOCs:

$$\begin{aligned} k_t^i &= \left(1-\tau_t^i\right)^{1/\alpha} A^i l_t^i \\ l_t^i & \begin{cases} = 0 \quad \text{if} \quad w_t > \frac{\alpha}{1-\alpha}\left(1-\tau_t^i\right)^{1/\alpha} A^i = MP\left(l_t^i\right) \\ \in [0,\lambda] \quad \text{if} \quad w_t = \frac{\alpha}{1-\alpha}\left(1-\tau_t^i\right)^{1/\alpha} A^i \\ = \lambda \quad \text{if} \quad w_t < \frac{\alpha}{1-\alpha}\left(1-\tau_t^i\right)^{1/\alpha} A^i \end{cases} \end{aligned}$$

Note: if the wage is below the net marginal product of labor, no worker is hired, while the maximum (λ) is employed if the wage is below the net marginal product of labor. Note also that the tax rate lowers demand for capital.

So, what is the equilibrium wage? There are two cases:

- if $\lambda\left(\theta^e + \theta^m\right) \leq 1$ there is excess supply of labor, $l_t^j = \lambda$, and $w_t = 0$

- if $\lambda(\theta^e + \theta^m) > 1$ there is excess demand for labor:

$$w_t = \min\{MP(l_t^e), MP(l_t^m)\}$$

That is, the wage is pin down by the minimum net marginal product, one group makes zero profit (each individual of that group employs less than λ workers), the other makes positive profits (each individual of that group employs λ workers).

10.2 Inefficient Policies

Assume that taxes are set by the elite to maximize their utility (dictatorship of the elite).

Revenue Extraction

Consider the case when $w_t = 0$. Obviously, $\tau_t^e = T^w = T^m = 0$. τ_t^m is chosen to maximize tax revenue:

$$\begin{aligned} \max_{\tau_t^m} &= \tau_t^m \theta^m y_t^m = \frac{\phi}{1-\alpha}\tau_t^m (1-\tau_t^m)^{(1-\alpha)/\alpha} A^m \lambda \theta^m + R \\ FOC &: \tau_t^m = \alpha \end{aligned}$$

This is the peak of the Laffer curve. Output maximization, instead, requires $\tau_t^m = 0$. Inefficient policies result from the desire to redistribute together with the absence of lump-sum taxes.

Factor Price Manipulation

Assume $\phi = 0$ so that there is no room for tax redistribution and we are in the case $w_t > 0$. Still, the elite wants to tax the middle class. Why? Consumption of the elite,

$$c_t^e = \left[\frac{\alpha}{1-\alpha}(1-\tau_t^e)^{1/\alpha} A^e - w_t\right] l_t^e + T_t^e,$$

is decreasing in wages; at the same time, the wage falls with taxation, as taxes reduce the net productivity of labor:

$$w_t = \min\left\{\frac{\alpha}{1-\alpha}\left(1-\tau_t^j\right)^{1/\alpha} A^j\right\}$$

Thus, the elite prefers as high a tax rate as possible in order to reduce the demand for labor from the middle class and thus wages. So:

$$\tau_t^m = \overline{\tau}$$

Note that this tax rate is generally higher than the one for revenue extraction: the intuition is that, for revenue extraction, the elite still wants the middle class to be productive enough, not to reduce the tax base too much. When the motive is factor price manipulation, instead, the elite is competing for labor with the middle class and prefers the latter to be unproductive.

When the two motive are combined, the optimal tax rate for the elite is somewhere in between the two extremes: the revenue extraction motive mitigates the desire to manipulate factor prices in order to preserve some tax base and thus tax revenues.

Political Consolidation

Assume that there is a probability p_t that the political power permanently shifts from the elite to the middle class; once in power, the middle class will pursue a policy that maximizes its utility. Assume also that this probability is a function of the income level of the middle class with $p_t' > 0$.

To study the taxation choice, we now need to write the utility of the elite recursively:

$$V^e(e) = \max_{\tau_t^m} \left\{ c_t^e + \beta \left[(1 - p_t) V^e(e) + p_t V^e(m) \right] \right\}$$

Suppose also that $w_t = 0$. Then, the FOC is:

$$\begin{aligned} \frac{\partial c_t^e}{\partial \tau_t^m} + \frac{\partial p_t}{\partial \tau_t^m} \beta \left[V^e(m) - V^e(e) \right] &= 0 \\ \frac{\partial c_t^e}{\partial \tau_t^m} &= \frac{\partial p_t}{\partial \tau_t^m} \beta \left[V^e(e) - V^e(m) \right] \end{aligned}$$

Note: $\frac{\partial p_t}{\partial \tau_t^m} < 0$ and $V^e(e) - V^e(m) > 0$, so that the RHS is negative. This means that the preferred τ_t^m is now to the right of the peak of the Laffer curve. Intuition: taxing has now another beneficial effect, to consolidate the political power of the elite. This second motive moves the tax rate beyond the point that would just maximize revenues.

Note: as natural resources, R, increase, $V^e(e) - V^e(m)$ gets bigger: remaining in power becomes more valuable so that the elite is willing to sacrifice more tax revenue to increase the probability of staying in power. In this case more natural resources translate into worse policies. This is an example of the "curse of natural resources".

Lack of Commitment (Holdup)

Suppose now that the elite cannot commit to a tax rate before the middle class invests. That is, the tax rate is chosen after the investment has been made. This leads to higher taxes: previously, the elite took into account that higher taxes discourage investment thereby reducing tax revenue, while now this effect is absent, because the tax is set after the investment decision. The problem is that the middle class will anticipate this and will invest little in the first place.

In this case, the unique (**Markov Perfect** - i.e., history independent) political equilibrium is one where the tax rate is at the maximum level:

$$\tau_t^m = \overline{\tau}$$

This outcome is worse than that with commitment for all players.

To avoid this very inefficient taxation, there is scope for a **Subgame Perfect** equilibrium (depending on past history) that is an implicit agreement to keep lower taxes sustained by a **trigger-strategy**. For example, suppose that the elite is only motivated by revenue extraction. The elite promises $\tau_t^m = \alpha$ (instead of, say, $\overline{\tau} = 1$) and the middle class chooses the optimal k given $\tau_t^m = \alpha$. If the elite deviates (sets higher taxes) the punishment is to set $k = 0$ forever (note: the punishment is the Markov Perfect equilibrium). This is an equilibrium if the value of staying in the agreement V^{TS} is higher than that of deviating V^{DEV}. The agreement yields every period a transfer of

$$T^e = \frac{\phi\alpha}{1-\alpha} (1-\alpha)^{\frac{1-\alpha}{\alpha}} A^m \lambda \theta^m$$

worth $V^{TS} = T^e + \beta V^{TS}$ from which V^{TS} can be derived:

$$V^{TS} = \frac{1}{1-\beta} \frac{\phi\alpha}{1-\alpha} (1-\alpha)^{\frac{1-\alpha}{\alpha}} A^m \lambda \theta^m.$$

The highest payoff of deviating is instead

$$V^{DEV} = \frac{\phi}{1-\alpha} (1-\alpha)^{\frac{1-\alpha}{\alpha}} A^m \lambda \theta^m.$$

Thus, this trigger-strategy is an equilibrium if $V^{TS} > V^{DEV}$:

$$\beta > 1 - \alpha$$

That is, agents must be patient enough for the future punishment to discourage short-tun deviations.

10.3 Inefficient Economic Institutions

Given that the elite prefers to implement inefficient policies, they may also prefer inefficient economic institutions that can support the inefficient policies. We discuss two examples.

Security of Property Rights

The constitution may set a limit to $\overline{\tau}$. What limit would the elite choose? In particular, suppose that at time $t = 0$ the elite can choose $\overline{\tau} \in \left[0, \overline{\tau}^H\right]$

- In the case with commitment: $\overline{\tau} = \overline{\tau}^H$ (although the equilibrium tax rate may well be below $\overline{\tau}^H$). The elite does not gain anything from limiting his ability to tax. Inefficient institutions would sustain inefficient policies.
- In the case without commitment: a constitutional limit may now help the elite to overcome the problem of excessive taxation due to the lack of commitment. In the above example, if the elite cannot sustain $\tau_t^m = \alpha$ with a trigger strategy, the elite can still implement it by limiting $\overline{\tau} = \alpha$.

Barriers to Technology Adoption

Economic institutions (barriers to entry, protection of IPRs, infrastructures) may affect the technology choice of producers. In some cases, the elite may want the middle class to adopt the most productive technologies. In other cases, the elite may have an incentive to block new technologies. Suppose that the productivity of the middle class depends on government actions $g \in \{0,1\}$:

$$A^m = A^m(g) \quad \text{with} \quad A^m(1) > A^m(0)$$

How is g chosen?

- if the only mechanism at work is revenue extraction (e.g., when $w_t = 0$): $g = 1$. In this case, tax revenue is maximized when the middle class is more productive.
- when the only motive for taxation is factor price manipulation (e.g., $w_t > 0$ and $\phi = 0$): $g = 0$. In this case, the elite is competing (for labor) against the middle class and prefers the latter to be unproductive.

The political consolidation mechanism may also lead to the choice $g = 0$. Thus, the elite's preferences for inefficient policies may translate into preferences for inefficient, non-growth enhancing, institutions.

10.4 Inefficient (Inappropriate) Political Institutions

So far we have considered the dictatorship of the elite. An alternative political regime would be the dictatorship of the middle class. In the latter case, outcomes would be as above, after the proper change in labels. Which of the two political regimes is more efficient? Can an economy be stuck with an inefficient regime?

Whether the dictatorship of the elite or that of the middle class is more efficient depends on the relative number and productivity of the two groups. Assuming that $\theta^m = \theta^e$, aggregate output is higher under the dictatorship of the elite iff $A^e > A^m$. Suppose this is the case initially, but then the middle class becomes more productive. Will the elite be willing to relinquish power? Not without some compensation. However, such a Coasian deal can pose several difficulties. First, if the middle class promises future transfers in exchange for power, this promise will not be time-consistent and thus will not be credible. Second, a single lump-sum transfer from the middle class to the elite in exchange for power may be too large to be feasible.

This suggest that political institutions that were appropriate in the past may persist even though more efficient political institutions exist.