Models of Long Run Institutional Dynamics

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Lecture 17

Introduction

- So far we have examined static models of political competition (PC), a specific democratic institution
- These can be extended to explore dynamic implications
- A static PC model predicts at any given date t, a mapping from income distribution (ID) at t to Economic Policy (EP) at t
- We can use this to generate a political economy theory of dynamics (growth or income distribution):

$$\text{ID at date } t \underset{(\textit{politics})}{\rightarrow} \text{EP at date } t \underset{(\textit{economics})}{\rightarrow} \text{ID at date } t+1 \rightarrow$$

Political Economy Steady State Models

- Alesina-Rodrik (1994): steady states of a dynamic median voter model of inequality with no elite capture: predicts high inequality countries have higher taxes and lower growth in the long run
- Benabou (2000): argues that the Alesina-Rodrik model is not consistent with cross-country facts
- He considers dynamics of a PE model with elite capture, in which high inequality generates low taxes, which in turn re-generates high inequality
- His model has multiple steady states which describe difference between US (high inequality, generates right-wing policy, which re-generates high inequality) and W Europe/E Asia (low inequality, generates redistributive welfare state, which re-generates low inequality)

Dynamics of Political Institutions

- 'Bigger' questions (of interest to development economists and economic historians):
  - comparisons of outcomes of democracy with autocracy
  - transition between autocracy and democracy

- Of particular interest is the possibility of macro 'underdevelopment traps' owing to political economy reasons

Institutional Traps: Historical Examples

- Engerman and Sokoloff (JEP 2000): historical analysis of divergence between North and Central/South America in 20th century traced back to colonial origins in 16th and 17th century:
  - CSA were more suitable for minerals and cash crops (sugar, coffee) than NA attracted wealthier colonial settlers from Europe
  - These settlers created political institutions to ensure their monopolization of these resources, enslavement of indigenous population and slave imports to create cheap labor source
  - Kept taxes low, did not educate the masses, prevented democracy (compared to NA)
  - When Industrial Revolution arrived in 19th century they were unprepared and fell behind NA
- Similar story in Acemoglu, Robinson and Johnson (AER 2001): cross-country regressions of modern day p.c.i., political institutions on colonial settlements in 16th-17th century (instrumented by exposure of settlers to tropical disease)

Transition from Autocracy to Democracy

- Spread of Democracy: e.g., extension of franchise in UK and US during 19th century
- Why did autocrats/elites agree to dilute their own power?
- Acemoglu-Robinson (QJE 2000) provide one answer: threat of revolution owing to progressive rise of inequality, autocrats cannot credibly commit to redistribute, so must agree to usher in democracy
- Lizzeri-Persico (QJE 2004) provide different answer for 19th century democratic reforms in the UK: democracy only way to ensure provision of public goods (eg sanitation and public health) which affect elites

Transition from Autocracy to Democracy: Historical Path-Dependence

- Borguignon-Verdier (JDE 1999) model formalizes the Engerman-Sokoloff ‘story’
- More generally:
  - how high historical inequality may trap some countries into persistent underdevelopment (zero growth) and autocracy
  - while others with less inequality but same ‘fundamentals’ transit into democracy with restricted/small middle class, low growth and perpetuation of elite power
  - and those with low starting inequality transit into robust democracy with large/growing middle class, high growth and vanishing elite power

Borguignon-Verdier (2000) Model: Assumptions

- Two Period version (later sections discuss extensions to more periods)
- Period 1: Two classes of citizens:
  - *elites*, income y^r, educated, proportion $1 - p$ of population
  - *poor*, income y^p, uneducated, proportion p
  - per capita income $\bar{y} \equiv (1 - p)y^r + py^p$
- All parents have one child
- Cost of education 1, where $y^r > 1 > y^p$
- No credit market, poor cannot afford to educate their children, rich can
- Return to education:
  - private return: $R > 1$
  - social return μ (human capital externality): per capita income in the economy at $t = 2$ increases by $\mu.e$ if e is the fraction of population with education at $t = 2$

Education Investment/Policy in Period 1

- Elites are altruistic towards their own children (zero discount rate), so will invest in education privately even without any public education subsidy
- They also decide on how much taxes to pay to fund public education for the poor
- Government funds subsidy $1 - y^p$ for each poor child, parent has to contribute y^p
- Public education provided to proportion $e \leq p$, costs government $T = e(1 - y^p)$
- Government raises revenues via proportional income taxes at rate $\tau \equiv \frac{T}{\bar{y}}$ involves deadweight losses/admin costs of $a\tau^2$ per dollar of income taxed

Political Power

- Country is an autocracy ruled by elites, or a ‘nominal’ democracy where political participation/awareness of citizens depends on their education
- An uneducated citizen has zero awareness/turnout, hence in period 1 the elites decide government policy entirely in their own self-interest (*oligarchy*)
- In period 2, any poor citizen that has received education in period 1 becomes politically aware/active:
  - If $e \leq 1 - p$ the oligarchy persists (median voter is still an elite)
  - If $e > 1 - p$ a genuine democracy emerges representing interest of the ‘middle class’ (educated child of a poor parent)

Key Trade-off faced by Elites in Period 1

- *Cost* of funding public education at scale e at $t = 1$:
  - Fiscal cost $F \equiv \bar{y}[\frac{T}{\bar{y}} + a\{\frac{T}{\bar{y}}\}^2] \equiv [e(1 - y^p) + ae^2\frac{(1-y^p)^2}{\bar{y}}]$
  - Elites bear entire burden of taxation, hence cost per elite household is $\frac{F}{1-p}$
  - Loss of political power in Period 2 to new middle class if $e > 1 - p$
- *Benefit:* extra income at $t = 2$ of μe owing to human capital externality

Elite Dynasty Payoff at $t = 1$

$$Y(e) \equiv [y^r - 1 - \frac{1}{(1-p)}[e(1-y^p) + ae^2\frac{(1-y^p)^2}{\bar{y}}]] + [y^r + R + \mu(1-p+e)] \tag{1}$$

$$\frac{\partial Y(0)}{\partial e} > 0 \quad \text{if and only if} \quad \mu > \frac{1-y^p}{1-p} \tag{2}$$

Public Education Investment in Period 1, Conditional on Perpetuation of Oligarchy

Proposition

The optimal choice of e by the elite over the range $[0, 1-p]$ is 0 if (2) does not hold. Otherwise it is:

$$e^* = \min\{1-p, \frac{\mu(1-p) - [1 - \bar{y} + (1-p)x]}{\frac{2a(1-\bar{y}+(1-p)x)^2)}{\bar{y}}}\} \quad (3)$$

(where $x \equiv y^r - y^p$, $y^p \equiv \bar{y} - (1-p)x$), and zero otherwise.

Higher initial inequality/poverty (y^p low/x high, for given $\bar{y}$) implies e^* low; high human capital externality μ implies e^* high

Government Policy in Period 2

- Two period model so $t = 2$ is the last period, hence there is no point investing in education at $t = 2$
- Date 2 policy choice reduces to selecting (linear) income tax policy, which could redistribute from rich to poor at $t = 2$
- If tax rate is τ, it raises per capita revenue of $c = \tau \bar{y}_B(1 - a\tau)$, where $\bar{y}_B \equiv \bar{y} + (\mu + R)(1 - p + e)$ is period 2 per capita income
- This allows government to provide lump sum welfare support of c to everyone in the population

Government Policy in Period 2, contd.

- If $e \leq 1 - p$, median voter is elite, will not want to redistribute $\rightarrow$ right wing government (oligarchy perpetuated) selects $\tau = 0 = c$
- If $e > 1 - p$, median voter is the middle class (educated, child of a poor parent), whose after-tax income at $t = 2$ is:

$$\begin{aligned} Z(\tau; e) = \; & (1-\tau)[\bar{y} - (1-p)x + R + \mu(1-p+e)] \\ & + \tau(1-a\tau)[\bar{y} + (\mu + R)(1-p+e)] \end{aligned} \tag{4}$$

Government Policy in Period 2, contd.

Proposition

Suppose $e > 1 - p$ and democracy emerges in Period 2. Then the period 2 tax rate is 0 if

$$x(1-p) \leq R(p-e) \tag{5}$$

and

$$\tau^*(e) = \frac{x(1-p) - R(p-e)}{2a[\bar{y} + (\mu + R)(1-p+e)]} \tag{6}$$

otherwise.

Intuition: Middle class does not want any redistribution if its pre-tax income $\bar{y} - (1-p)x + R + \mu(1-p+e)$ is bigger than per capita income $\bar{y} + (R+\mu)(1-p+e)$, which reduces to condition (5)

Alternatively (5) says income gap between elite and middle class at $t = 2$ is smaller than gap between middle class and poor

Nature of Democracy in Period 2

- If e is low relative to p and x, condition (5) will hold, and a right wing democracy ($\tau = 0$) emerges
- If e is close enough to p, condition (5) will not hold:
  - a redistributive democracy ($\tau > 0$) emerges
  - $\tau^*(e)$ is increasing if $R \geq (1-p)x$ or $R < (1-p)x$ and $1 + \frac{\mu}{R} < \frac{\bar{y}}{(1-p)x-R}$
  - In this case, raising e creates a larger middle class and greater redistribution at $t = 2$, which is costly to the elite

Elite's Income Loss in Period Two when Democracy Emerges

- Now consider choice by elite at $t = 1$ over the range $e > 1 - p$
- Elite has nothing to lose at $t = 2$ from emergence of democracy if (5) holds, equivalent to $e \leq e_\tau \equiv p - \frac{x}{R}(1 - p)$
- If $e > e_\tau$, elite's loss from emergence of redistributive democracy at $t = 2$ is

$$L(e) = \tau^*(e)[px + R(p - e)] - a(\tau^*(e))^2[\bar{y} + R + \mu(1 - p + e)] \quad (7)$$

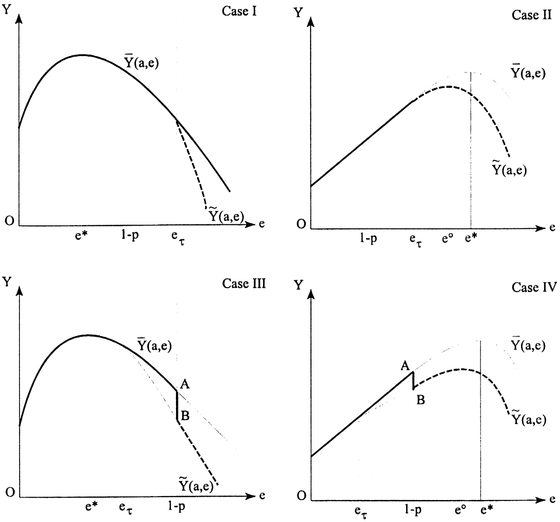
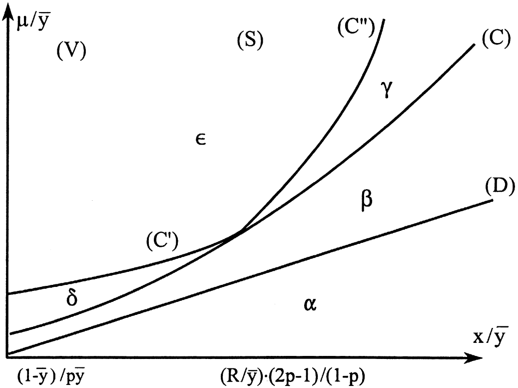


Fig. 1.

Total PV Income of elite families $\bar{Y}$ (solid line) and optimal choice e^* if no redistributive democracy emerges, dashed line and optimal choice e^o otherwise

Resulting Political and Economic Dynamics

- Different outcomes corresponding to parameters (initial inequality $\frac{x}{y}$, human capital externality $(\frac{\mu}{y})$ shown in Figure 2:
  - Case α: $e^* = 0$, no education, no growth, preservation of oligarchy
  - Case β: $0 < e = e^* < 1 - p$, little growth, minority middle class, preservation of oligarchy
  - Case γ: $e^* = 1 - p$, medium growth, ruling oligarchy with equal sized middle class
  - Case δ: $1 - p < e^* < e_\tau$, high growth, *de jure* democracy, transfer of power to middle class ruler who behaves the way the elite wants
  - Case ϵ: $e^* > e_\tau$: fast growth, *de facto* democracy, middle class ruler ushers in welfare state



solution α: Pure oligarchy regime
solution β: Minority middle class regime
solution γ: Balance of power regime
solution δ: Accomodating ruling middle class regime
solution ϵ: Democracy regime

Fig. 2.