Economic Development: Theory and Policy

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5.1 Introduction - Literature

Proximate versus fundamental causes of economic growth

- Ideally, one would like to answer the question why countries grow at different rates at a causal level.
- This refers to the following thought experiment: *if, all else equal, a particular characteristic of the country where changed exogenously, what would be the effect on equilibrium growth?*
- Answering this question requires the isolation of endogenous variables.
- For this reason it is fair to start with correlates = proximate cause of economic growth.
5.1 Introduction

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Institutions

Average growth rate of GDP per capita 1960–2000

Average growth of investment ratio 1960–2000

Country codes:

- CHN
- KOR
- THA
- MYS
- JPN
- LKA
- URY
- CMR
- BRA
- GHA
- TUR
- CAN
- SWE
- USA
- CHL
- MEX
- ARZ
- BFA
- HND
- TWN
- CRI
- MEX
- GTM
- PER
- ING
- ARG
- ZAF
- ZWE
- NGA
- VENKEN
- JOR
- NIC

Graph showing the relationship between average growth rate of GDP per capita and average growth of investment ratio from 1960 to 2000.
5.1 Introduction
5.1 Introduction

Proximate versus fundamental causes of economic growth

- If proximate causes were important in generating large cross-country differences, why do certain economies fail to improve their technologies, invest more in physical capital, and accumulate more human capital?

⇒ Fundamental causes (Acemoglu, 2009)

1. (history dependent) multiple equilibria → "luck"

2. geographic differences

3. institutional differences

4. cultural differences
5.1 Introduction

- Adam Smith emphasized the importance of 'peace, easy taxes, and a tolerable administration of justice'.
- John Locke (1690) articulated the importance of property rights - similar Adam Smith and Frederick von Hayek.
- North (1990, p. 3):
  - Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction.
  - In consequence [institutions] structure incentives in human exchange, whether political, social, or economic.

- Why are there inefficient institutions as a result of a social choice and what is the point of reference?
5.1 Introduction

Source: Acemoglu 2009
5.1 Introduction

Source: Acemoglu 2009
5.1 Introduction

- Growth theory isolates several factors as being responsible for sustained economic growth, for example: human capital, physical capital, research and development...

- As has been argued already these factor stress the importance of correlates to economic growth, i.e. they are endogenous with respect to the economic environment.
5.1 Introduction

- Institutional differences = differences in a broad cluster of social arrangements:
  1. security of property rights
  2. contracting institutions
  3. entry barriers
  4. incentives to provide public goods
  5. ...

- A tractable definition differentiates between
  1. political institutions = rules affecting political decision process
  2. economic institutions = economic arrangements (taxes, property rights...)

- Institutions differ across countries and do matter for economic growth → Again: why do some societies choose institutions which are harmful for economic growth?
5.1 Introduction

- Since there are economic events that would benefit all members of society, the main ingredient of the political economy approach is social conflict.
- Hence, individuals have conflicting preferences over economic institutions.
- In general, societies consist of different groups with differing economic and political power.
- The implementation of distortionary policies is therefore due to
  1. Revenue extraction: attempt of a powerful group to transfer rents from other groups to themselves.
  2. Factor price manipulation: enrichment of other groups may constitute a risk (replacement motive) to the powerful and/or decrease their profits.
- Further source of inefficiencies: lag of commitment to future policies induce so-called hold-up problems, i.e. a range of policies comes into action after investments are undertaken.
5.2.1 Contents - Institutions versus Geography

5.2.1 Introduction
5.2.2 Historical Evidence
5.2.3 The Geography Hypothesis
5.2.4 The Institutions Hypothesis
5.2.5 The Temperate Drift Hypothesis
5.2.6 Timing of the Reversal
5.2.7 Institutions and the Reversal
5.2.8 Institutions and Industrialization
5.2.1 Institutions vs. Geography - Introduction

- Geographic factors remain constant for a long period of time.
- The geographic view of economic development claims:
  - differences in economic performance reflect differences in geographic, climatic and ecological characteristics across countries.
  - climate has a direct effect on income through work effort (Machiavelli, 1519; Montesquieu, 1748; Marshall, 1890)
- More recent views:
  - Myrdal (1968): *climate exerts everywhere a powerful influence on all forms of life*, and that *serious study of the problems of underdevelopment... should take into account the climate and its impacts on soil, vegetation, animals, humans and physical assets in short, on living conditions in economic development*
  - Jared Diamond (1997): timing of the Neolithic revolution → nature and history of food production
  - Jeffrey Sachs (2000): disease environment, natural resources, transport costs, technology (temperate drift=geography interacts with technology)
According to the geography view, societies that were rich in 1500 should be rich today because geographic factors did not change drastically.

Proponents of the role of institutions (Acemoglu, Johnson, and Robinson, 2001) claim that this view is inconsistent with the following historical pattern:

- Regions that had been rich before European colonization are now relatively poor.
- This reversal is consistent with the institution view since colonization in the 15th century by European powers led to major changes in the institutional setting of colonized societies.
- More precisely: institutional reversal → implementation of institutions that encouraged investments and growth in previously poor regions → reversal of incomes.
- The reversal of relative incomes took place in the 19th century and resulted from industrializing countries with good institutions.

⇒ a drastic shock in institutions causes drastic changes in income
Colonization in the 15th century provides a 'natural experiment' to distinguish between the impact of institutions and geography.

European colonialism led to institutional reversal:
- development of relatively better institutions in previously poor regions
- development of extracting or maintaining bad institutions in previously prosperous regions

Reason:
- poor (rich) regions were sparsely (densely) populated
- Europeans settled in large numbers to initially sparsely populated areas and introduced institution in their favor
- Prosperous regions have been characterized by controlled immigration, extractive institutions and forced labor

Consistent with this view:
- The Western Offshoots have been initially poor, whereas the civilizations of the Mughals, Aztecs, and Incas were among the richest in 1500
- The Western Offshoots belong today to the richest regions of the world and are richer than the territories of the Mughal, Aztecs, and Incas.
5.2.2 Institutions vs. Geography - Historical Evidence

- Economic prosperity around or even before 1500 is difficult to measure.
- Urbanization and population density are good proxies for income per capita or productivity.
- Urbanization
  - Economic development $\leftarrow\rightarrow$ structural change $\leftarrow\rightarrow$ countryside-city migration (Kuznets, 1968)
  - Urbanization requires large agricultural surplus and the possibility to trade this surplus (Bairoch, 1988)
- Population density
  - Malthus: $y \uparrow$ implies $N \uparrow$
  - However: high $N$ could also be above equilibrium population resulting in increasing mortality rates and reduced fertility. Then, excess population could reflect low incomes per capita.
  - Use of population density because of its availability and correlation with urbanization in the required time interval.
5.2.2 Institutions vs. Geography - Historical Evidence

Source: Acemoglu et al. 2001
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5.2.3 Institutions vs. Geography - The Geography Hypothesis

- climate → work effort (Machiavelli, 1519; Montesquieu, 1748)
- Jared Diamond (1997): geography → Neolithic revolution → development of modern armies and modern technologies
  → ’...proximate factors behind Europes conquest of the Americas were the differences in all aspects of technology. These differences stemmed ultimately from Eurasias much longer history of densely populated...[societies dependent on food production]’ (1997, p. 358, quoted in Acemoglu et al. 2001)
- these differences are geographically determined
- Galor (2011): timing of Neolithic revolution depends on genetic diversity driven by migratory distance from the origin of human mankind → Out-of-Africa Hypothesis
5.2.3 Institutions vs. Geography - The Geography Hypothesis

- Jeffrey Sachs (2000): health → income versus health?
  - 'Certain parts of the world are geographically favored. Geographical advantages might include access to key natural resources, access to the coastline and sea navigable rivers, proximity to other successful economies, advantageous conditions for agriculture, advantageous conditions for human health.' (2000, p. 30).
  - Tropical agriculture faces several problems that lead to reduced productivity of perennial crops in general and of staple food crops in particular' (2000, p. 32), and that 'The burden of infectious disease is similarly higher in the tropics than in the temperate zones' (2000, p. 32).
  - The greater population in temperate areas over the past centuries led to more rapid advances in technologies appropriate for these areas relative to technologies necessary for development in the tropics → temperate drift hypothesis
Testing the geography hypothesis

- Geography has a main effect on economic performance

\[ Y_i = \alpha_0 + \alpha_1 G_i, \] (1)

- Major impact of geography on economic performance stems from a time-varying interaction effect

\[ Y_{it} = \alpha_0 + \alpha_1 G_{it} + \alpha_2 T_t G_{it}, \] (2)

\( t = \) time; \( T_t = \) time varying characteristic of the state of the technology or the world as a whole

- Prediction: countries that have been rich 500 years ago must be rich today
5.2.4 Institutions vs. Geography - The Institutions Hypothesis

→ societies with a social organization that provides encouragement for investment will prosper.

→ necessary condition: guarantee and enforcement of property rights (North, 1991)

- Meaning of 'good'/bad' social organization/institutions
  - institutions of private property
    1. Secure property rights encourage investments because investors receive revenues of their investments
    2. Emphasis on 'a broad cross section of the society' and not only for a small elite
  - extractive institutions: majority of the population faces high risk of expropriation by the government, the ruling elite or other agents.

→ North and Weingast (1989, p. 805-806) what matters is: '... whether the state produces rules and regulations that benefit a small elite and so provide little prospect for long-run growth, or whether it produces rules that foster long-term growth.'
Prediction: institutions are persistent, but contrary to geography they can be changed instantaneously.

→ European colonialism led to a drastic change in the organization of colonized societies

→ European colonialism led to the introduction or continuation of extractive institutions

⇒ institutional reversal: relatively prosperous regions → colonization → extractive institutions

→ Institutions hypothesis + institutional reversal → reversal of relative incomes
What triggers the implementation of good/bad institutions by colonizers and what is the link to initial prosperity?

1. economic profitability of alternative policies
   - high population density $\rightarrow$ forced labor $\rightarrow$ high concentration of power
   - A first attempt to colonize Argentina (1536) failed because of low population density of natives contrary to Paraguay. Argentina has a higher share of European settlers and no forced labor.

2. whether Europeans could settle or not
   - Europeans implemented institutions of private property when they settled in large numbers because they were affected by these institutions
   - Extraction and European settlement were self-reinforcing
   - Low population density made settlement of Europeans in large numbers possible
   - High population density makes diseases like malaria and yellow fever more virulent and therefore extractive institutions more likely.
## 5.2.4 The Institutions Hypothesis

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<td><strong>Log Population Density in 1500</strong></td>
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### 5.2.4 The Institutions Hypothesis

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5.2.4 The Institutions Hypothesis

(1) base sample
(2) without North Africa
(3) without the Americas
(4) just the Americas
(5) with continent dummies
(6) without Neo-Europes = Western Offshoots
(7) controlling for latitude
(8) controlling for geography
(9) controlling for colonial origin
(10) controlling for religion
5.2.5 Institutions vs. Geography - The Temperate Drift Hypothesis

- Prediction: geography interacts with technology
  - tropical areas provided most favorable environment for early civilizations, since the need for high calorie intake is lower there
- The arrival of appropriate technologies in turn made temperate areas more productive.
- Western Offshoots are temperate areas and became rich after the arrival of European colonialism made their agricultural technologies available.
  - European colonialism may have enriched this regions → reversal of incomes due to temperate drift hypothesis.

But timing and nature of the reversal does not support the temperate drift hypothesis.
Temperate drift hypothesis relates to agricultural technologies → reversal should be associated with diffusion of European technologies in agriculture

The reversal is however largely a 19th century phenomenon

Diffusion of European agricultural technologies took place from the 16th century on
5.2.6 Institutions vs. Geography - Timing of the Reversal

Source: Acemoglu et al. 2001
5.2.6 Institutions vs. Geography - Timing of the Reversal

Source: Acemoglu et al. 2001
5.2.6 Institutions vs. Geography - Timing of the Reversal

Source: Acemoglu et al. 2001
It has been argued that the reversal of economic prosperity among former European colonies seems to be inconsistent with the geography view.

But this does not automatically imply that institutions played a crucial role.

→ we have to show that the institutional reversal accounted for reversal in incomes and the mechanism through which institutions have affected economic development.
5.2.7 Institutions vs. Geography - Institutions and the Reversal

- Estimation strategy: the reversal documented so far reflects the correlation between economic prosperity in 1500 ($Z$) and income today ($Y$) through the intervening variable, institutions ($X$). Suppose that

$$Y = \alpha X + \beta Z + \varepsilon.$$  \hspace{1cm} (3)

→ Hypothesis: $\beta = 0 \rightarrow$ population density or urbanization has no direct effect on gdp per capita today, but via institutions

⇒ this requires

$$X = \lambda Z + \nu,$$ \hspace{1cm} (4)

which implies as a probability limit of the OLS regression: $\beta + \lambda \alpha$. 
5.2.7 Institutions vs. Geography - Institutions and the Reversal

- The empirical results represented so far are consistent with $\beta = 0$ as long as $\alpha, \lambda \neq 0$.
- Given that $Z$ is independent from $\nu, \varepsilon$ and $X$ from $\varepsilon$, the associated OLS regression writes

$$Y = aX + bZ + u_2,$$

with the hypothesis $\hat{b} = 0$.

- Because of endogeneity problems between $X$ and $Y$, omitted variable bias and measurement errors, this strategy is not possible!

- Solution: search for an instrument $M$ for $X$ that is independent from $\varepsilon$, such that

$$X = \gamma M + \zeta$$
5.2.7 Institutions vs. Geography - Institutions and the Reversal

→ Then, the following regression can be estimated by using Two-Stage Least Squares
  
  • Second stage

  \[ Y = aX + bZ + u_2, \]  
  \( (7) \)

  • First Stage

  \[ X = cM + dZ + u_3 \]  
  \( (8) \)

⇒ Testing the hypothesis that \( Z \) has an effect on \( Y \) only through \( X \) requires in the second stage that \( \hat{b} = 0 \).

• Critical to this strategy is the instrument!
5.2.7 Institutions vs. Geography - Institutions and the Reversal

- Acemoglu et al. (2001) argue that settler mortality rates are good instrument for settlements of Europeans and subsequent institutions necessary for economic development.

- Reasoning: high mortality rates made settlement of Europeans in large numbers less likely and the implementation of extractive institutions more likely.
### 5.2.7 Institutions and the Reversal

Average Protection Against Expropriation Risk, 1985-95

<table>
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<tr>
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<th>Panel A: Second Stage Regressions</th>
<th>Panel B: First Stage Regressions</th>
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<td>Log Population Density in 1500</td>
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<td>Log Settler Mortality</td>
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<td>Log Population Density in 1500</td>
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5.2.7 Institutions vs. Geography - Institutions and the Reversal

→ the hypothesis that prosperity in 1500 has no direct effect can not be rejected

→ the 2SLS effect of institutions on income per capital remains robust.

⇒ this supports the idea that reversal of economic prosperity is reflected in:

   early prosperity → institutions introduced by European colonists.
Why is the reversal a 19th century phenomenon?

Imagine a society with a small elite, where the property rights of the elite are well protected and the rest of the population has no effective property rights.

Bad institutions do not matter as long as the major investment opportunities are in agriculture.

Industrialization requires broad based participation (big-push), large investments and people with entrepreneurial skills

→ major problems

- Entrepreneurs are not necessarily members of the ruling elite
- weak property rights hinder investments
- elite may block investments in order to maintain power

⇒ institutions matter more for technologies that require broad-based economic participation.
Hypothesis: societies with good institutions take better advantage of industrialization

\[ y_{it} = \mu_t + \delta_i + \pi X_{it} + \phi X_{it} UKIND_t + \varepsilon_{it} \]  

- \( \mu_t \): time effects
- \( \delta \): country effects
- \( X \): measure of institutions
- \( UKIND \): industrial output in UK
- \( y \): income per capita in country \( i \) at date \( t \).

The variable of interest is \( \phi \).

\( \phi > 0 \) reflects a positive interaction between industrialization and institutions. \( \pi \) measures the direct effect.

\( \phi \) is reported to be around 0.13 and highly significant!