

ECO 3302 – Intermediate Macroeconomics

Lecture 8: Proximate vs. Fundamental Causes of Economic Growth

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- 3. Institutions: Theory and Data
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- 4. Taking Stock

Introduction

Introduction

- ▶ In the past few lectures before spring break:
 - · Studied Solow model to understand mechanics of growth
 - · Learned that richer countries invest more and have better technologies
 - Ended up saying that Solow model only emphasizes proximate causes of growth
 - To say that a country is poor because it has little capital and inefficient technology is like saying that someone is poor because it has no money

▶ Today, we study the fundamental causes of growth

- What factors do lead countries to invest more and develop better technologies?
- We emphasize the role institutions, trying to understand:
 - What institutions are made of
 - Cross-country differences in institutional quality
 - Origins of institutions

Sources of Prosperity

Sources of prosperity

▶ Let's start with a basic question:

What explains the observed vast differences in incomes per capita across countries?

Standard answers:

- Physical capital: poor countries don't save enough
- Human capital: por countries don't invest enough in education and skills
- Technology: poor countries underinvest in R&D and lag in adopting new tech
- ▶ But, as North and Thomas (1973) put it, "the factors we have listed [...] are not causes of growth; they are growth".

Sources of prosperity

Standard answers leave us with many unsatisfactory questions:

- If accumulating physical capital is so important, why haven't poor countries invested more in it?
- · If education is so important, why haven't poor countries invested more in it?
- If technology is so important, why haven't poor countries developed or adopted new technologies?
- Something is clearly missing from our discussion!
 - What factors explain these differences in behavior across countries?
 - In other words, what are the fundamental causes of economic growth?

Proximate vs. fundamental causes of growth

- Economists have come up with four major candidates for fundamental causes of growth:
 - 1. Luck
 - 2. Geography
 - 3. Culture
 - 4. Institutions
- Most economists believe that fundamental differences in standards of living across countries are explained by differences in institutions
- From now on, we make the following distinction:
 - Proximate causes of growth: human and physical capital, technology
 - Fundamental causes of growth: luck, geography, culture, institutions

Fundamental causes of growth: Luck and geography

- 1. The luck hypothesis emphasizes the role of luck
 - * Multiple equilibria in technology adoption
 - \star Multiple steady states and path dependence

Possible, but can't systematically explain observed income differences

- 2. The geography hypothesis emphasizes the role of nature
 - Climate determines work effort and incentives to produce (Montesqieu 1748, Marhsall 1890)
 - Ecology and technology: soil quality, natural resources, topography, technology in temperate- vs. tropical- climates (Myrdal 1968, Sachs, 2001)
 - Disease burden: tropics more sensible to diseases like malaria, AIDS (Sachs 2000) Some evidence in favor of this hypothesis

Countries closer to the equator on average have lower GDPs per capita



- 3. **The culture hypothesis** states that beliefs, values, social norms, and religion affect economic outcomes. Potential reasons:
 - Willingness to engage in productive activity vs. leisure
 - Degree of cooperation and trust
 - Protestantism vs. Catholicism (Weber 1930, 1958)
 - Southern- vs. Northern- Italy (Banfield 1958)

Some evidence in favor of this hypothesis

The culture hypothesis: Religion

Less religious countries have higher GDPs per capita

Importance of Religion vs level of GDP per capita The question that was asked was "How important is religion in your life?" And the possible answers were "very important", "somewhat Our World in Data important", "not too important" and "not at all important". Shown is the share that answered "very important" The color of each country represents the largest religion in the county. The percentage value is the share answering very important, Ethiopia Indonesia Uganda Pakistan 0 95% Burkina Largest religious group in the country 0 93% Faso 90% Tanzan Christians Folk Religions 0 Hindus Malavaia Jordan very important" 80% 8396 84% Jews 80% Muslims 0 0 Unaffiliated Palestine Brazil 74% 74% Peru 66% • South Africa 0 Turkey Lebanon 67% 60% answering 50% United States 5396 • Venezuela 40% 42% Mexico . Share a 3796 Arcentina Israel 30% 34% Canada 0 Chile ● 27% Vietnam Polanc 2014 28% Spain 0 26% Ukraine -United Kingdom Come 22% Russia South Korea 21% Australia 19% 1996 18% France Japan 14% 1196 China 0 3% 5 000\$ 10.000\$ 15 000\$ 20.000\$ 25.000\$ 30.000\$ 35,000\$ 40.000\$ 45 000\$ 50.000\$ 55.000\$ GDP per capita (PPP adjusted in international-\$: in 2014)

The culture hypothesis: Trust

Countries with higher interpersonal trust have higher GDPs per capita



Data source: Integrated Values Surveys (2022); World Bank (2023)

OurWorldinData.org/trust | CC BY

Note: For each country, trust data is shown for the latest survey wave in the period 2009-2022. GDP per capita is expressed in international-\$* at 2017 prices.

Fundamental causes of growth: Institutions

- 4. The institutions hypothesis highlights the role of institutions in shaping economic incentives to invest in technology, physical and human capital (Knack and Keffer 1995; Hall and Jones 1999; Acemoglu, Johnson and Robinson 2001, 2002)
 - Institutions are endogenous (ie, societies' own choices)
 - · Institutions set constraints (formal & informal) on individual behavior
 - * Property rights, the rule of law, the judicial system, infrastructure, political rights, limiting firms' power, corruption, providing social insurance, stabilization, ...
 - Important connections between institutions, geography and culture

Lots of very compelling evidence in favor of this hypothesis (quasi-natural experiments in Korea, Germany, regression analyses, imperial colonies, ...)

The institutions hypothesis: Korea



Notes. Data from the Maddison Project Database 2020. Graph with some interpolated data. 12 / 42

The institutions hypothesis: Germany



Figure 1: Economic performance in Germany, 1900–2016

Fundamental causes in economic growth models

- > When formulating theories, we make implicit assumptions
- In most theories of economic growth, an implicit assumption is that institutions, geography and culture do not influence economic growth
 - Models emphasize proximate causes
 - Very hard to incorporate fundamental causes to models in satisfactory way, even if just saw that they are critical to explain economic differences
 - Easiest to think of fundamental causes as influencing growth in an abstract way (through the residual, together with technology, and all other things outside the model)
 - Easier to study role of institutions, culture, geography using regression analysis, quasi-natural experiments, ...
- Let's try to understand the relationship between economic growth and institutions more in depth

Institutions: Theory and Data

What are institutions exactly?

We said:

- ▶ Institutions are endogenous (i.e., man-made)
- Shape economic incentives and set constraints on individual behavior
- Determine the degree to which property rights are enforced, the rule of law applied, public infrastructure and social insurance provided,...

North (1990) found a way to summarize all this:

"Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction"

▶ Institutional basics are preconditions for economic growth:

- 1. Property rights
- 2. Rule of law

...and many more

- The first two conditions are so fundamental that they are at the root of the definition of failed state
 - We think of failed states as states where there is almost complete lack of either property rights or the rule of law
 - These are typically the poorest countries in the world (eg, Venezuela today)

Property rights

- Property rights are essential for the functioning of a market economy:
 - Who wants to buy a house when it can be occupied without consequences?
 - Who wants to run a business when expropriation risk is high?
 - Who wants a lost/stolen Rolex when PRs are enforced internationally?
- Lack of enforcement of property rights makes market participants more reluctant to engage in economic activity
 - Low enforcement of PRs \rightarrow less and smaller transactions \rightarrow lower GDP
- ▶ In most developed countries, property rights typically taken for granted ...
- ▶ ... But many developing countries struggle fail with their enforcement

Enforcement of property rights and economic development



Notes. Data from Acemoglu, Johnson, and Robinson (2001), "The Colonial Origins of Comparative Development"

Rank	Country	Property rights index	Rank	Country	Property rights index
1	Finland	100	15	France	93
2	Norway	99	28	Spain	87
3	Denmark	98	48	Chile	72
4	Austria	97	94	Mexico	48
	Iceland	97	105	China	45
	Luxembourg	97	136	Argentina	136
	Sweden	97	176	Afghanistan	6
8	Netherlands	96		Yemen	6
9	Germany	95	178	Libya	5
	UK	95	179	Syria	3
	United States	95	180	Venezuela	0

Notes. Index measures effectiveness of government in protecting private (physical and intellectual) property. **Source**. Data from the Heritage foundation.

The rule of law

Economists like to think of economic agreements and transactions as legally-binding contracts. Examples:

- Work contracts
- Purchase agreements

Potential disputes:

- Clause III of contract breaks law \boldsymbol{X}
- Tenant violates conditions of housing lease
- Company doesn't respect agreed terms of trade

Societies need sufficiently developed legal systems to enforce contracts (and also to guarantee safety of its citizens)

The rule of law

Some countries are better at enforcing laws than others

• Many point to countries inability to enforce rule of law as cause for slow growth

Factors that make a strong rule of law:

- Broad applicability
- Judicial independence
- Impartial application of the law (eg, by police, courts, ...)

"To my friends, everything; to my enemies, the law" \sim Benavides

• Small number of legal procedures and quick enforcement of contracts

Rank	Country	Rule of law index	Rank	Country	Rule of law index
1	Finland	100	23	France	79.6
2	Denmark	98.5	34	Spain	69.6
3	Singapore	95.3	37	Chile	66.7
4	Luxemburg	95.0	62	China	47.5
5	Norway	94.8	95	Argentina	39.9
6	Switzerland	94.6	120	Mexico	25.8
9	Iceland	93.3	151	Congo DM	4.3
10	Sweden	93.0	152	CA Republic	3.9
14	Germany	88.8	153	Libya	2.2
18	UK	86.2	154	Yemen	1.6
19	United States	84.6	155	Venezuela	0

Notes. Index measures quality of contract enforcement, courts, police, likelihood of crime and violence.

Other important institutional aspects

► Corruption

Political stability

► Crime

▶ Regulatory quality

- ▶ Voice and accountability
- Public infrastructure
 - •
 - .

Corruption control



Notes. Index measures how much public power is used for private gain.

Political stability and absence of violence



Notes. Index measures perceived likelihood of political instability or politically motivated violence.

Regulatory quality



Notes. Index measures government ability to implement regulations that support private sector development.

Ease of doing business



Notes. Index considers ease of starting business, dealing with permits, getting electricity, registering property, getting credit, paying taxes, trading across borders, enforcing contracts, etc.

Voice and accountability



Notes. Index measures voting rights, freedom of expression, freedom of association, and free media.

Government effectiveness



Notes. Score measures quality of a country's public services, civil service, and policy implementation.

Institutions and Growth

We have said:

- ▶ Richer countries invest more and develop/adopt better technologies
- Ultimately, these cross-country differences in behavior obey to institutional differences, geography, culture, and even luck
 - Economists believe that institutions are most important and so the data shows
 - But, why do some countries have better institutions than others?
 - This year Nobel prize winners—Acemoglu, Johnson and Robinson—studied this question and formally proved the connection between institutions and growth
 - They received the Nobel prize for this work! (Read offficial announcement <u>here</u>)
 - We now review two of their most influential studies
 - Excellent summary on their work on institutions provided <u>here</u> by *The Economist*

"The Colonial Origins of Comparative Development: An Empirical Investigation"

- Question: Why are some countries richer than others? Is it because of institutional differences?
- ▶ Challenge: Simple OLS regression analysis

 $\log \text{GDP per capita}_{ct} = \alpha + \beta \times \text{Institutional quality}_{ct} + \gamma \mathbf{C_{ct}} + \varepsilon_{\mathbf{ct}}$

yields biased and inconsistent estimate of β —the effect of institutional quality on economic performance—that cannot be interpreted causally

- Endogeneity: Institutions & GDP jointly determined by some unobserved factor (eg, geography, history, culture, ...)
- **Reverse causality**: Do better institutions lead to higher GDP per capita, or the other way around?

Ingenious theory and econometric method to solve problem:

- Instrumental variables (IV) approach to obtain unbiased, consistent, and causal estimate of the effect of institutions on current performance (β). How IV works:
 - Find IV for endogenous variable (ie, quality of institutions)
 - IV must be relevant (ie, important in explaining endogenous variable) and exogenous (ie, not have a direct effect on the dependent variable)
 - Follow two-stage least squares (2SLS) procedure. First regress endog variable X on instrument Z and obtain predicted value \hat{X} :

$$X_{ct} = \pi_0 + \pi_1 Z_{ct} + \pi_2 \mathbf{W}_{ct} + \upsilon_{ct}$$

Next replace X with \hat{X} in original regression and estimate β using OLS:

$$Y_{ct} = \alpha + \beta \hat{X}_{ct} + \gamma \mathbf{C_{ct}} + \varepsilon_{\mathbf{ct}}$$

 Estimated β represents causal effect of endog variable on dependent variable, provided IV satisfies neccessary conditions (relevance and exogeneity)

- Ingenious theory and econometric method to solve problem:
 - Instrumental variables (IV) approach to obtain unbiased, consistent, and causal estimate of the effect of institutions on current performance (β)
 - Theory: Argue that differences in economic development can be traced back to differences in the institutions established during colonial times. Mechanism:

 $\stackrel{(\text{potential})}{\text{settler mortality}} \Longrightarrow \stackrel{\text{Current}}{\implies} \stackrel{\text{Current}}$

- (Exogenous) variation in settler mortality rates (IV) affected settlement patterns
- Different settlement patterns led to different types of institutions (temporal settlement ⇒ extractive institutions; permanent settlement ⇒ inclusive inst.)
- Institutions are highly persistent over time
- Institutions affect economic performance by incentivizing certain behaviors

Main findings:

- 1. Settler mortality rates were a major determinant of type of settlement
 - Low mortality rates led to long-term settlements

2. Settlements were a major determinant of early institutions

- Long-term settlements were better to invest in and followed European law
- Short-term settlements tried to extract as many resources as possible

3. Strong correlation between early institutions and institutions today

- Institutions long-lasting in the way they were set up (even after independence)
- 4. Differences in institutional quality can explain much of observed differences in income per capita cross countries



Notes. Data from Acemoglu, Johnson, and Robinson (2001), "The Colonial Origins of Comparative Development"

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"Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution"

In another influential paper, Acemoglu, Johnson and Robinson argue against the role of geography in explaining cross-country income differences

> AJR document a reversal of fortune for former European colonies

- **Reversal of fortune**: countries that were once economically prosperous are now poor, while those that were previously impoverished are now rich
- Examples:
 - Mughals in India, Aztecs and Incas (mostly in Mexico and Peru) richest in 1500, while civilizations in North America, Australia, New Zealand very poor
 - United States, Canada, New Zealand, and Australia much richer today than countries now occupying the territories of the Mughal, Aztec, and Inca Empires



Notes. Crude proxy for prosperity in 1500 is urbanization: ↑ income per capita, ↑ ubranization **Source**. Data from Acemoglu, Johnson, and Robinson (2002), *"Reversal of Fortune"*



Notes. Crude proxy for prosperity in 1500 is population density: ↑ income per capita, ↑ pop. density **Source**. Data from Acemoglu, Johnson, and Robinson (2002), *"Reversal of Fortune"*

Some criticisms to Acemoglu, Johnson, and Robinson's work

> As all influential work, their research has been both acclaimed and criticized

Main criticisms:

- Theory struggles to explain development of some East Asian states (eg, South Korea, Singapore, Taiwan, today's China all developed under authoritarianism)
- Theory struggles to explain development of some Western countries (eg, England after Glorious Revolution in 1688, United States development under slavery)
- AJR understate the role of geography (Sachs, 2003; Easterly and Levine, 2003)
 - Natural endowments affect opportunities & well being, independent of institutions
 - Countries with tropical climates might struggle economically due to higher disease burden or poor agricultural productivity, not just due to weak institutions

Some criticisms to Acemoglu, Johnson, and Robinson's work

As all influential work, their research has been both acclaimed and criticized

Main criticisms:

- Selection bias (AJR focus on European colonies and ignore other colonial experiences)
- · Oversimplification and poor measurement of institutional quality
 - AJR's proxies for institutions (mortality and expropriation risk) are overly simplistic
 - Institutions are multidimensional objects (laws, norms, enforcement capacity, ...)
 - <u>Sachs (2012)</u> argues that AJR institutional measures don't account for political and social dynamics affected by geography, culture, and governance
- Exogeneity of institutions and historical determinism
 - AJR emphasize that historical events largely determine institutional quality
 - This view leaves little room for contemporary politics and reforms (as in Botswana)
- <u>Albouy's critique</u> (imputation of mortality rates for $\approx 1/2$ sample) and <u>AJR's response</u>

Taking Stock

Taking stock

Today, we close the circle and understand much better the growth process:

- ▶ Richer countries invest more and employ better technologies (proximate causes)
- ▶ But what explains these differences in behavior across countries?
- Ultimately, cross-country differences in income per capita obey to institutional differences, geography, culture, and even luck (fundamental causes)
 - · Economists believe institutions are most important and so research shows
 - Luck possibly plays a role, but cannot explain systematic differences
 - Geography and culture more important than luck, but less than institutions
 - Quasi-natural experiments (in Korea and Germany), regression analysis and historical evidence (for former European colonies) disfavor these hypothesis

Key concepts we've learned:

- ► Institutions as "the rules of the game":
 - Types of institutions: Extractive vs. inclusive institutions
 - Institutional basics: Property rights, the rule of law, ...
 - Failed state: complete lack of either property rights or the rule of law
- Reversal of fortune: countries that were once economically prosperous are now poor, while those that were previously impoverished are now rich

Measures of institutional quality and where to find data

Questions?

Thank You!

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