# DEVELOPMENT ECONOMICS

# GEOGRAPHY AND INSTITUTIONS

# This Lecture

- We will talk about the two fundamental causes of income differences
  - **Geography** or "natural environment"
    - Differences in the natural environment.
  - **Institutions** or "government"
    - Humanly-devised rules shaping incentives.
- Readings:
  - Weil book: Chapters 12 and 15
  - Paper by Acemoglu-Johnson-Robinson (sections 4 and 5a)

# What have we learned so far?

- If someone asks you: "why are some countries richer than others?"
  - You would answer:
    - Physical capital differences (poor countries don't invest enough).
    - Human capital differences (poor countries don't invest enough in education and skills).
    - Productivity differences (poor countries don't invest enough new technologies, and don't organize their production efficiently).
  - Factors of productions and productivity are half the story each.

- But why is that the case?

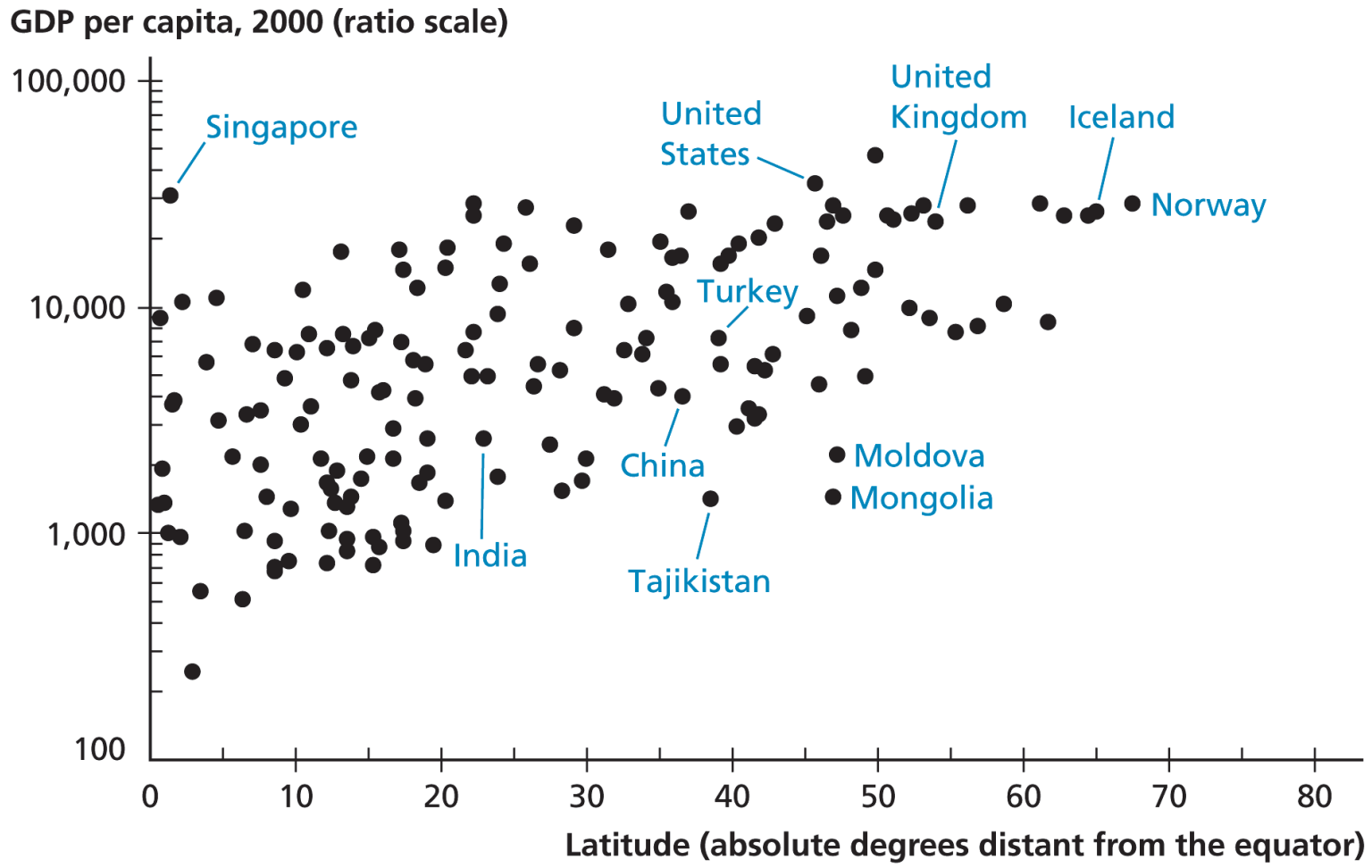
# Fundamental vs. Proximate Causes of Growth

- So far, we studied the **proximate** causes of growth.
- But this leads to the question: why do some countries accumulate more capital and are more productive?
  - Why incentives to invest (in machines, health, and education) are different?
  - Why some countries foster innovation and allocate factors better?
- The answers are in the **fundamental** causes of growth.

# Geography

- Roughly speaking, the natural environment.
  - The climate.
  - The soil.
  - Natural resources (oil, coal, forests).
  - Suitability of terrain to transportation (rivers, “flatness”).
  - Access to oceans (some countries are landlocked).
  - Disease environment.
  - Natural disasters.

## FIGURE 15.1
## Relationship Between Latitude and Income per Capita




Source: Heston et al. (2002).

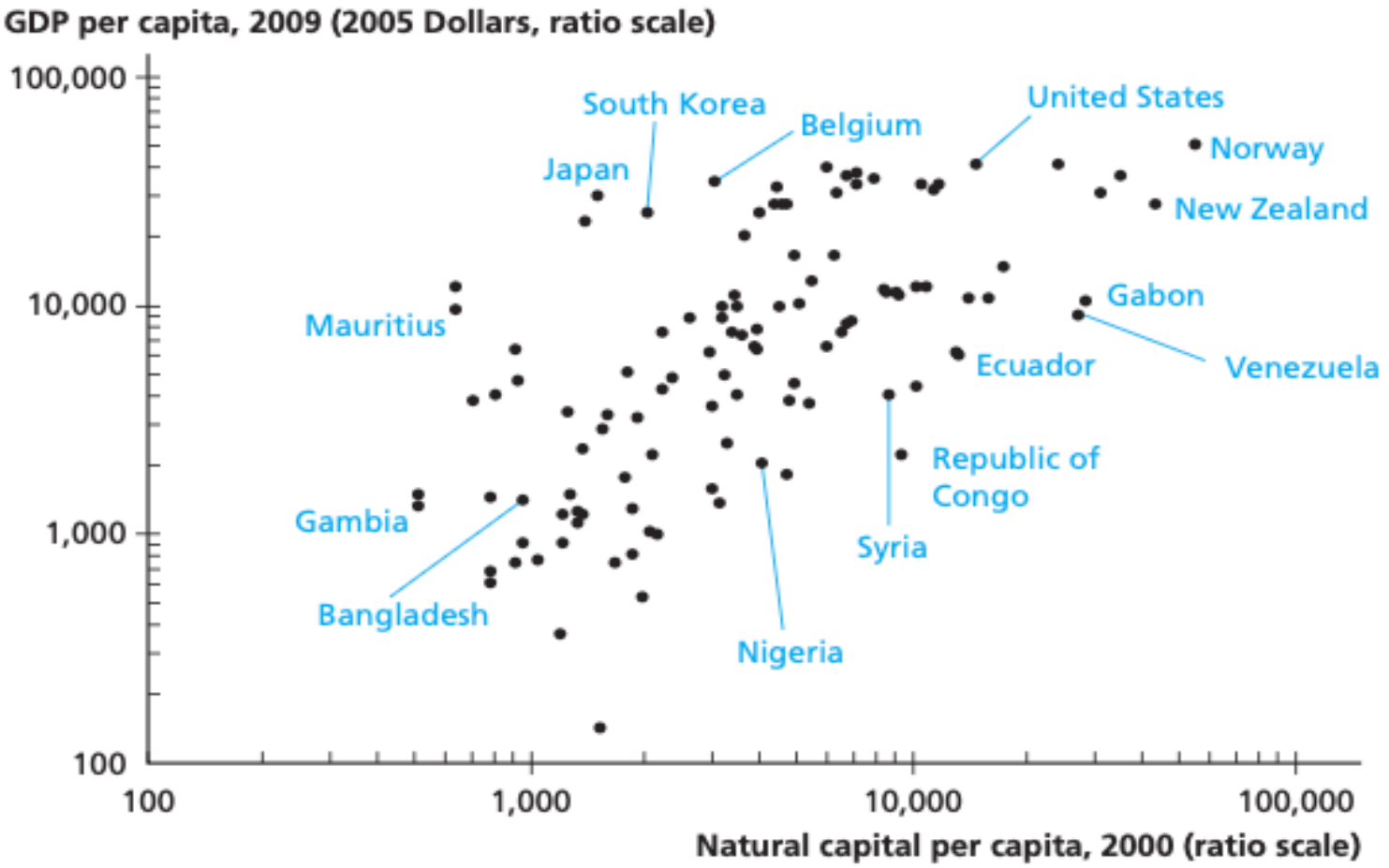
# The Mainstream View of Geography

- Perhaps the main supporters of the role of geography are Jeffrey Sachs and Jared Diamond:
  - "*Economies in tropical ecozones are nearly everywhere poor, while those in temperate ecozones are generally rich*" because "*Certain parts of the world are geographically favored. Geographical advantages might include access to key natural resources, access to the coastline and sea…, advantageous conditions for agriculture, advantageous conditions for human health.*"
  - "*The burden of infectious disease is higher in the tropics than in the temperate zones*".
    - E.g. Malaria.

# Is a temperate climate better for agriculture?

- Shouldn't it be the opposite?
  - Tropical areas have longer growing seasons.
    - And lusher vegetation.
- Disadvantages of tropical areas:
  - Rainfall is concentrated in tropical areas (eg, Indian monsoons), which is not good for farming
  - Frost plays a role in growing some crops.
- Of the types of crops, pastures, and animals deemed suitable for agriculture, the majority is from temperate climates.
  - "*Of the 56 large-seeded grass species that could become food grains, 39 are native to Eurasia*".
- But could this all be endogenous?
  - In the longer run, couldn't tropical countries adapt their crops to their climate?

# Natural Resources




*Sources*: World Bank (2006), Heston, Summers, and Aten (2011).

# The natural resources course

- The relationship between natural resources and income is tricky.

- Countries that rely more on natural resources (measured as share of income or exports) grow **slower** than others.
  - This is called the **resource curse**.
  - For example: In Africa, finding oil or diamonds is likely to lower the countries' income.

# Why are resources a curse?

- Possible answers:
  - Countries over-consume because of it, jeopardizing their future.
    - In other words: countries should save their resource windfall and invest it, but they consume it instead.
  - The **dutch-disease**: exploiting the resource impedes the growth of other sectors (manufacturing is the usual example).
    - When the resource is over, the country is backward and inapt in other sectors.
  - Politics: resource feed authoritarian governments and breed conflict over it (think of diamonds and oil in Africa)

# Conclusions on Geography

- Good arguments and evidence that geography matters for growth.

- However, we will see later that countries with similar geography and different institutions have different incomes, and that the relationship between geography and income changed through time.
- This fits in a world where institutions matter more than geography.

# What are institutions?

- Institutions are the rules of the game in economic, political and social interactions.

- Usual definition (from Douglas North):
  - "*Institutions are the rules of the game in a society or, more formally, are the humanly devised constraints that shape human interaction.*"
  - are humanly devised.
  - set constraints.
  - shape incentives.

# In practice, what do we call institutions?

- Usually:
  - Enforcement of property rights.
  - Legal systems.
  - Entry barriers.
  - Democracy vs. dictatorship.
  - Constraints on politicians and political elites.

- Some grey areas in practice:
  - Formal vs. informal institutions. Examples:
    - Formal: laws and constitutions.
    - Informal: several of the "rules" of British-style government are not formally written.
  - Grey area between "informal institutions" and "culture" (next lecture).
    - Where do social norms and conventions enter?

# Why institutions affect income?

- They set the incentives
  - To invest in capital, education, and health.
  - To allocate factors efficiently.
  - To invest in new technologies.

- In developed countries:
  - The government provides good education and health care.
  - If you invest in capital (e.g., build a factory), it is yours and you will get the returns.
  - If you invent a new technology, you can get a patent and royalties from its use.
  - Markets operate with enough freedom to allocate resources.

- In developing countries:
  - The government fails to provide public services.
  - The government cannot protect you from expropriation of your factory.
    - Sometimes the government itself does the expropriation.
  - People can copy your technology.
  - Corrupt or mismanaged governments allocate poorly factors of production.

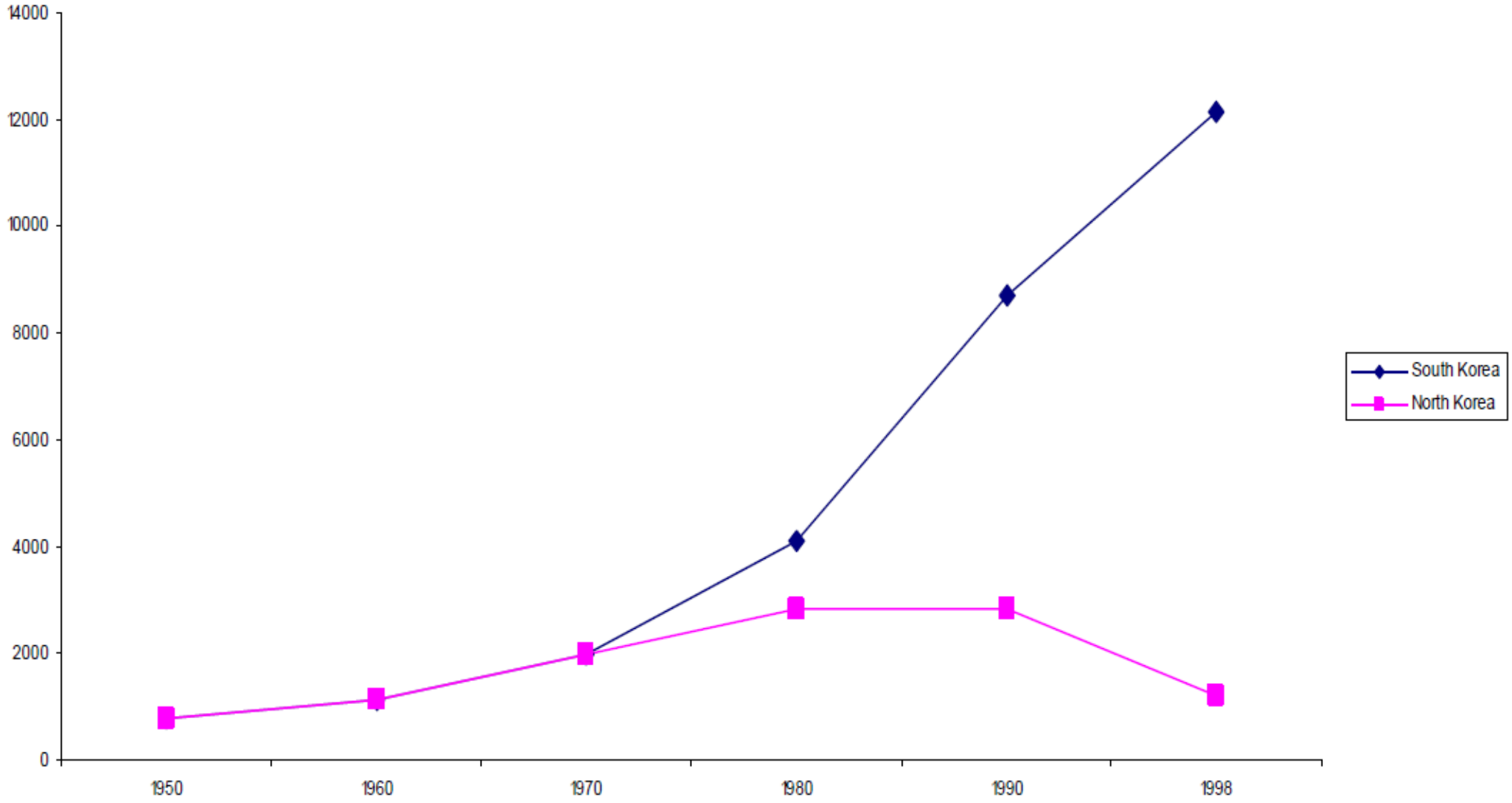
# Empirical evidence

- The arguments from before make a good case that institutions can matter.
  - A lot of the arguments are explained in the textbook (Ch. 12).

- But how would we see that in the data?
  - Case studies: convincing, but not necessarily general.
  - We can measure institutions and see if they jointly explain GDP per capita.
  - But how to measure institutions?
  - Institutions are (econometrically) endogenous

# Case Study: South and North Korea at night

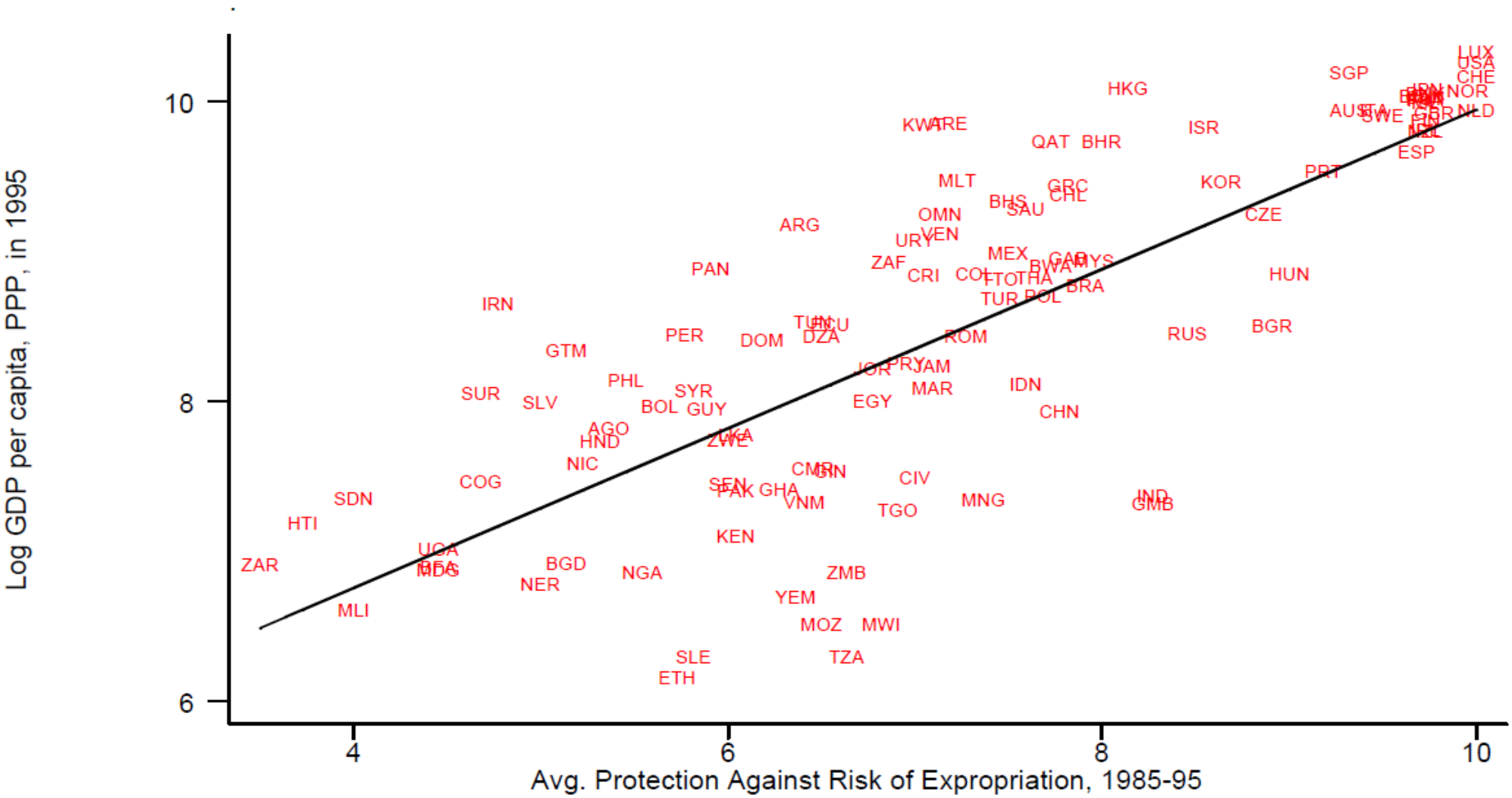
# Case Study:
# GDP per capita in South and North Korea



# Measuring Institutions

- Most used measures are subjective. Examples:
  - "Risk of expropriation", in a scale from 1 to 10.
    - International Country Risk Guide: a survey of international investors.
  - "Constraints on the executive", in a scale to 1 to 7.
    - Polity IV (a group of political scientists).

- A critique: these are **choices**, not the rules of the game.
  - Examples where the variables track who is in office, or specific policy.
  - Some countries go from lowest to (almost) maximum score in 15 years.


Log GDP per capita, PPP, in 1995
10
8
6
4
6
8
10
Avg. Protection Against Risk of Expropriation, 1985-95
LUX
USA
CHE
NOR
NLD
SGP
HKG
AUS
SWE
ESP
ISR
KOR
PRT
CZE
HUN
BGR
RUS
QAT
BHR
KWT
ARE
MLT
GRC
CHL
BHS
SAU
OMN
VEN
URY
MEX
ZAF
CRI
COL
TTO
THA
BWA
MYS
BRA
TUR
POL
ROM
ARG
PAN
IRN
PER
DOM
DZA
JOR
PRY
JAM
MAR
IDN
CHN
EGY
GTM
PHL
SYR
SUR
SLV
BOL
GUY
AGO
HND
NIC
ZWE
CMR
GIN
CIV
SEN
PAK
GHA
VNM
TGO
MNG
IND
GMB
COG
SDN
HTI
KEN
ZAR
UGA
BFA
MDG
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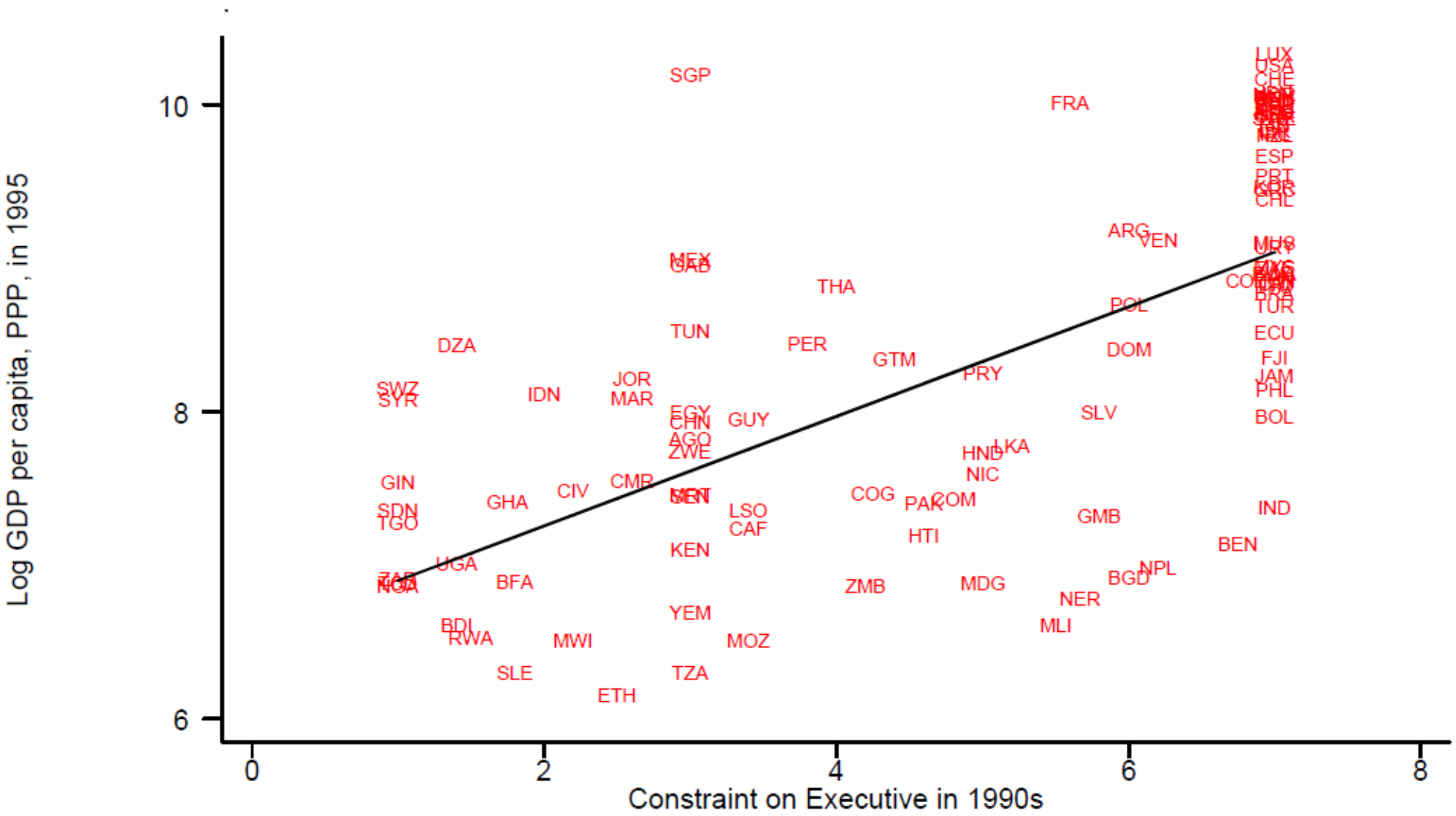
NER
NGA
ZMB
YEM
MOZ
MWI
MLI
SLE
ETH
TZA


Log GDP per capita, PPP, in 1995
10
8
6
0
2
4
6
8
Constraint on Executive in 1990s
SGP
FRA
LUX
USA
CHE
ESP
PRT
CHL
ARG
VEN
MEX
GAB
THA
POL
TUR
TUN
ECU
DZA
PER
GTM
DOM
FJI
JAM
PRY
JOR
MAR
IDN
SYR
PHL
SLV
BOL
EGY
CHN
GUY
AGO
ZWE
HND
LKA
NIC
GIN
CMR
CIV
GHA
COG
PAK
COM
GMB
IND
SDN
TGO
LSO
CAF
HTI
BEN
KEN
UGA
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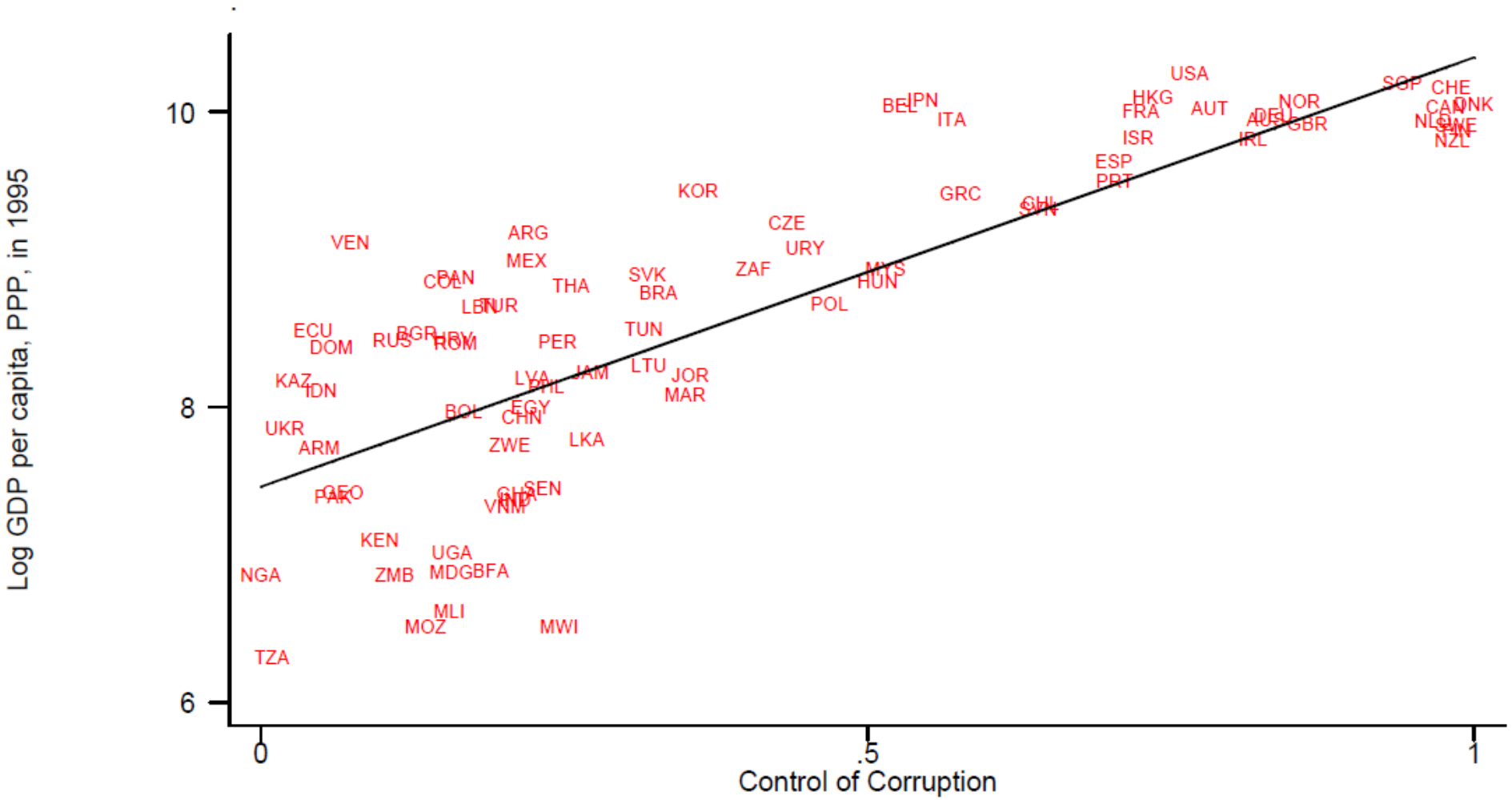
MLI
BDI
RWA
MWI
MOZ
SLE
TZA
ETH


Log GDP per capita, PPP, in 1995
10
8
6
0
.5
1
Control of Corruption
USA
SGP
CHE
HKG
JPN
BEL
ITA
FRA
AUT
NOR
DNK
CAN
AUS
DEU
GBR
NLD
SWE
FIN
NZL
IRL
ISR
ESP
PRT
GRC
KOR
CZE
URY
ZAF
MYS
HUN
POL
SVK
BRA
THA
MEX
ARG
VEN
COL
PAN
LBN
TUR
ECU
DOM
RUS
BGR
HRV
ROM
PER
TUN
KAZ
IDN
LVA
PHL
JAM
LTU
JOR
MAR
UKR
ARM
BOL
EGY
CHN
ZWE
LKA
GEO
PAR
SEN
GHA
IND
VNM
KEN
UGA
NGA
ZMB
MDG
BFA
MLI
MOZ
MWI
TZA

# Do the previous graphs imply that institutions cause GDP per capita?

- Probably not.
- Reverse causality.
  - Does the USA have more control of corruption because it is richer or the other way around?
- Omitted variables.
  - Geography (or culture, or something else) causes simultaneously better institutions and higher income.
- How to disentangle those?
  - An attempt: Acemoglu, Johnson and Robinson (2002)

# Acemoglu, Johnson, and Robinson (QJE, 2002)

- Starting at the late 15th Century, Western Europe colonizes most of the rest of the World.
- Different institutions imposed at different places.
- The paper looks at prosperity in countries that were colonies:
  - Before colonization.
  - Today.

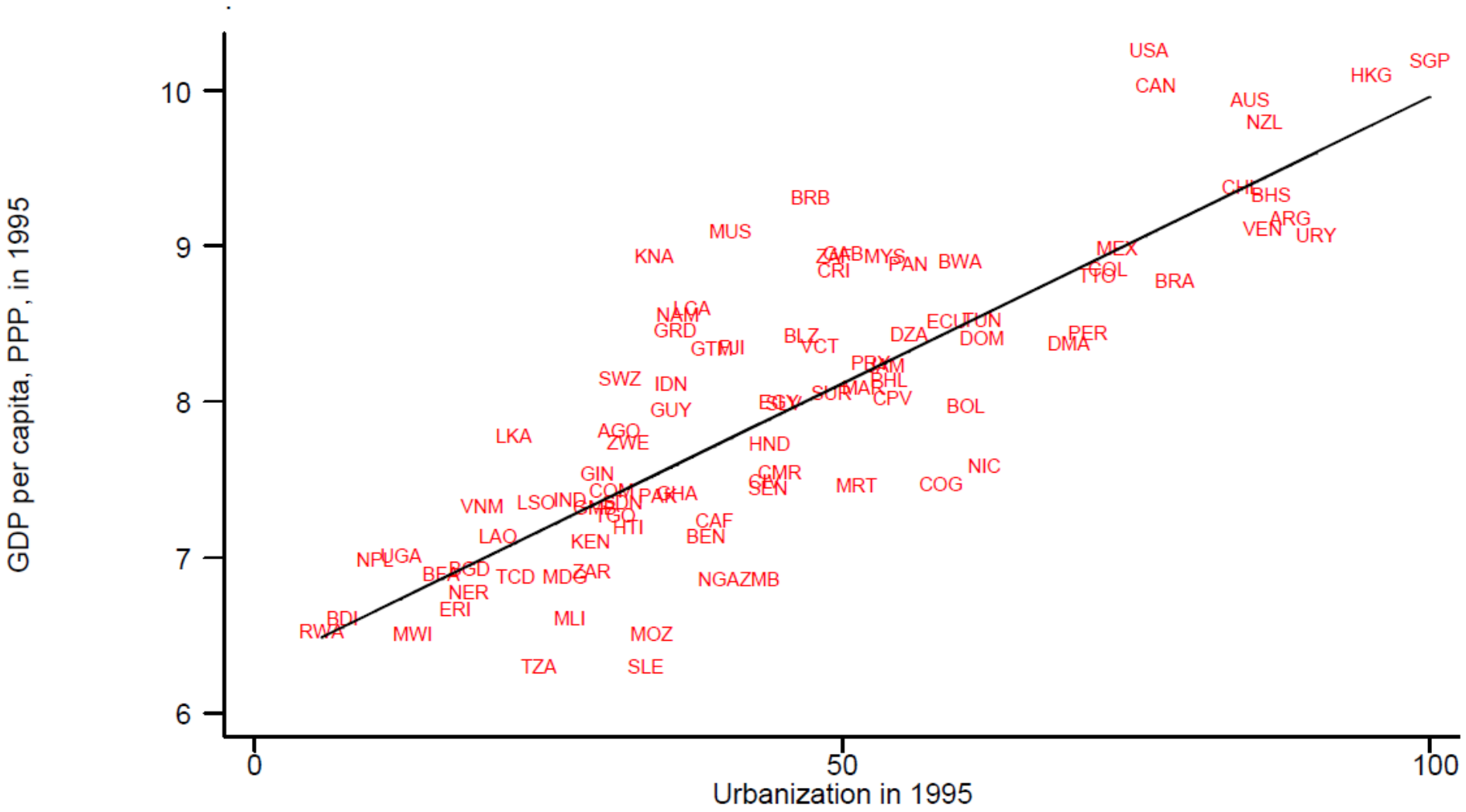
# How to measure prosperity in 1500?

- GDP data is not available (for most countries).

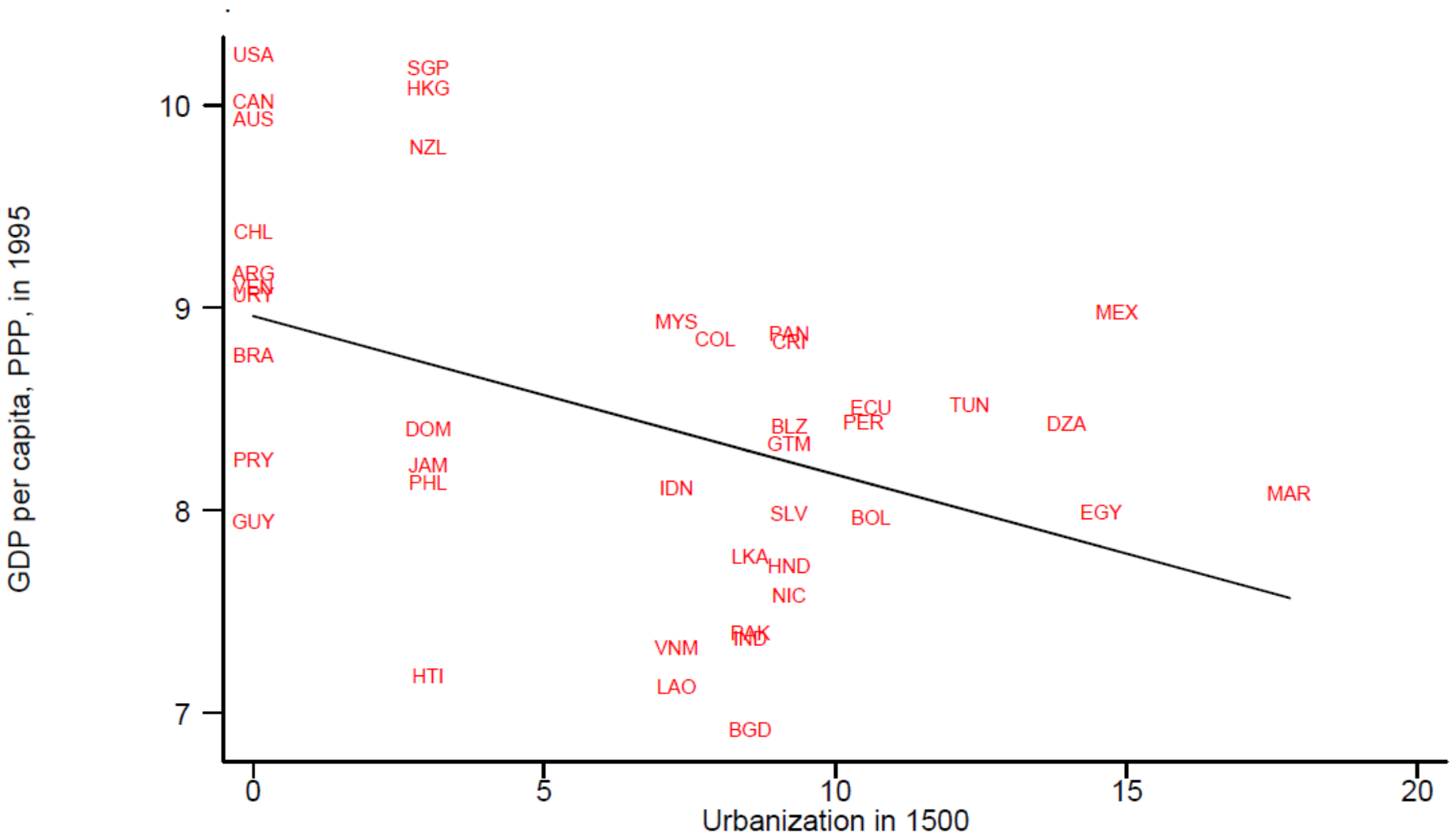
- **Urbanization** (% of pop. living in cities) serves as a proxy for GDP per capita.
  - Only societies with agricultural surplus and good transportation networks can be urbanized.
  - Urbanization is highly correlated with income (today and in the past).
  - Data is available for the past.

- Another variable is **population density**.
  - Before industrialization, increases in (total) income were accompanied by (almost offsetting) increases in population.

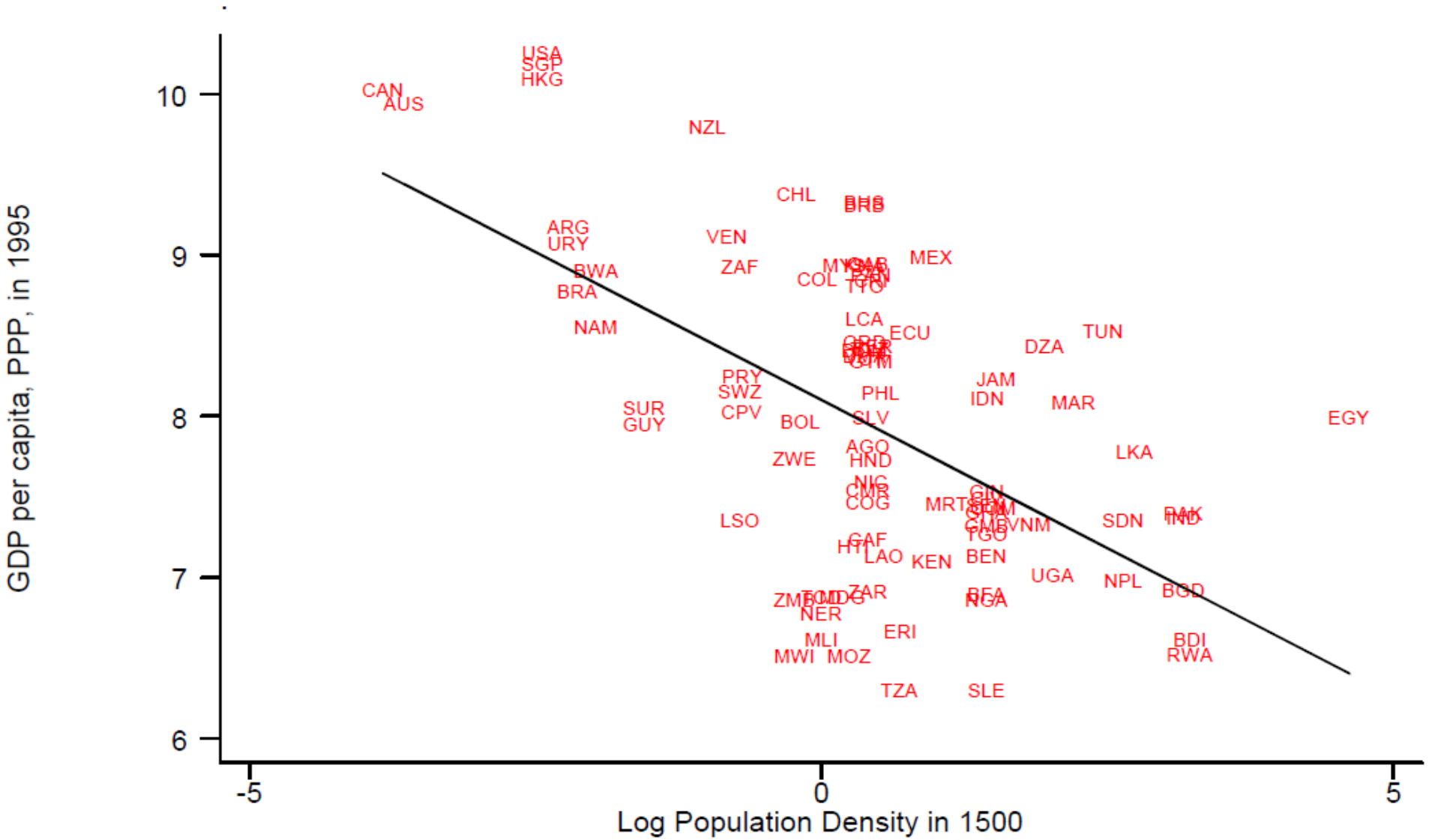
# Urbanization and income today



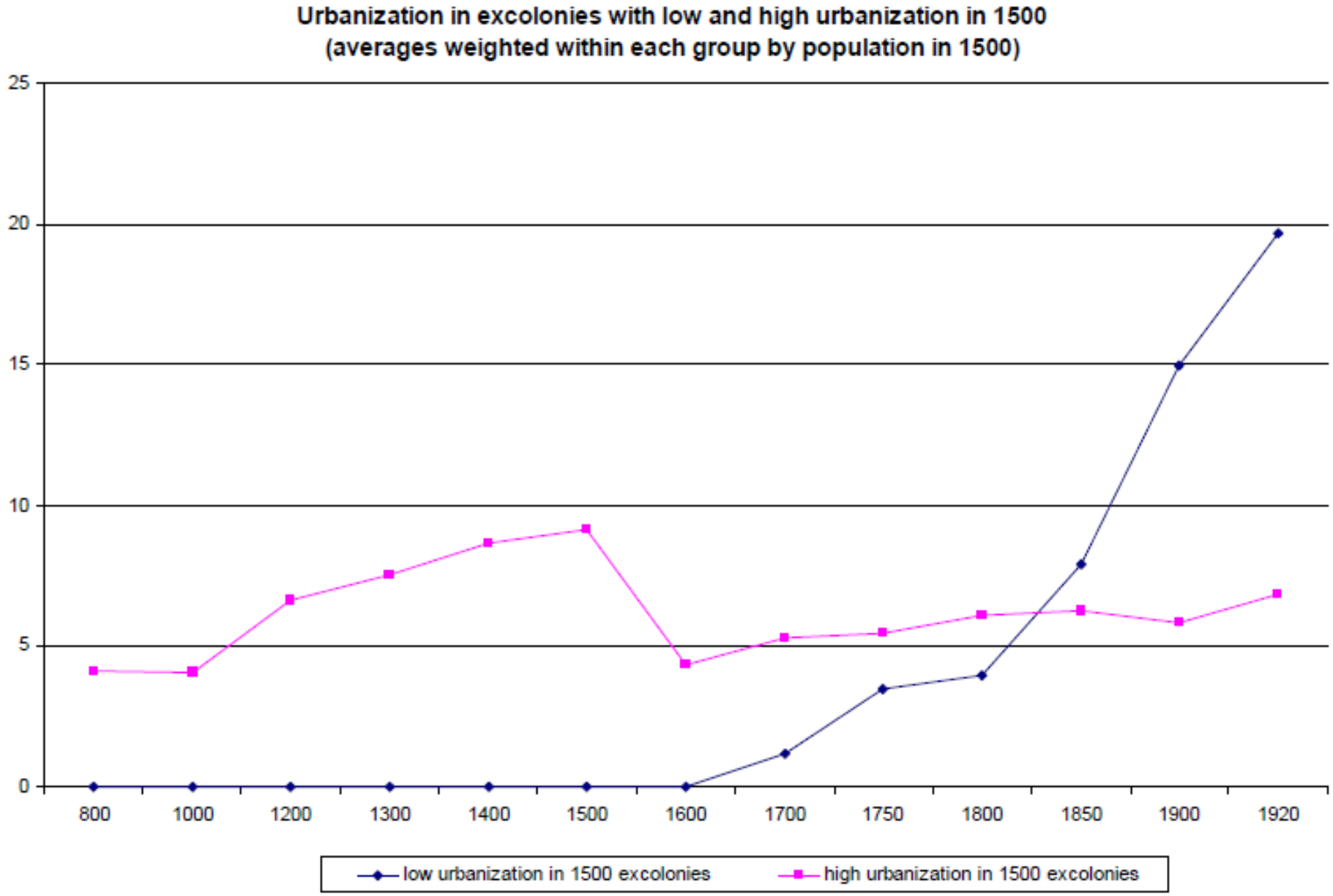
# The *Reversal of Fortune*: Urbanization (1500) vs. Income (1995)



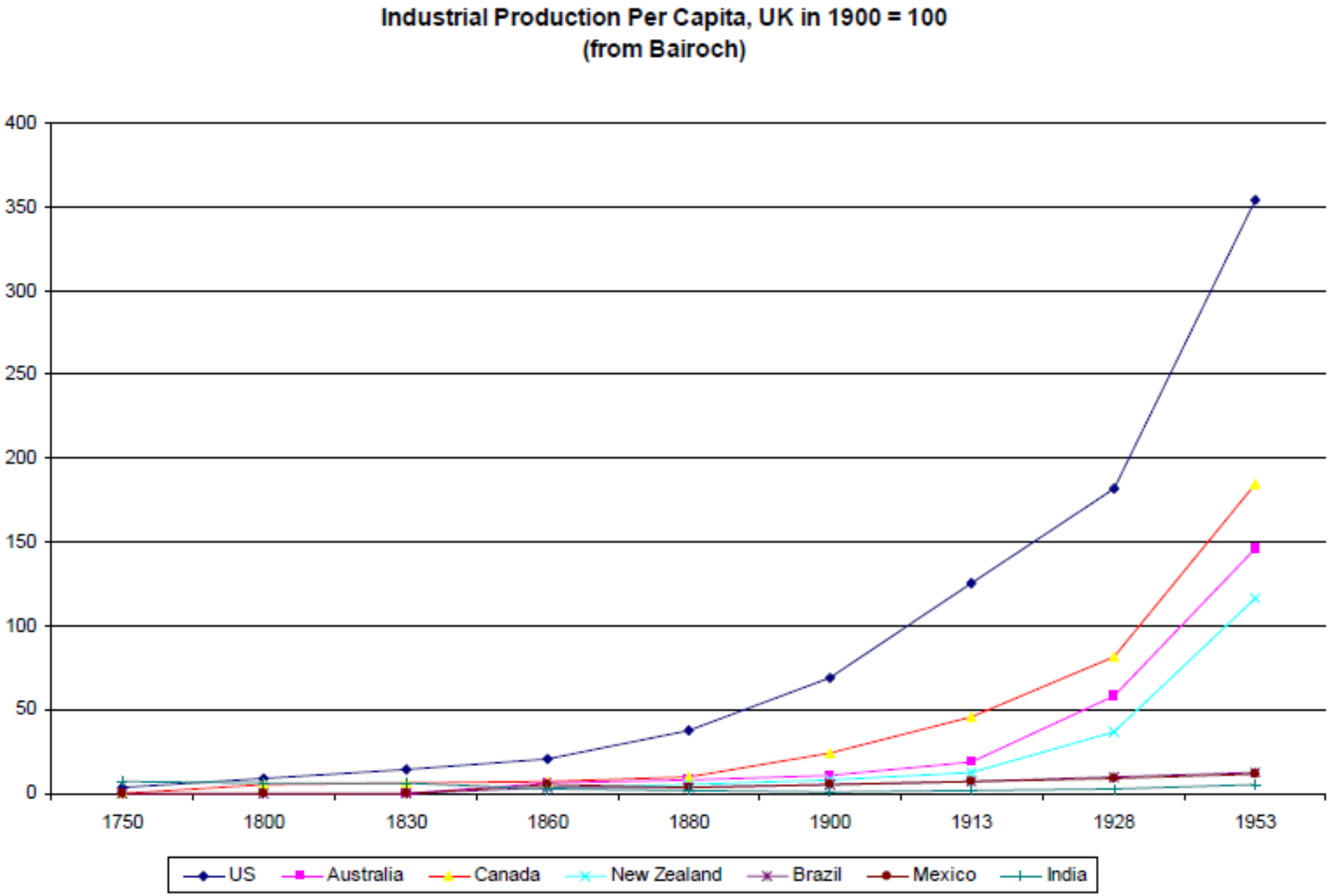
# The *Reversal of Fortune*: Pop. Density (1500) vs. Income (1995)



# When did the reversal happen?



# What happened? Industrialization.



# Gist of the institutions story

- What are "good" institutions?
  - Designed to secure property rights
  - Representative democracies, division of powers, etc.

- Societies that were rich in 1500 could be exploited via **extractive institutions** (risk of expropriation and holdup by the government)
  - Designed to maximize the rents to European colonists, not to maximize long-run growth
  - E.g. African slavery in the Caribbean, forced labor in South America.

# Gist of the institutions story

- Societies that were poor in 1500 were sparsely settled with **Inclusive institutions.**
  - Jamestown, Virginia: attempts at extractive institutions failed, and better ("inclusive") institutions were adopted.

- The institutions hypothesis, combined with institutional reversal, predicts a reversal in relative income across countries
  - Good institutions persisted from colonial times and allowed industrialization/prosperity later.

# Extractive vs. inclusive institutions in the colonialism Era

- Why was extraction more likely in relatively prosperous areas?

- Economic profitability
  - High pop density provided a supply of labor to work in agricolture or mining
  - Settlers leveraged existing tax administration system to levy high taxes

- Whether Europeans could settle or not
  - Malaria and yellow fever were endemic in many densely pop areas
  - When more europeans settled they demanded rights and protection

# The institutional reversal

URBANIZATION, POPULATION DENSITY, AND INSTITUTIONS

| | Dependent variable is: | | | | | |
|---|---|---|---|---|---|---|
| | Average protection against expropriation risk, 1985–1995 | | | Constraint on executive in 1990 | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | *Panel A: Without additional controls* | | | | | |
| Urbanization in 1500 | −0.107 | | −0.001 | −0.154 | | −0.037 |
| | (0.043) | | (0.059) | (0.066) | | (0.098) |
| Log population density in 1500 | | −0.37 | −0.37 | | −0.49 | −0.40 |
| | | (0.10) | (0.15) | | (0.15) | (0.25) |
| $R^2$ | 0.14 | 0.16 | 0.25 | 0.12 | 0.12 | 0.18 |
| Number of observations | 42 | 75 | 42 | 41 | 84 | 41 |

# Can Institutional differences explain the reversal in relative incomes?

| | Dependent variable is log GDP per capita | | | |
|---|---|---|---|---|
| Institutions as measured by: | Average protection against expropriation risk, 1985–1995 | | Constraint on executive in 1990 | |
| | (1) | (2) | (3) | (4) |
| | *Panel A: Second-stage regressions* | | | |
| Institutions | 0.52 | 0.88 | 0.84 | 0.50 |
| | (0.10) | (0.21) | (0.47) | (0.11) |
| Urbanization in 1500 | −0.024 | | 0.030 | |
| | (0.021) | | (0.078) | |
| Log population density in 1500 | | −0.08 | | −0.10 |
| | | (0.10) | | (0.10) |
| | *Panel B: First-stage regressions* | | | |
| Log settler mortality | −1.21 | −0.47 | −0.75 | −0.88 |
| | (0.23) | (0.14) | (0.44) | (0.20) |
| Urbanization in 1500 | −0.042 | | −0.088 | |
| | (0.035) | | (0.066) | |
| Log population density in 1500 | | −0.21 | | −0.35 |
| | | (0.11) | | (0.15) |
| $R^2$ | 0.53 | 0.29 | 0.17 | 0.37 |
| Number of observations | 38 | 64 | 37 | 67 |

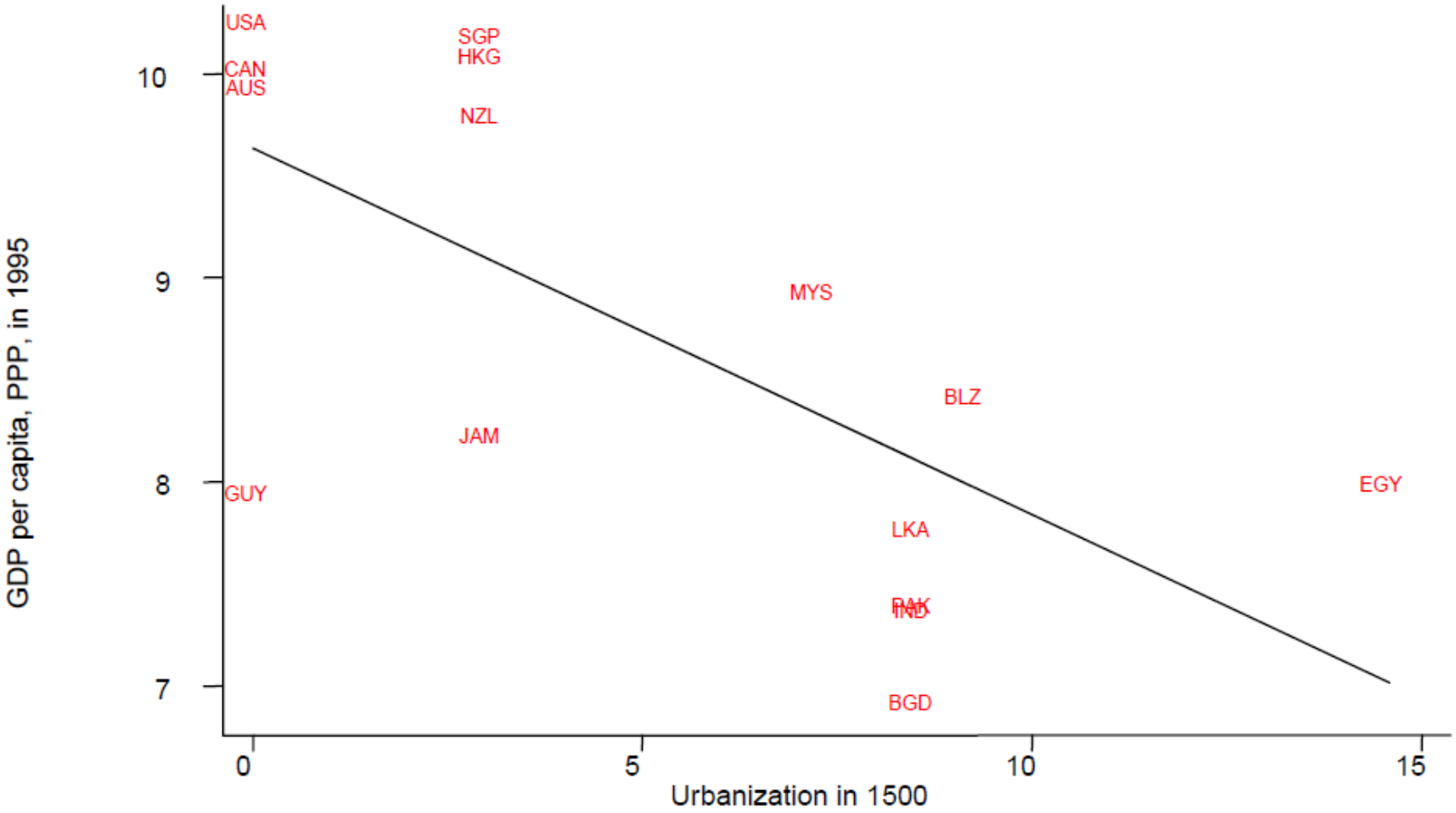
# Are British colonies special?

- Some claim that being colonized by Britain led to prosperity later.

- Acemoglu-Johnson-Robinson claim this is not the case.
  - The reversal is robust to controlling for the identity of the colonial power.
  - The same reversal can be seen when we look at only British colonies.

# Reversal among former British colonies

# Reversal among former British colonies



# Geography and the reversal of fortune

- The "simple" geography hypothesis cannot explain the result.
  - Geography is fixed through time, hence it cannot explain a reversal.

- The "sophisticated" geography hypothesis
  - Some geographical trait was "good" in 1500 turned into bad around 1800, and still is today.
  - The role of geography evolves with the arrival of appropriate technologies
  - European crops were spread after colonization, so having a geography like Europe changes from "bad" to "good".
    - But then the reversal would have happened in the 1500-1600s, not 1800s.
    - The reversal is related to industrialization, so agriculture can't explain much.

# Why some countries have better institutions than others?

- The view pushed by Acemoglu, Johnson, and Robinson is that bad institutions favor the powerful.
  - Even institutional change that will benefit the aggregate will create some winners and losers – and these potential losers block institutional reform.
  - People who hold political power enjoy the "rents" from extractive institutions.
  - And hence will keep them around, even when a change would benefit everybody else.

- Example from the US: after the end of Civil War and slavery, Southern landowners profited from having a large pool of poor, uneducated workers.
  - Hence they kept them poor and uneducated, and created institutions that restricted their mobility (to the North) and their participation on the polls.