

ECON B225: ECONOMIC DEVELOPMENT

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Natural Resources

Natural Resources and Economic Development

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- **Simple association:** More natural wealth $\Rightarrow$ More economic activity $\Rightarrow$ More growth
 - ▣ If you have more wealth in the ground, your society will develop industries and technology to use it, this leads to growth and development
 - ▣ Intuitive – Many examples of countries with enormous resource wealth that are economically developed today (US, Canada, UK (colonial extraction), others...)
 - But what about other rich countries with very little natural resource wealth (Example: Japan, Greece)
- **Other possible relationship:** More natural wealth $\Rightarrow$ Over specialized economies, crowds out innovation, leads to highly centralized returns $\Rightarrow$ Less development
 - ▣ AKA: The “Resource Curse”

Anecdotal evidence of “Resource Curse”

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- **Examples:**
 - ▣ Democratic Republic of Congo (copper, coltan, minerals, rubber, others)
 - ▣ Cameroon (oil, timber, rubber)
 - ▣ Nigeria (oil)
- **But economists don't come to conclusions based on anecdotal observations**
- **Note the resource curse is different from “Dutch Disease”**
 - ▣ Dutch Disease is about instability due to a discovery of natural resources
 - ▣ This can have negative development effects, but it's not the same story as the resource curse

Sachs and Warner (2001)

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- **Research Question:** Does natural resource abundance have an effect on economic growth and if so how much?

Previous Literature

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- **Mostly skipped**
 - Very short introduction
- **Highlight just previous work that supports their characterization of the status of the question**

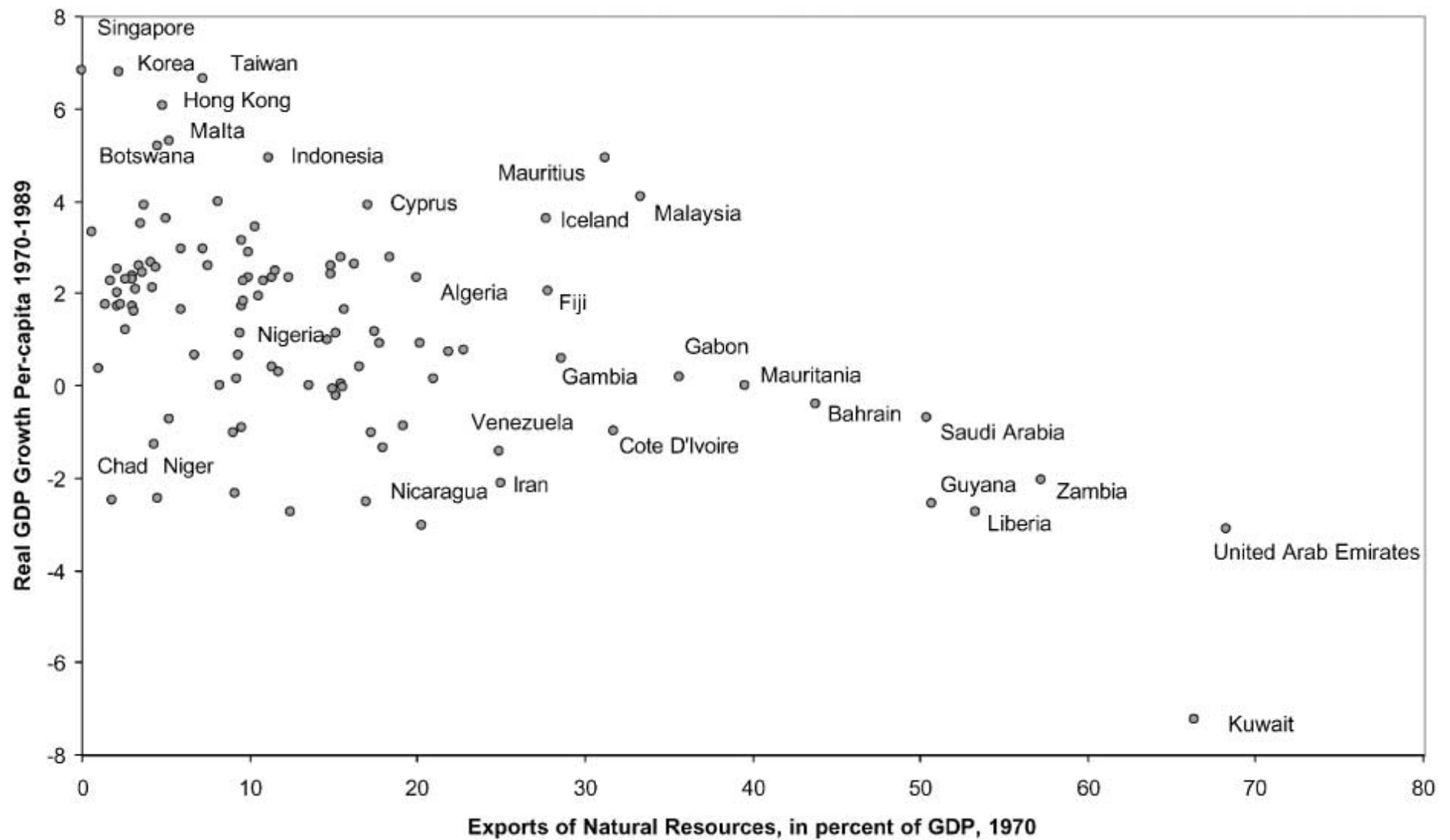


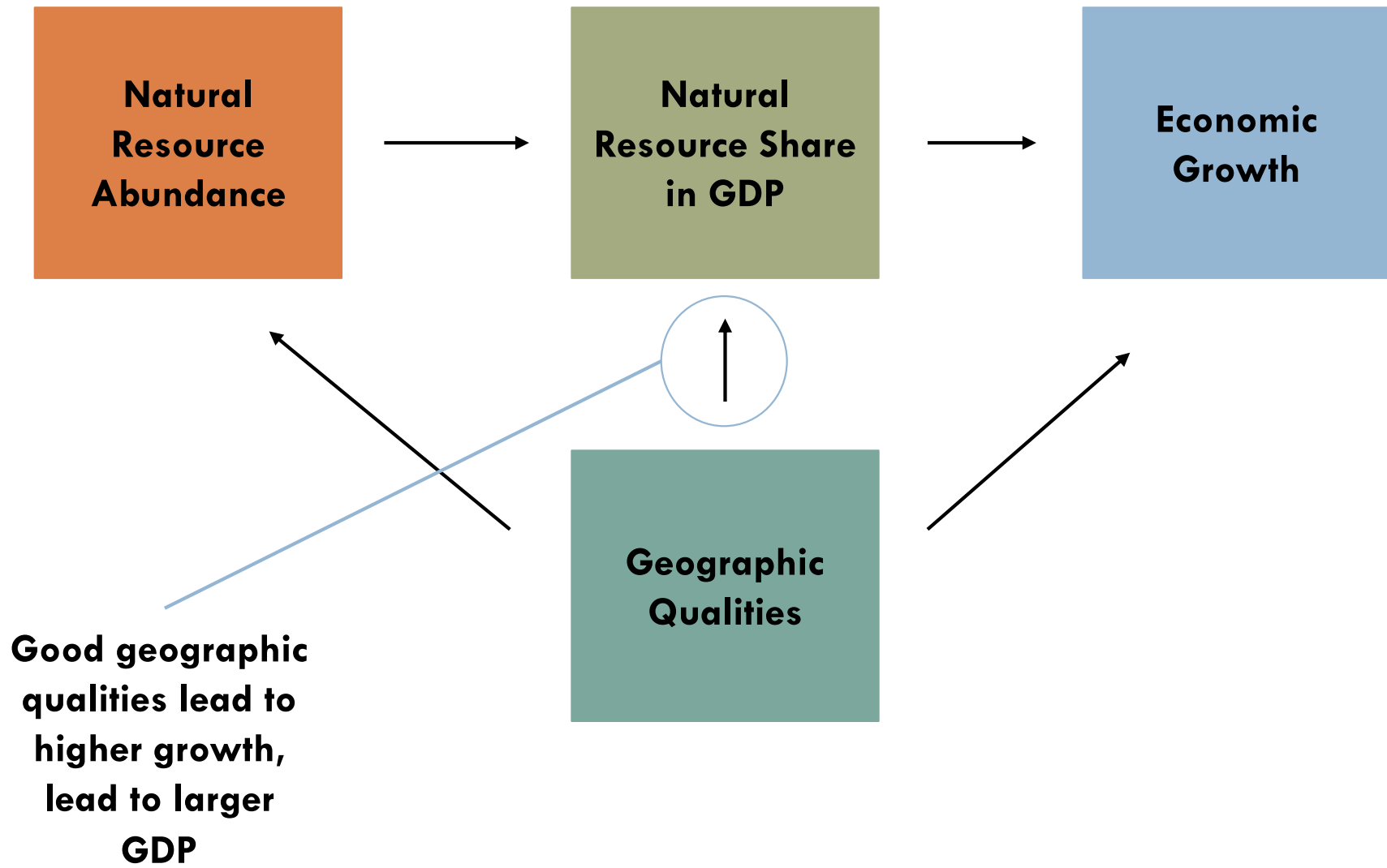
Fig. 1. Growth and natural resource abundance 1970–1989.

Motivation

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- **Casual observation and intuition**
- **Robust empirical relationship observed in the past**
 - ▣ Replicable
 - ▣ Robust to many controls
- **Highlight worry:**
 - ▣ Need to control for geographic characteristics when measuring the dependent variable the way they do

Sachs and Warner claim to control for this with including geographic control variables and/or controlling for past economic growth



Results (from previous paper)

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Table 1

Regression of economic growth on natural resource abundance, 1970–1990, controlling for growth in the 1960s^a

Log GDP 1970	– 1.8 (8.87)
Natural resource abundance	– 9.9 (6.50)
OPEN	1.3 (3.2)
Log investment	0.8 (2.4)
Rule of law	0.4 (3.8)
Terms of trade change	0.1 (2.1)
Growth 1960–1969	0.02 (0.2)
R^2	76%
N	69

Table 2

Growth regressions with the natural resource variable and the geography and climate variables.
Dependent variable: growth per-capita 1970–1989

	(1)	(2)	(3)	(4)	(5) ^a
Log GDP per pop '70	− 0.31 (1.00) ^b	− 0.20 (0.67)	− 0.37 (1.19)	− 0.69 (2.12) ^c	− 0.86 (2.51) ^c
GDP70 × OPEN 1 ^d	− 1.52 (3.34) ^e	− 1.68 (3.72) ^e	− 1.82 (4.08) ^e	− 1.13 (2.58) ^c	− 1.11 (2.33) ^c
Share of years open (OPEN)	16.21 (4.19) ^e	17.63 (4.64) ^e	18.77 (4.98) ^e	12.75 (3.44) ^e	12.45 (3.11) ^e
Natural resource abundance (N.R. exports/GDP in 1970)	− 0.05 (4.91) ^e	− 0.05 (4.29) ^e	− 0.04 (3.44) ^e	− 0.04 (3.72) ^e	− 0.03 (2.57) ^c
% Land w/in 100 km coast	0.63 (1.27)				0.60 (1.20)
Km to closest major port		0.00 (0.28)			0.00 (0.14)
% Land in geographical tropics			− 0.87 (1.77)		− 0.64 (1.23)
Falciparam malaria index, 1966				− 1.41 (2.86) ^e	− 1.22 (2.16) ^c
Constant	3.40 (1.42)	2.79 (1.17)	4.52 (1.79)	7.17 (2.66) ^e	8.48 (3.06) ^e
Observations	97	97	97	94	93
R ²	0.57	0.57	0.58	0.58	0.59

^aJoint significance test for Geography Variables in regression (5): $F(4,85) = 3.04$ P -value = 0.022.

^bAbsolute value of t -statistics in parentheses.

^cSignificant at 5% level.

^dGDP70 × OPEN is an interaction variable where GDP70 is the log of GDP per-capita in 1970 and OPEN is the shorter name for “share of years open” from Sachs and Warner (1995).

^eSignificant at 1% level.

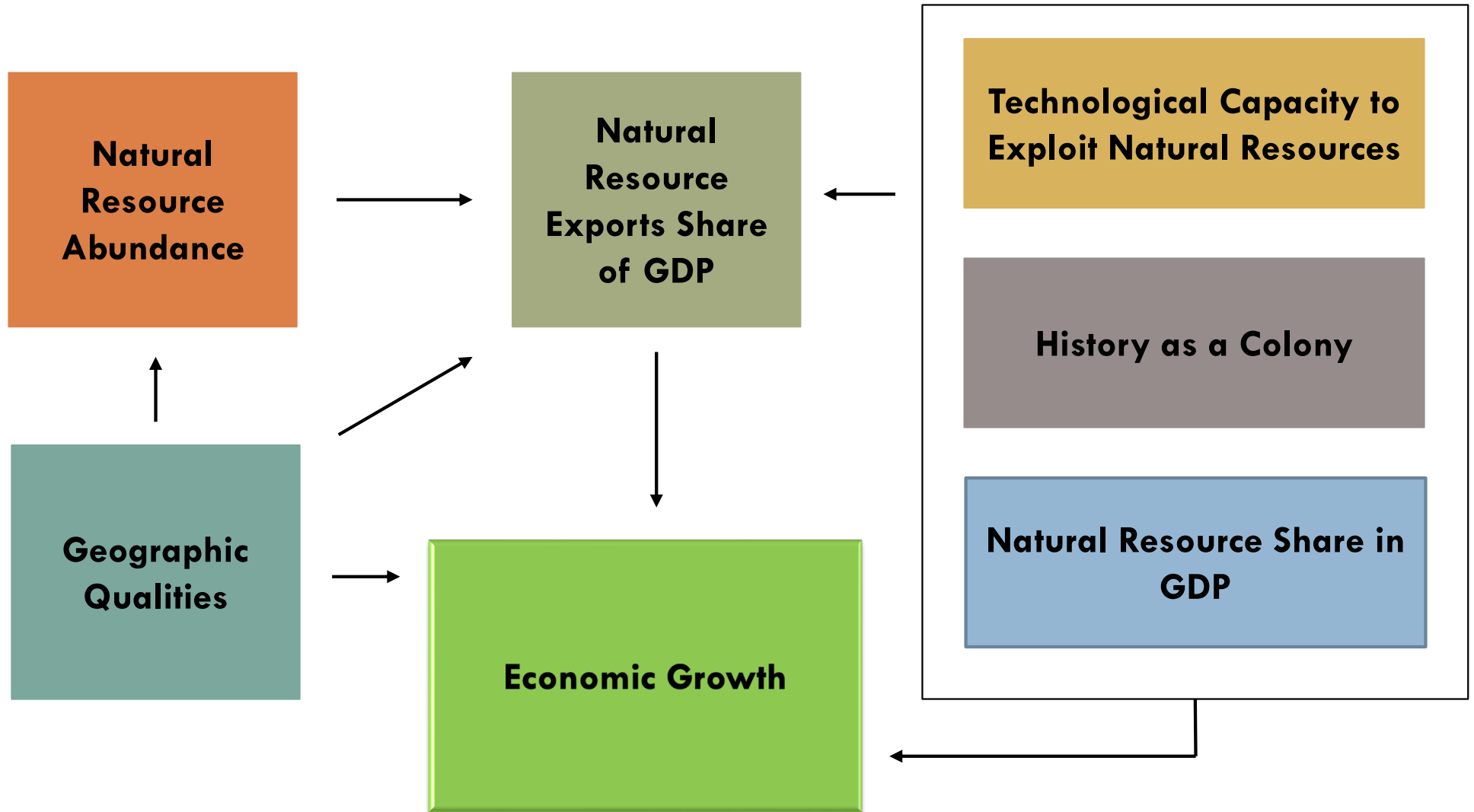
Problems with Identification

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- **This is an older paper. Looking back from 2020, there are a lot of problems here**
 - What are some of the issues you've identified?

Other Omitted Variables

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Some Criticisms from 2021

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- **Their estimates are *unidentified***
 - They have found some interesting conditional correlations.
 - But they have not found a causal effect or evidence of some “curse” beyond some association
 - We cannot say that the abundance of natural resources is causing this lack of growth in the way they seem to want to get to
- **That said, this is a very hard topic to study and if there was a better way then it would have been done**
 - No good instrument, can’t randomize, and you can’t exploit natural experiments.
 - Hard to measure the actual amount of natural resources in a country
- **Illustration of how hard it is to analyze the causal channels of macroeconomic growth**