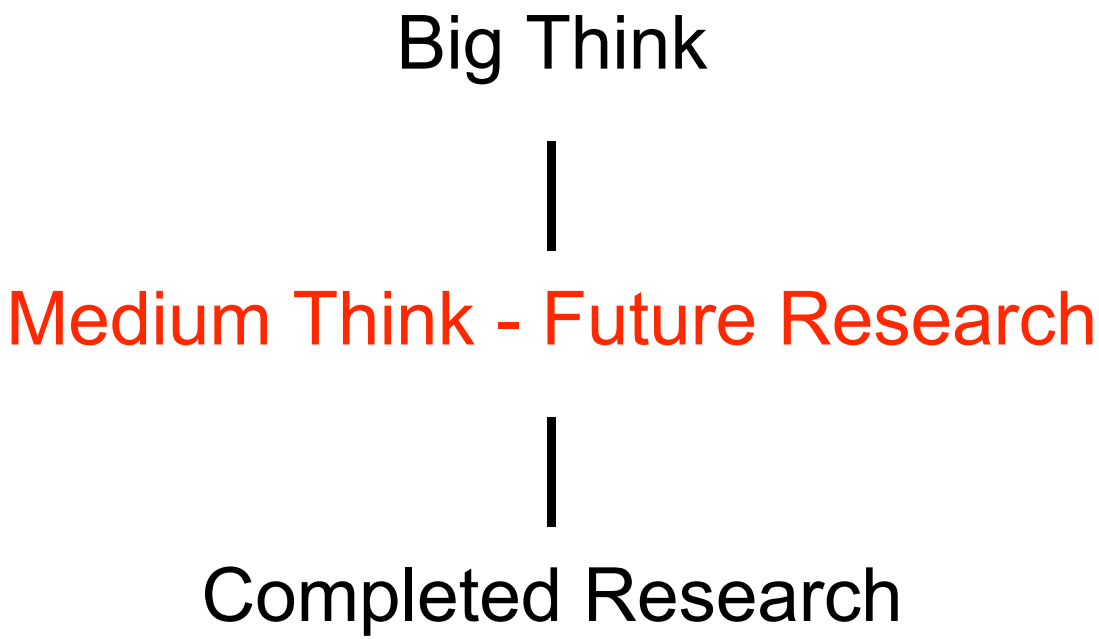
Barriers to Development in Africa: Geography and Policy

LAURA ALFARO, Harvard University and NBER
GIOVANNI PERI, University of California, Davis and NBER
ALAN TAYLOR, University of California, Davis and NBER


Big Think
Medium Think - Future Research
Completed Research

Starting Point

- Macroeconomic development accounting
  - Decomposition of Y/L gap
  - Gap in A (residual TFP) and MPK (measured)
    - How to estimate MPK? K/Y macro, K/Y sectoral, financial, micro
- Current consensus? “It’s all A”
    - It’s not factor accumulation and barriers thereto
  - A = “institutions”
    - It’s not policies, which are endogenous anyway
    - A endogenous? (colonialism, legal origins, culture, etc.)
- Institutions versus policies: False dichotomy?
    - Levels: correlation high, but isn’t 1.
    - Differences: Plenty of change in policies orthogonal to levels/changes in institutions. Why/how?
- Needed: A closer look
  - What is “policy space” available, despite history/institutions? What shapes it? When do transitions/accelerations stick?

Major Problem: Data

- Assumption that PWT data can be trusted
  - An issue for LDCs in general and especially Africa
  - E.g., China revisions
  - Price measures doubtful
    - PWT's PK appears flat globally (Eaton-Kortum), but trade literature finds huge trade costs. Both can't be right.
  - Quantity measures doubtful
    - Shadow economies very large, poorly measured
    - What are true Y and K in the shadow sector?
      - "De Soto hypothesis": MPK high in shadow sector
  - Input measures doubtful
    - Allowing for resources important (Caselli-Feyrer) but what is the right production function? Data?
    - Capital stock estimates: poor, mechanical; can we do better?
      - "Tanzi hypothesis": infrastructure K is badly maintained

ICP Revisions in Africa

Largest upward revisions

2005 PPP GDP ($ billions)	ICP '05	Previous estimate	*Diff.*
Congo, Rep.	12.0	5.0	*139%*
Gabon	17.8	9.1	*96%*
Nigeria	247.3	154.8	*60%*
Angola	55.0	37.2	*48%*
Equatorial Guinea	12.2	8.7	*40%*

Largest downward revisions

2005 PPP GDP ($ billions)	ICP '05	Previous estimate	*Diff.*
Zimbabwe	6.2	26.9	*-77%*
Gambia, The	1.1	2.9	*-64%*
Congo, Dem. Rep.	15.7	41.2	*-62%*
Guinea	8.8	21.2	*-59%*
Lesotho	2.6	6.1	*-57%*

PK and level of development

Does law of one price hold for K?

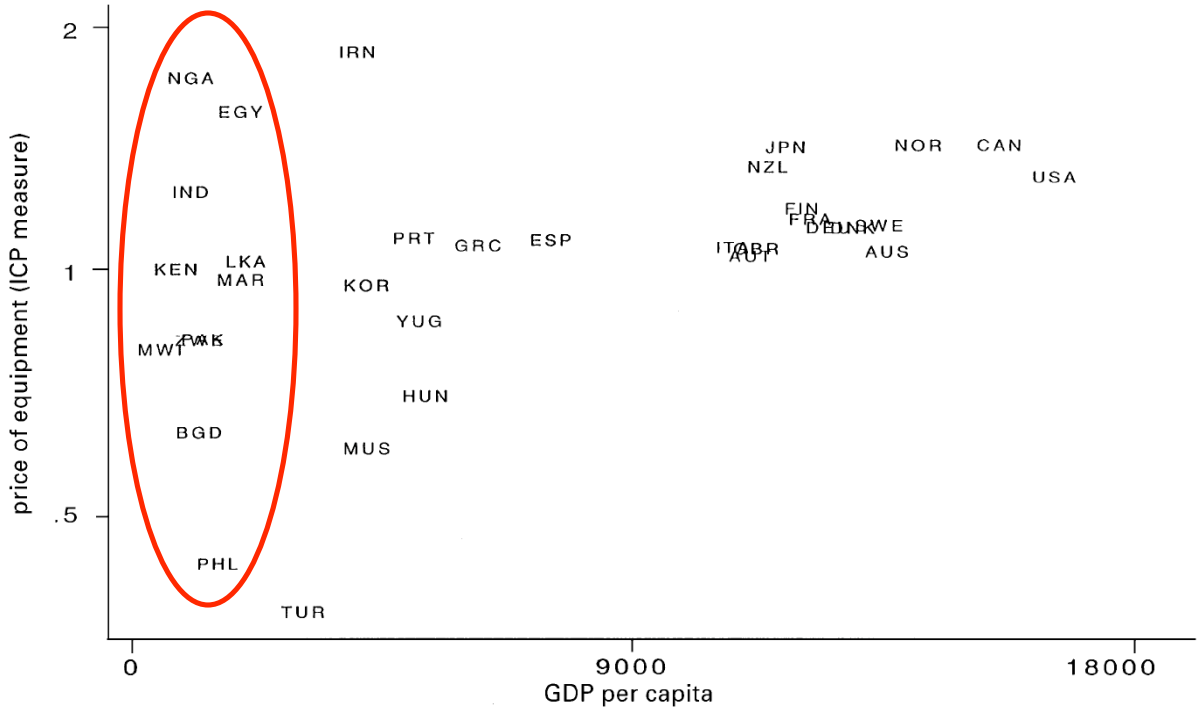


Fig. 6. Development and the price of equipment.

Responses: Eaton-Kortum (dismiss) versus Hsieh-Klenow (embrace).
We need some resolution of these conflicting views.
New ICP PK not out yet. Problems of ICP survey. Get new data?

Shadow economies

True Y may be much bigger than reported Y

SIZE OF THE SHADOW ECONOMY IN VARIOUS DEVELOPING, TRANSITION, AND OECD COUNTRIES

Developing Countries	Size of shadow economy as % of GDP, average over 1990–93
Africa	
Nigeria	68–76%
Egypt	
Tunisia	39–45%
Morocco	
Central and South America	
Guatemala	40–60%
Mexico	
Peru	
Panama	
Chile	25–35%
Costa Rica	
Venezuela	
Brazil	
Paraguay	
Colombia	
Asia	
Thailand	70%
Philippines	38–50%
Sri Lanka	
Malaysia	
South Korea	
Hong Kong	13%
Singapore	

Schneider & Enste 2000

Depreciation rates

True K may be much smaller than imputed K

column 1: Corruption index +10 => effective roads x 0.3

Table 5. The Effects of Corruption on Quality of Roads, 1980-95

Dependent variable: Paved roads in good condition as a percentage of total paved roads (Annual data)

Independent Variables	(1)	(2)	(3)	(4)
Constant	-1.03 (-0.150)	7.55 (1.01)	1.83 (0.193)	19.6 (1.82)
Corruption index	-7 (-8.68)	-2.56 (-2.20)	-6.51 (-4.74)	-0.32 (-0.17)
Public investment-GDP ratio	2.03 (2.65)	3.09 (4.00)	1.15 (0.53)	-0.2 (0.10)
Public investment-GDP ratio x corruption index			-0.16 (-0.44)	-0.58 (-1.56)
Real per capita GDP*		0.24 (6.38)		0.25 (6.57)
Adjusted R^2	0.186	0.326	0.184	0.329
Number of observations	322	269	322	269

Sources: IMF, *Government Finance Statistics*; *World Tables*; *Business International*; and *Political Risk Services*. The corruption index is taken from Mauro (1995) and *International Country Risk Guide* compiled by Political Risk Services. A high value of the index means a country has high corruption; t-statistics are in parentheses. Estimation technique is OLS.

* Indicates that the coefficient is multiplied by 100.

Tanzi & Davoodi 1997

Directions for Our Research Project(s)

- Data: Physical cost of capital
  - Is PK=PK* ?
    - PWT versus trade costs literature = total disagreement
    - Need for better direct estimates of PK than PWT
      - Traded versus nontraded component
      - Role of Balassa-Samuelson effects
      - Quality controls, used/new goods
    - How
      - Get better (raw) ICP data from World Bank, AfDB (?) and member countries and check
      - Do our own surveys in the field for selected goods/countries
        - » Purchasing records (firms, governments)
        - » Sales record (firms), other databases
        - » Would also like historical data (dynamics matter)
        - » Are recorded prices telling the truth?
        - » E.g.: IT, construction equipment,…?
      - South Africa pilot study

Directions for Our Research Project(s)

- Data: Financing costs
  - Is r=MPK equalized within/between countries?
    - Financial policies and their impacts on costs
      - Financial cost of capital
      - Some studies measure costs indirectly
      - Others assess impact of financial liberalization
    - Within- versus between-country intermediation
      - Hsieh-Klenow II on K misallocation US/China/India
        - » What about Africa?
    - Try to push this research forward with Africa focus
      - Census data?
      - Surveys of financial intermediaries?
      - Compare with multinational firms?
      - Role of microcredit?

Directions for Our Research Project(s)

- Data: Marginal product of capital
  - Literature uses MPK/MPK* = APK/APK*
    - Since Cobb-Douglas appears OK (Gollin)
  - But are the estimates of Y and K unbiased?
    - Probably not
      - Y measure is affected by shadow economy
      - K is also affected by shadow economy, but it is also sensitive to depreciation and capacity utilization, and age and quality correction
      - Also have to deal with aggregation issue
    - Expect these biases to matter in Africa
      - Seek better data (new or previously compiled)
      - Do some systematic analysis
        - » Construct new estimates (or at least controlled conjectures)
      - How big a difference could these biases make?

Directions for Our Research Project(s)

- Analysis: Trade policies
  - Round 1: heavily cited studies have data from pre-1990s.
    - Edwards, Sachs/Warner versus Rodrik/Rodrgiguez
  - Round 2…
    - Now add more recent experiences (Wacziarg-Welch)
    - Seems to be a large impact in countries with large imports of capital goods and intermediates and where barriers on these goods changed (Estevadeordal-Taylor, in progress)
  - What did that mean for Africa?

Directions for Our Research Project(s)

- Analysis: Geography
  - Once we have the improved measures of r = MPK gaps, we can ask what explains them?
    - Immutable geography/history or potentially-changeable policy?
    - And how big are they compared to other frictions?
  - Isolation?
    - Price differences between Africa-developed countries
      - » pure geography (unlikely?)
      - » non-tradability, policy-institutional barriers, GDP composition
    - Try to characterize the “isolation of Africa”
      - » “Gravity” barriers
      - » E.g., use price differences in goods and capital goods and compare with flows (trade) as well as differences in prices of less tradable factors (wages and returns to schooling).
      - » Is Africa more isolated in its access to physical capital than it is in its access to human capital (knowledge)?