Misallocation, Property Rights, and Access to Finance: Evidence from Within and Across African Countries

Şebnem Kalemli-Özcan, and Bent Sorensen

University of Houston and NBER, University of Houston and CEPR

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We ask two main questions:

1. Is capital efficiently allocated across firms within African countries?
   - If not, what is the extent of this misallocation and underlying reasons?

2. Does the degree of capital misallocation vary across African countries?
   - If yes, what are the underlying country-level factors?
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Why are these questions important?

- Recent studies argue that misallocation of resources across firms is one of the most important causes of underdevelopment (Restuccia and Rogerson (2008)).

- Some studies measure the return to capital (for a given country):
  - Banerjee and Duflo (2005), Udry and Anagol (2006), Kremer et al. (2009)

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Our contribution

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Preliminary results

- Many firms borrow at rates as high as 40% (nominal and real), where mean is 15%
  - Estimated MPK can be as high as 1300%, where mean is 70%
  - Firms with limited access to finance have higher returns to capital
  - Variation in strength of property rights and ease of doing business across countries explain the variation in the extent of misallocation
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- Important WB initiative between 1999 and 2007 to survey establishments from 80 developed and developing countries, mostly with face-to-face interviews

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Main Advantages of the Database

- Many variables for key firm characteristics such as size, foreign and state ownership, exports, age..
- Direct observations on the interest rates firms pay
- Questions on firms’ own perceptions of obstacles such as financing constraints, infrastructure, corruption...
  - In most of the literature financing constrains indirectly inferred from the balance-sheet data
- Main disadvantage of the data is that it is a stratified sample and not representative of the aggregate economy.
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Three measures of misallocation

- **Measure 1:** Cost of capital: interest rate and collateral requirement
  - Does your establishment currently have a line of credit or loan from a financial institution? If so what is the average annual interest rate?
  - Did your financial institution require collateral? If yes, what type of assets were required?
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Measures of misallocation

- **Measure 2:** MPK based on Cobb-Douglas production function (value added divided by replacement cost of capital)

  \[ MPK_{1i} = \alpha \frac{Y_i}{K_i}, \alpha = 1/3 \]

- **Measure 3:** Index of misallocation from Hsieh and Klenow (2009) (Total cost of labor divided by total capital income)

  \[ HK_i = \frac{\alpha \left( wL \right)_i}{1 - \alpha \left( RK \right)_i} \]

  Their index is 1+HK

- Productivity-Size correlation: Cannot perform Olley-Pakes or Levinsohn-Petrin since we have a single cross-section
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Collateral Requirements

Distribution of Misallocation
Country Level Evidence
Firm Level Evidence

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Misallocation, Property Rights, and Access to Finance: Evidence...
Nominal Interest Rates

Mean Standard Deviation

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Distribution of Nominal Interest Rates

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Misallocation, Property Rights, and Access to Finance: Evidence
Distribution of Real Interest Rates

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Distribution of Misallocation
Country Level Evidence
Firm Level Evidence

Germany

[Bar chart showing distribution of annual real interest rate with peak around 5%]
South Africa

Kalemli-Ozcan, and Sorensen

Misallocation, Property Rights, and Access to Finance: Evidence from Within and Across African Countries
## Descriptive Statistics

<table>
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<th></th>
<th>Obs.</th>
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<th>Min</th>
<th>Max</th>
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Distribution of MPKs

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Distribution of HK-index

Kalemli-Ozcan, and Sorensen
Misallocation, Property Rights, and Access to Finance: Evidence from Within and Across African Countries
Misallocation Across Countries: Correlates

- Corruption
- Protection of Investor rights
- Shareholder rights
- Legal rights
- Ease of doing business
Misallocation Across Countries: Correlates

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Corruption and Misallocation

Distribution of Misallocation

Country Level Evidence

Firm Level Evidence

Introduction

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Misallocation, Property Rights, and Access to Finance: Evidence from Within and Across African Countries

 coef = -11.047834, (robust) se = 5.3129673, t = -2.08
Doing Business and Misallocation

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Misallocation, Property Rights, and Access to Finance: Evidence from Within and Across African Countries
Misallocation Within Countries: Correlates from Obstacles

Regress firm-level measures of misallocation (HK, MPK, R-spread) on firm-level obstacles:

Do you think the following present any obstacle to the current operations of your establishment?

- Telecommunications, Electricity
- Transportation
- Access to land
- Tax rates, Tax administration
- Customs and Trade Regulations
- Functioning of the courts
- Labor Regulations
- Inadequately educated workforce
- Business licensing and Permits
- Access to finance (availability and cost)
- Political instability, Macroeconomic instability
- Corruption, Crime, Theft and disorder
- Practices of competitors in the informal sector
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Main Obstacles

Distribution of Misallocation
Country Level Evidence
Firm Level Evidence

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Misallocation, Property Rights, and Access to Finance: Evidence
Severity of Obstacles

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Misallocation, Property Rights, and Access to Finance: Evidence from Within and Across African Countries
South Africa

Distribution of Misallocation

Country Level Evidence

Firm Level Evidence

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Misallocation, Property Rights, and Access to Finance: Evidence from Within and Across African Countries
Nigeria

Distribution of Misallocation
Country Level Evidence
Firm Level Evidence

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Misallocation, Property Rights, and Access to Finance: Evidence from Within and Across African Countries
### Firm-Level Determinants of Misallocation (log HK-index)

<table>
<thead>
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<tbody>
<tr>
<td><strong>Access to Finance</strong></td>
<td>0.089***</td>
<td>0.083***</td>
<td>0.111***</td>
<td>0.082***</td>
<td>0.048**</td>
<td>0.075***</td>
<td>0.039**</td>
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<td></td>
<td>(0.011)</td>
<td>(0.012)</td>
<td>(0.012)</td>
<td>(0.013)</td>
<td>(0.020)</td>
<td>(0.012)</td>
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<td><strong>Electricity</strong></td>
<td>0.021*</td>
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<td>-0.021</td>
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<td></td>
<td>(0.013)</td>
<td>(0.013)</td>
<td>(0.013)</td>
<td>(0.013)</td>
<td>(0.030)</td>
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<td>-0.213***</td>
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<td></td>
<td>(0.029)</td>
<td>(0.030)</td>
<td>(0.041)</td>
<td>(0.048)</td>
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<td>-0.006***</td>
<td>-0.002</td>
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<td>(0.001)</td>
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<td><strong>Small</strong></td>
<td>0.186***</td>
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<td><strong>Government</strong></td>
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<td>-0.009***</td>
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<td><strong>Foreign</strong></td>
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<td>(0.000)</td>
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<td><strong>Export</strong></td>
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<td><strong>Listed</strong></td>
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<td></td>
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<td><strong>Constant</strong></td>
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<td>0.305***</td>
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<td>(0.039)</td>
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<td>(0.084)</td>
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<td><strong>Country Dummies</strong></td>
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<td>no</td>
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</table>

- \* p < 0.1
- \** p < 0.05
- \*** p < 0.01

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Distribution of Misallocation

Country Level Evidence

Firm Level Evidence

MPK and Country Effects

Swaziland

Guinea-Conakry

Rwanda

Gambia, The

Senegal

Mali

Burundi

Congo, Democratic Republic of

Mauritania

Guinea-Bissau

Tanzania

Uganda

Botswana

Mozambique

Kenya

Namibia

Zambia

Nigeria

Angola

Ghana

Republic of South Africa

-2

-1

0

1

2

3

4

e( R-square-MPK | X )

e( Strength of Investor Protection | X )

coef = -.04400687, (robust) se = .01198886, t = -3.67
We provide preliminary evidence from 21 African countries and 4500 firms on the extent of capital misallocation.

- Many firms borrow at rates as high as 40% (nominal and real), where mean is 15%.
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Variation in strength of property rights and ease of doing business across countries explain the variation in the extent of misallocation.

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Next to do:

- Go to Africa!
- Time-series data: ORBIS
- Try to understand/differentiate between property rights and access to finance and see what are the country level dummies capturing?
- Work on the comments we will be getting now.