Towards a World Atlas of Government Financial Institutions

Deborah Lucas
Sloan Distinguished Professor of Finance and Director MIT Center for Finance and Policy
Overview

• Update on the MIT Center for Finance and Policy (CFP)

• Towards a World Atlas of Government Financial Institutions
  – Motivation
  – Project overview
  – Some recent findings on development banks

• Discussion
MIT Center for Finance and Policy

• An interdisciplinary initiative led by Sloan’s finance group
  – Deborah Lucas (Director)
  – Doug Criscitello (Executive Director)
  – Andrew Lo, Robert Merton, Andrei Kirilenko (co-directors)

• Mission is to produce and disseminate:
  – **Original and timely research** at intersection of finance and policy that will lead to improved decision-making by policymakers and regulators
  – **Innovative educational materials and curricula** that will make state-of-the-art financial tools relevant and accessible to students of public policy, employees of public institutions, and policymakers
CFP Research Tracks

- Evaluation and management of government financial institutions
  - e.g., government loan, guarantee and insurance programs, state pensions, state-owned banks, sovereign wealth funds
- Regulation of financial markets and institutions
  - e.g., evaluation of effects of proposed regulatory changes
- Measurement and control of systemic risk
  - e.g., forensics on causes of crashes, design of early detection systems
  - Consortium for Systemic Risk Analytics
Some ongoing CFP research projects

- **World Atlas of Government Financial Institutions** (Lucas)
  - Cataloging and comparing government financial activities and exposures internationally

- **Designing Better Retirement Products** (Merton)
  - Reverse mortgages (with Lucas)

- **Systemic Risk Dashboard** (Lo)

- **CanceRX** (Lo)
  - Exploring public/private risk-sharing to improve funding models for drug development
Website:
http://cfpweb.mit.edu

• Activity highlights
  – Distinguished Speaker series
  – Visiting scholars
  – New student club on Finance and Policy
  – Annual CFP conferences
    • Upcoming in September: “Financial Products and Policies for an Aging Population”

• Governments allocate a large share of societies’ capital and risk through their credit and insurance-related activities
  – e.g., mortgages, student loans, state-owned banks, pension and deposit insurance, other contingent guarantees

• Government financial institutions are opaque and represent a significant source of systemic risk

• Their costs and risks are poorly understood and inadequately accounted for

- There has been surprisingly little research in this area
- No comprehensive measure of the size of government credit market activities for most countries
- No consistent framework internationally for measuring associated subsidies and risks
- Little evaluation of whether programs are effective and what could make them more so
A decent compilation of government financial activities is available for the U.S.

- Excludes the Federal Reserve's emergency lending facilities
- Excludes federal health/life/P&I insurance
Largest U.S. financial institutions

Assets or Insured Obligations ($000s)

- **Federal Government**: $18,000,000,000
- **Bank of America**: $2,000,000,000
- **JPMorgan Chase**: $2,000,000,000
- **Citigroup**: $2,000,000,000
- **Wells Fargo**: $2,000,000,000
- **Goldman Sachs**: $2,000,000,000
The IMF has also compiled some data, e.g.,: Outstanding Gov’t-Guaranteed Bonds and Debt of Gov’t-Related Enterprises for OECD Countries (percent of GDP)

(Excludes contingent guarantees and national credit programs)

Source: IMF 2012 Fiscal Monitor
Phase 1: Data and methodology

• Create templates for data collection and questions to ask that:
  – Encompass the different institutional structures in different places
  – Include metrics that are as consistent and comparable across countries as possible

• Engage a small army of researchers (most of them MIT students from around the world) to come back with the answers

• Develop methodologies that can be consistently applied across institutions and countries to quantify subsidies and risks

• Compile the results and make them available to researchers, policymakers and the public
Phase 2: Analysis

- Use the data and methodologies to begin to evaluate:
  - What are the effects of government financial institutions on economic activity, efficiency and growth?
  - What works, what doesn’t, why?
  - How large are the subsidies?
  - What are the risk exposures to countries?

- Make the results accessible to a wide audience
Challenges

- Counting is not easy…
- Defining the right scope
  - Explicit guarantees only? Or also implicit guarantees?
  - What types of insurance to include? (health insurance probably out)
  - What level of detail? (asset size, default rates, profitability data)
- How to treat fractional government ownership and control of banks?
- Choosing metrics and methods that are informative, but as simple as possible to explain
Status

• Significant work on methodologies for subsidy estimation and risk evaluation

• Substantial progress on development banks
  – Papers on methodology for subsidy estimates, and on the EBRD and the Korean Development Bank
  – Work started on BNDES

• Some data collection for Korea, MENA, the U.S.
Development banks

- Huge source of capital for infrastructure and other large investments around the world
- Ranks are growing with new Asian Infrastructure Investment Bank
  - Started by China, in cooperation with more than 50 other founding member countries
- Single country and multilateral
  - Single country banks had over $2 trillion in assets in 2009
  - Multilateral banks had over $1.2 trillion in assets in 2012
## Development banks

<table>
<thead>
<tr>
<th>Table 1: Assets of Selected Multilateral Banks in 2012 (EUR billions)</th>
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<tbody>
<tr>
<td><strong>African Development Bank</strong>²</td>
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<tr>
<td><strong>Asian Development Bank</strong>²</td>
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<tr>
<td><strong>European Bank for Reconstruction and Development</strong></td>
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<td><strong>European Investment Bank</strong></td>
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<tr>
<td><strong>Inter-American Development Bank</strong>²</td>
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<tr>
<td><strong>World Bank Group</strong>²</td>
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<tr>
<td><strong>Intl Bank for Reconstruction &amp; Development</strong></td>
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<tr>
<td><strong>International Development Association</strong></td>
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<tr>
<td><strong>International Finance Corporation</strong></td>
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</tbody>
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² UA 1 = EUR 1.2
² USD 1 = EUR 0.77
Example:

Cost of Callable Capital for the EBRD

- Multilateral development banks rely on guarantees in the form of **callable capital** to absorb losses and keep borrowing costs low
  - But most funding for investments obtained by issuing debt
- Callable capital allows the bank to demand payments from its members when equity falls below a threshold
  - Member countries are writers of the call options
- Governments usually recognize **no cost of the call options until they are exercised**, although options represent a significant **upfront** cost to governments
## Callable capital and membership

<table>
<thead>
<tr>
<th>EBRD Top Capital Contributors</th>
<th>Capital subscription (000 Euros)</th>
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<tbody>
<tr>
<td>United States of America</td>
<td>3,001,480</td>
</tr>
<tr>
<td>France</td>
<td>2,556,510</td>
</tr>
<tr>
<td>Germany</td>
<td>2,556,510</td>
</tr>
<tr>
<td>Italy</td>
<td>2,556,510</td>
</tr>
<tr>
<td>Japan</td>
<td>2,556,510</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>2,556,510</td>
</tr>
<tr>
<td>Russian Federation</td>
<td>1,200,580</td>
</tr>
<tr>
<td>Canada</td>
<td>1,020,490</td>
</tr>
<tr>
<td>Spain</td>
<td>1,020,490</td>
</tr>
<tr>
<td>European Investment Bank</td>
<td>900,440</td>
</tr>
<tr>
<td>European Union</td>
<td>900,440</td>
</tr>
</tbody>
</table>
Callable capital is valued with a generalized options-pricing approach (see D. Lucas, “Evaluating the Cost of Government Credit Support: The OECD Context.”)

- Structural model based on current assets, asset volatility, dynamic capital structure adjustment rules, call threshold

Cost of committed callable capital over 20 years for EBRD estimated to be **EUR 7.2 billion to member countries** (but governments recognize no upfront cost)

- Annual probability of call estimated to be about 6 percent
- Significant uncertainty around point estimate, sensitive to parameter assumptions