Causes and Effects of International Banking: What Can We Learn From Micro Data?

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The issue

- **The recent crisis on international financial markets has renewed interest in a better understanding of bank internationalization.**
  1. What are the **bank-level** and the **country-level determinants** of cross-border banking?
  2. What are the effects of international banking on bank **performance** at home?
  3. What have been the **responses** of international banks to the crisis?
- **Because bank heterogeneity is important, these questions cannot be answered without micro data at hand.**
  - We present the results of previous research combining detailed information on banks' **international** exposures with other bank-level data.

Research presented in the following uses detailed bank-level data on German banks' foreign activities.

- The "External Positions Report" (*Auslandsstatus*), provided by the Deutsche Bundesbank
- The data serve as an input to the BIS's International Banking Statistics.
- In 2002, minimum reporting thresholds for foreign exposures have been abolished:
  - Exact information about expansion along the extensive margin
- Panel data with
  - Monthly data starting in 2002.
  - 2,235 banks
  - All countries worldwide

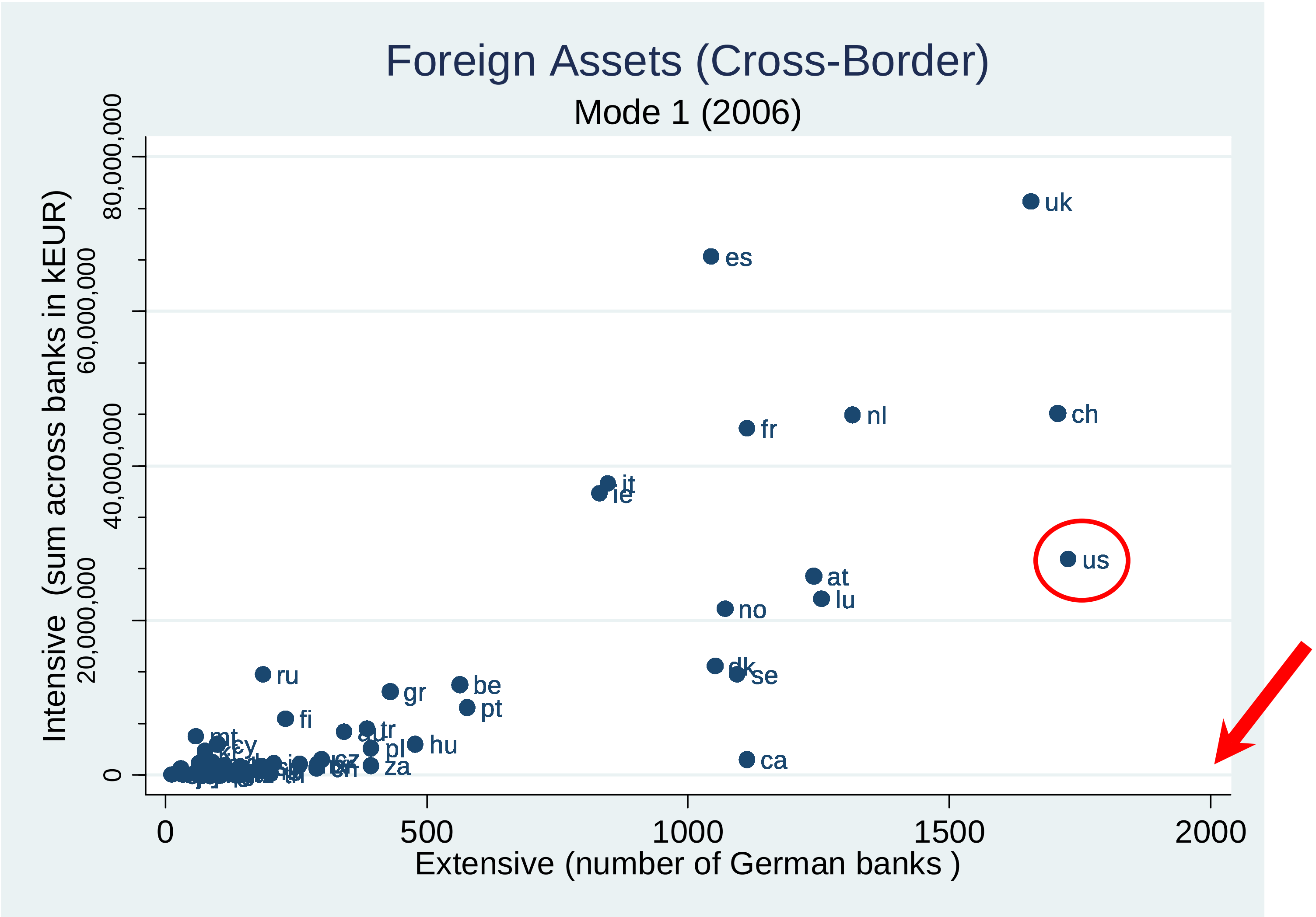
The data allow distinguishing different aspects of bank internalization.

- **By mode of entry**
  - Purely domestic (28 banks)
  - International assets (2,143 banks)
  - Foreign branches (27 banks)
  - Foreign branches and subsidiaries (37 banks)
- **By dimension of internationalization**
  - Extensive margin (number of countries)
  - Intensive margin (volume of activities)
- **By type of activity**
  - Maturity
  - Borrower
  - Currency
  - instrument
- **By country**

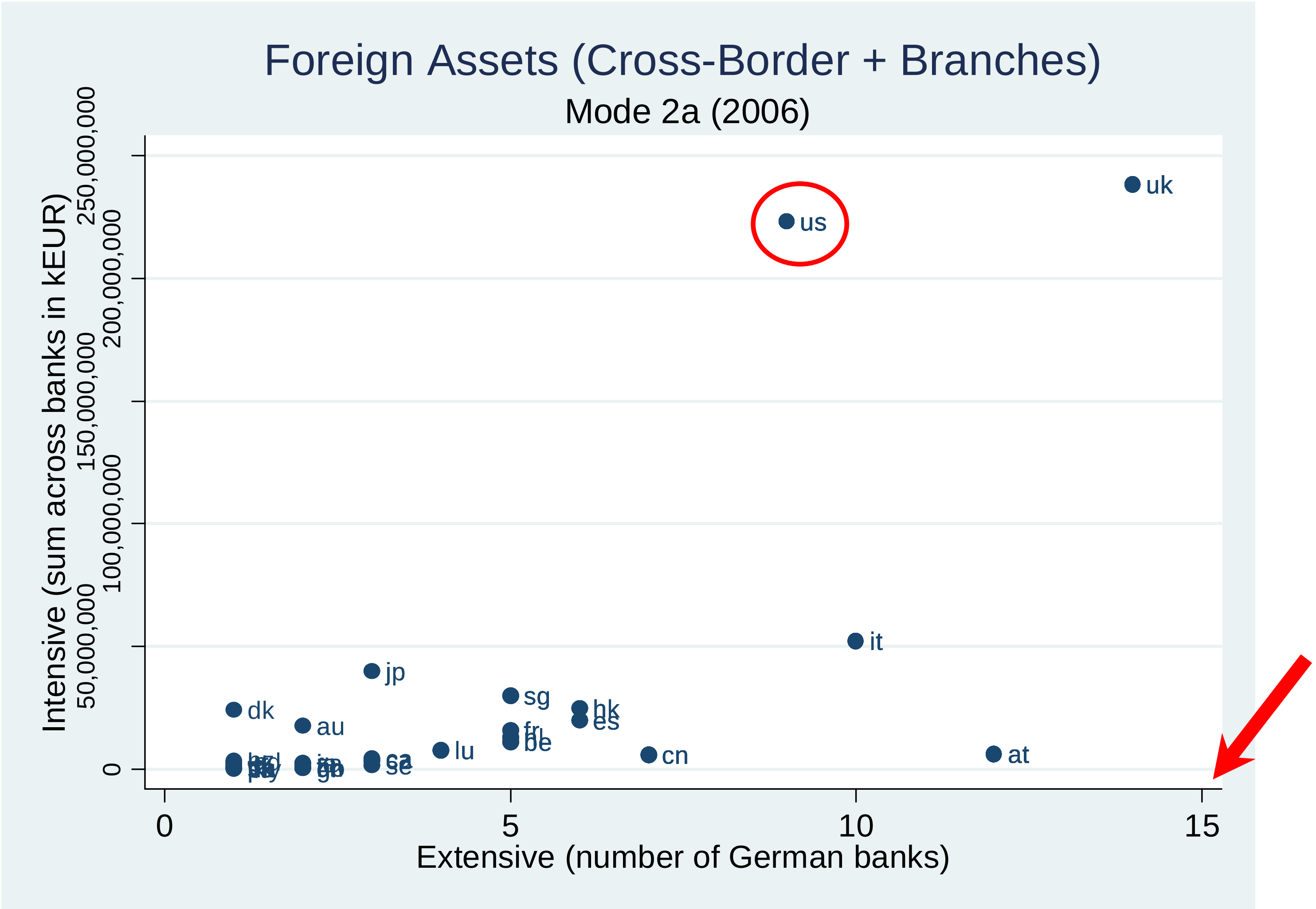
Question 1:

What are the bank-level and the country-level determinants of cross-border banking?

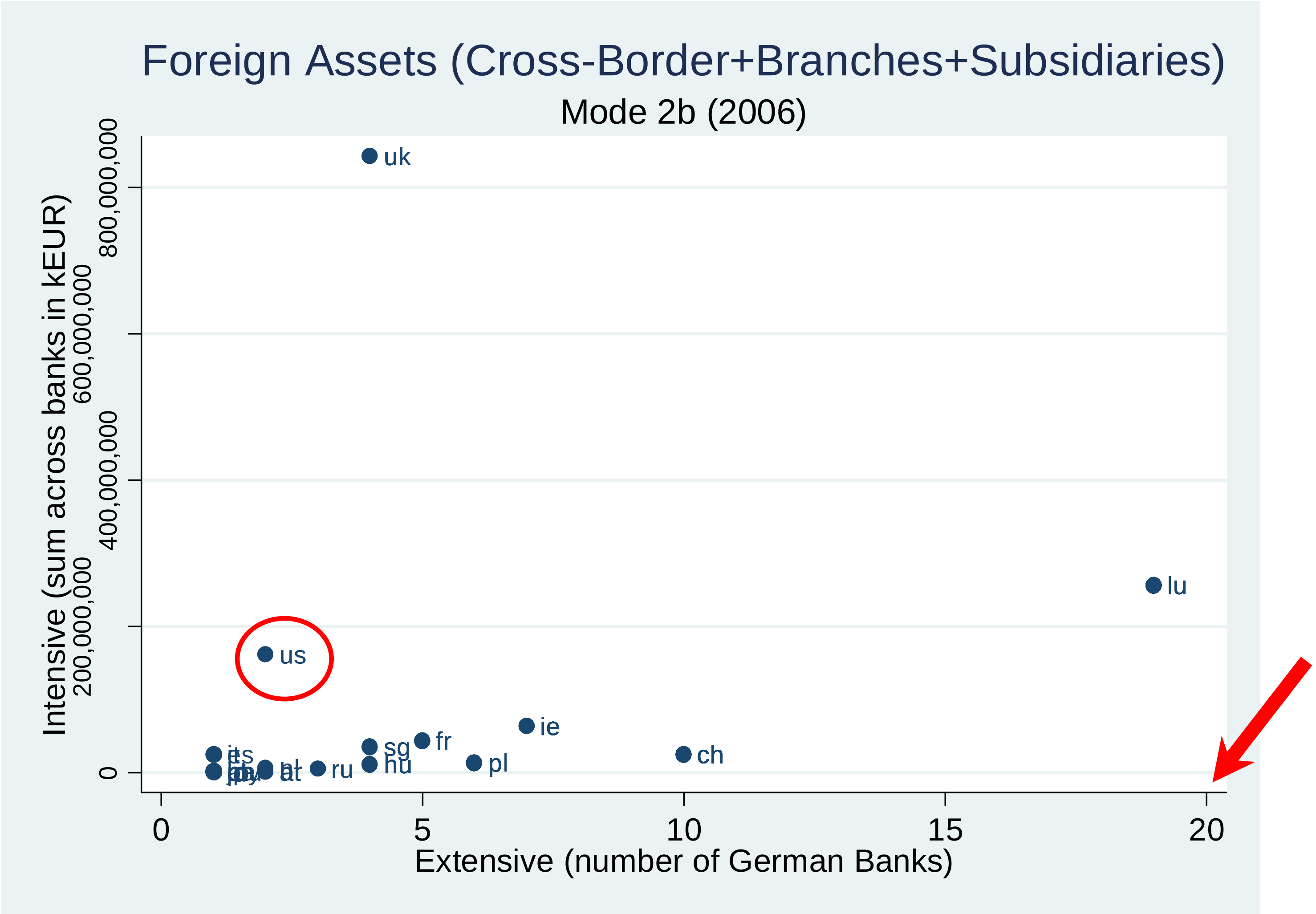
Almost all German banks have some foreign assets …



But only few banks have foreign branches ...



… or foreign subsidiaries.



There are differences and similarities between banks and non-financial firms.

- Similarities:
  - There is evidence for a “productivity pecking order”.
  - Large banks engage in FDI.
  - There is substantial heterogeneity across banks.
  - Gravity variables matter.
- Differences:
  - Almost all banks hold some foreign assets -- but only a few non-banks export or import.
  - Risk factors matter for banks.
- **Bank heterogeneity is important for understanding the effects of cross-border banking!**

Question 2:

What are the effects of international banking on bank performance at home?

What are the effects of banks' international expansions on their risk and market power at home?

- **Previous literature has focused on the <u>determinants of international banking</u>: Geography, regulations, market size, productivity matter.**
- **The <u>risk-competition nexus</u> for banks has also been analyzed extensively** (Beck 2008), **but results are mixed.**
  - This literature has not taken aspects of **internationalization** into account.
  - Results by Amihud et al. (2002) suggest that cross-border mergers have little impact on risk.

➢ **Answering this question requires linking bank-level data on international positions with detailed data on bank performance.**

Why is the link between risk, market power, and internationalization important?

- The current crisis shows that international banking exposes banks to (systemic) risks.
- Some current policy initiatives aim at limiting the international expansions of banks.
- Policymakers are concerned about the systemic effects of large financial institutions and aim at imposing tighter regulatory standards on them.

➢ *What do bank-level data say about the effect of internationalization on risk and market power?*

Measuring market power: Lerner index

- Lerner index
  = (Average revenues – marginal costs) / average revenues
- Marginal costs
  = Derivative of operating cost function with respect to four outputs
- Average revenues
  = Profits predicted by stochastic profit frontier
- Advantages:
  - Bank-specific measure of market power
  - Nests different models of competition
- Increase = higher market power

Measuring risk: Probability of default

- Standard measures used in the literature (non-performing loans, *z*-score etc.) do not provide information on actual failures of banks.
- We use information on the actual probability to experience a distress event (regulatory interventions):
  - 0/1 dummy on the probability of default
- Data come from the Bundesbank's distress database.
- Severe and less severe events can be distinguished.
- Increase = higher risk

Empirical model

- Banks simultaneously choose risk (probability of default) and market power (Lerner index).
- Standard simultaneous equation models cannot be applied because risk is a dichotomous variable.
- We employ an instrumental variables estimation following Maddala (1983) and Rivers and Vuong (1988).
- Two-stage procedure:
  - 1st stage: Create instruments for endogenous variables
  - 2nd stage: Structural equation using predicted values as regressors

Summary of results

	Market power (Lerner index)	Risk (Probability of default)
Intensive margin **(volume of activities)**	Positive (branches and cross-border)	Insignificant
Extensive margin **(Number of countries)**	Negative	Insignificant (positive for cooperatives)
	Negative **correlation between risk and market power.**	

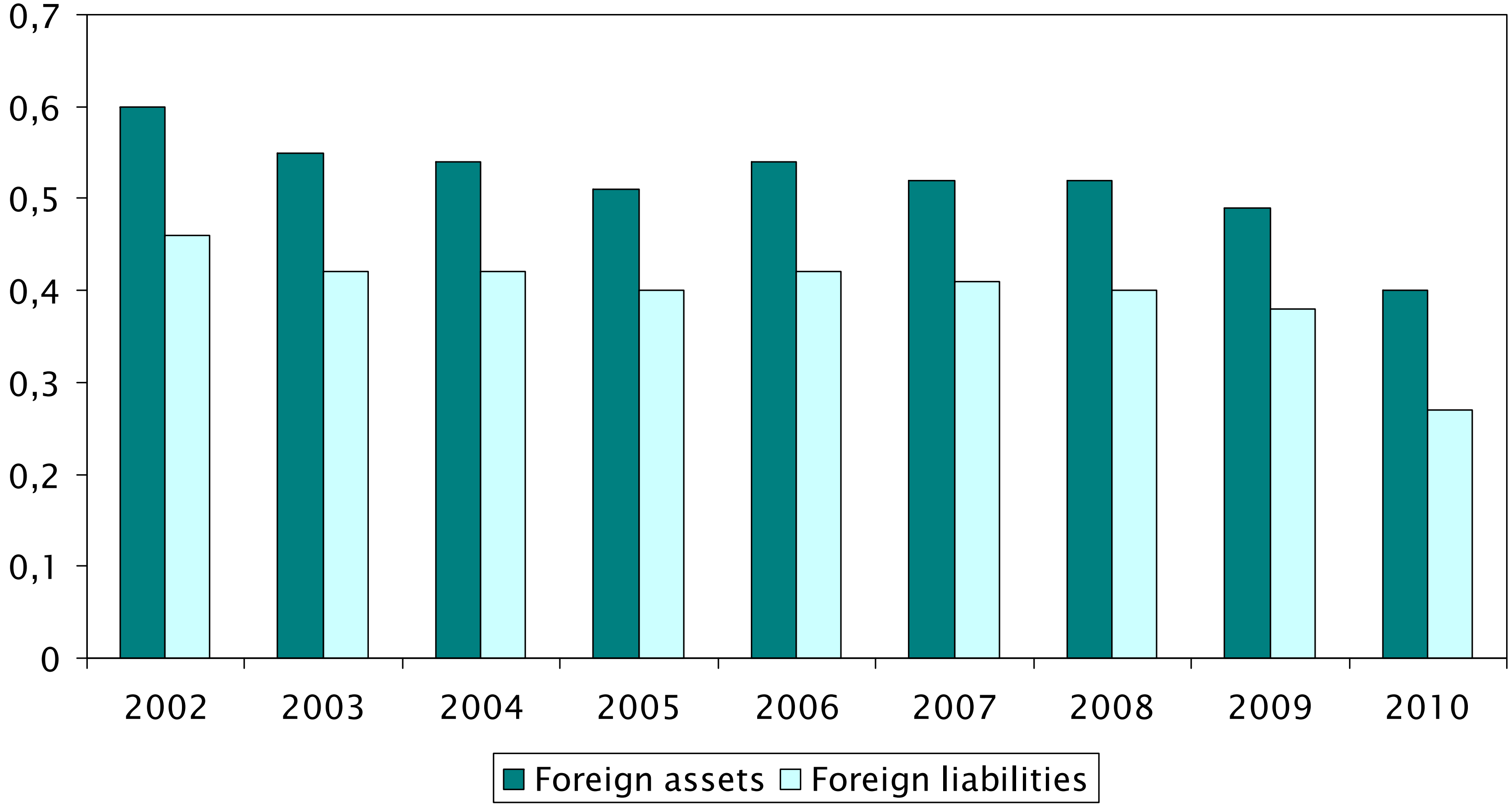
Robustness tests

- Sample splits by banking group:
  - **Savings** banks differ: Their market power is negatively related to the volume of activities and positively related to the number of countries.
  - **Cooperative** banks become riskier when expanding along the extensive margin.
- Strong versus weak distress events:
  - Results are qualitatively the same.
- Z-score as an alternative risk measure:
  - Results are qualitatively the same.
- Endogeneity of foreign assets

Question 3:

What have been the responses of international banks to the crisis?

Foreign assets and liabilities of German banks (% of total assets)



German rescue measures and access to TAF financing have affected the activities of banks.

- **German banks have <u>increased</u> their net foreign assets prior to the crisis.**
  - Growth of net foreign assets of banks with a strong reliance on **domestic wholesale** funding has been above-average.
- **… and they have <u>withdrawn</u> from foreign markets during the crisis.**
- **<u>Rescue</u> measures and liquidity assistance have had an impact:**
  - Banks receiving **<u>German</u>** government support have **increased** foreign activities after the crisis.
  - … but have scaled **down** relative to other banks.
  - Banks receiving **<u>TAF</u>** assistance have **lowered** foreign activities
  - … but have **increased** activities relative to other banks.

Outlook for future research

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- Empirical evidence on international banking based on micro data thus far focuses on a few countries only.
- But there should be scope for a broader research agenda using micro data: bilateral (BIS) data do not allow important aspects related to bank heterogeneity.
- A unified research agenda should address the following questions:
  - How important are banks' **internal** capital markets?
  - How effective are **macroprudential** policy tools?
  - What is the importance of different **channels** of **contagion** of shocks internationally?
  - What are the effects of internationalization on bank **performance** during crises episodes?

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