

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

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# The issue

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- 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.

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- 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.

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- **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**

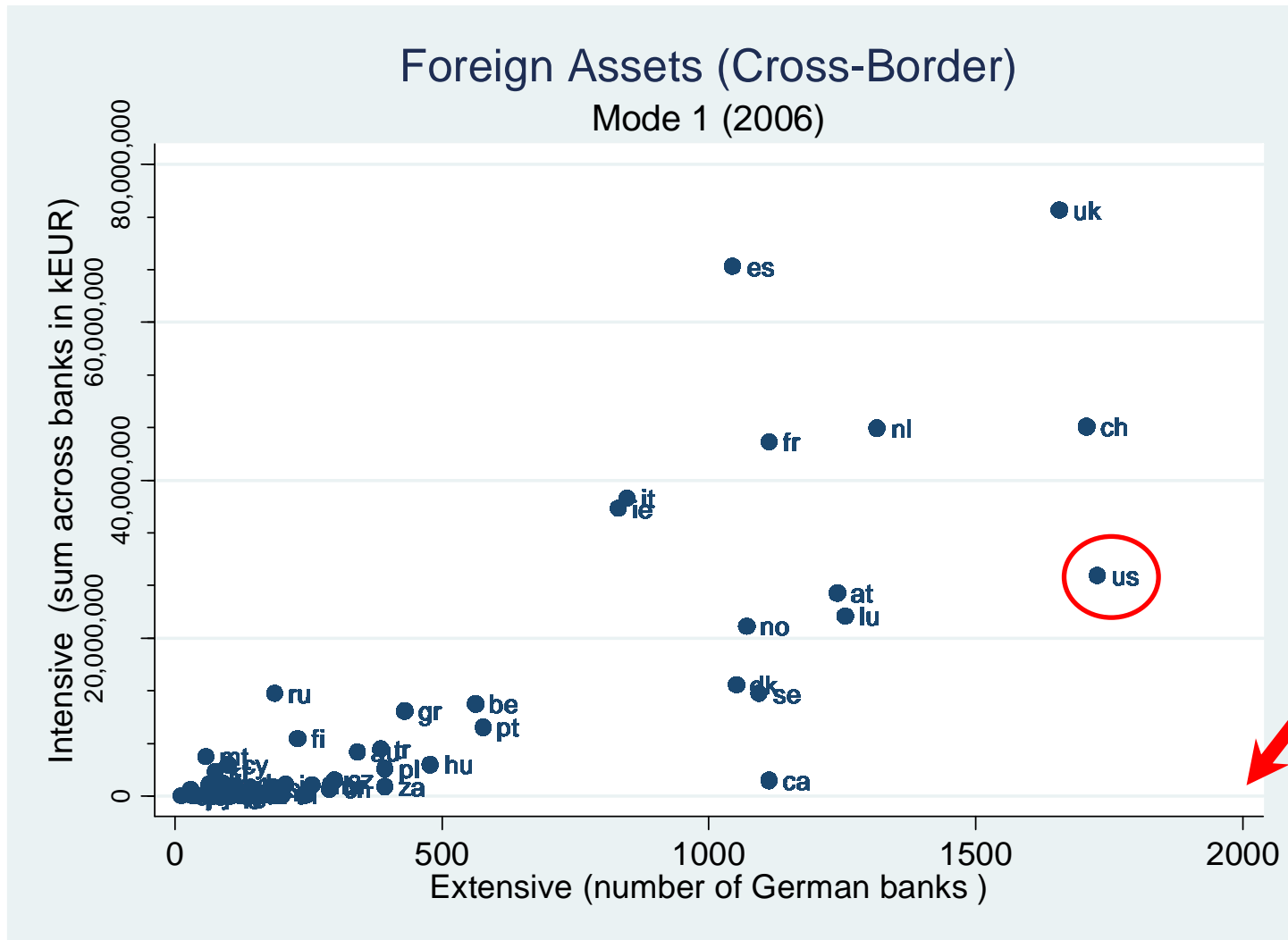
## Question 1:

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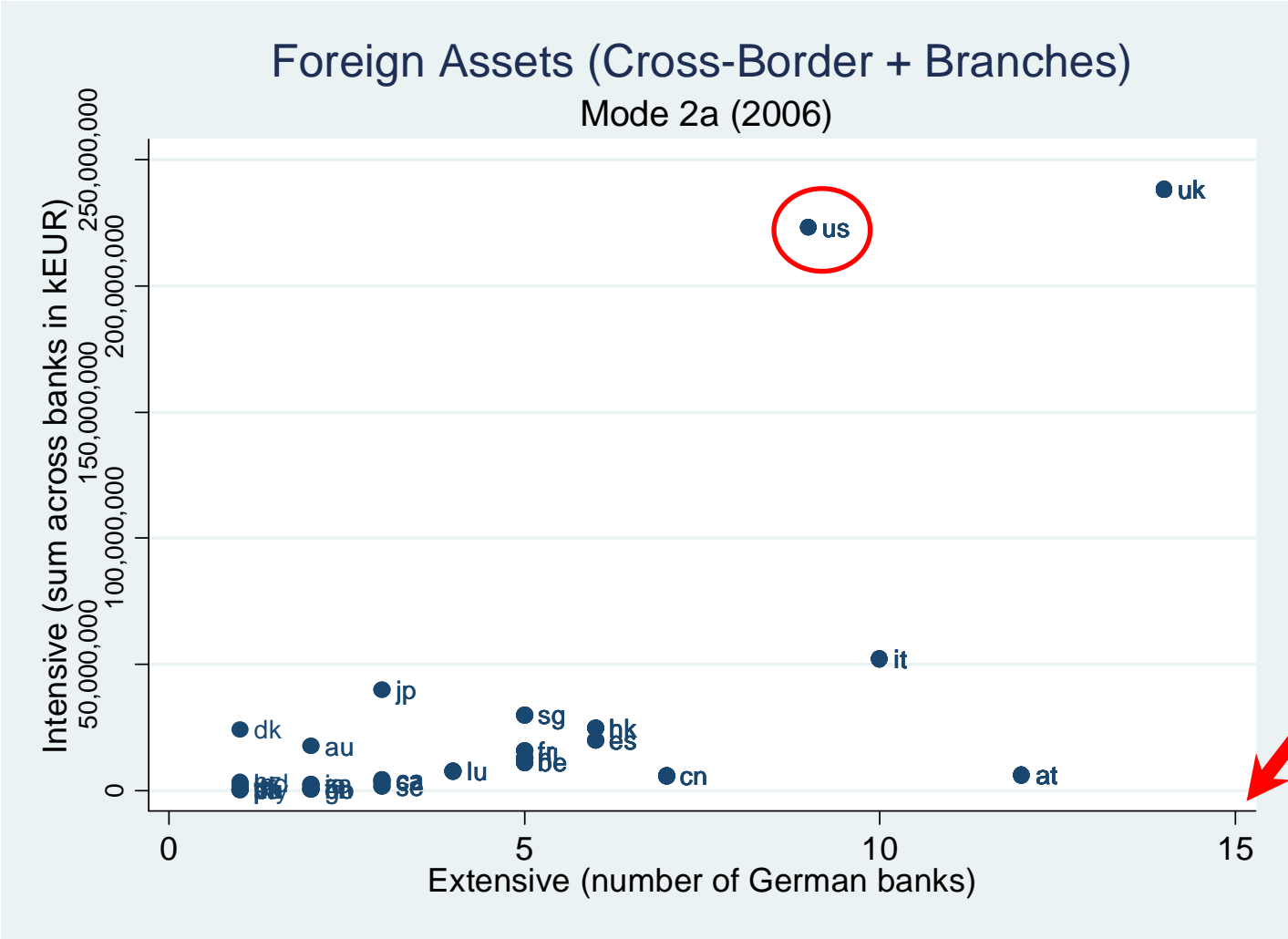
**What are the bank-level and the country-level determinants of cross-border banking?**

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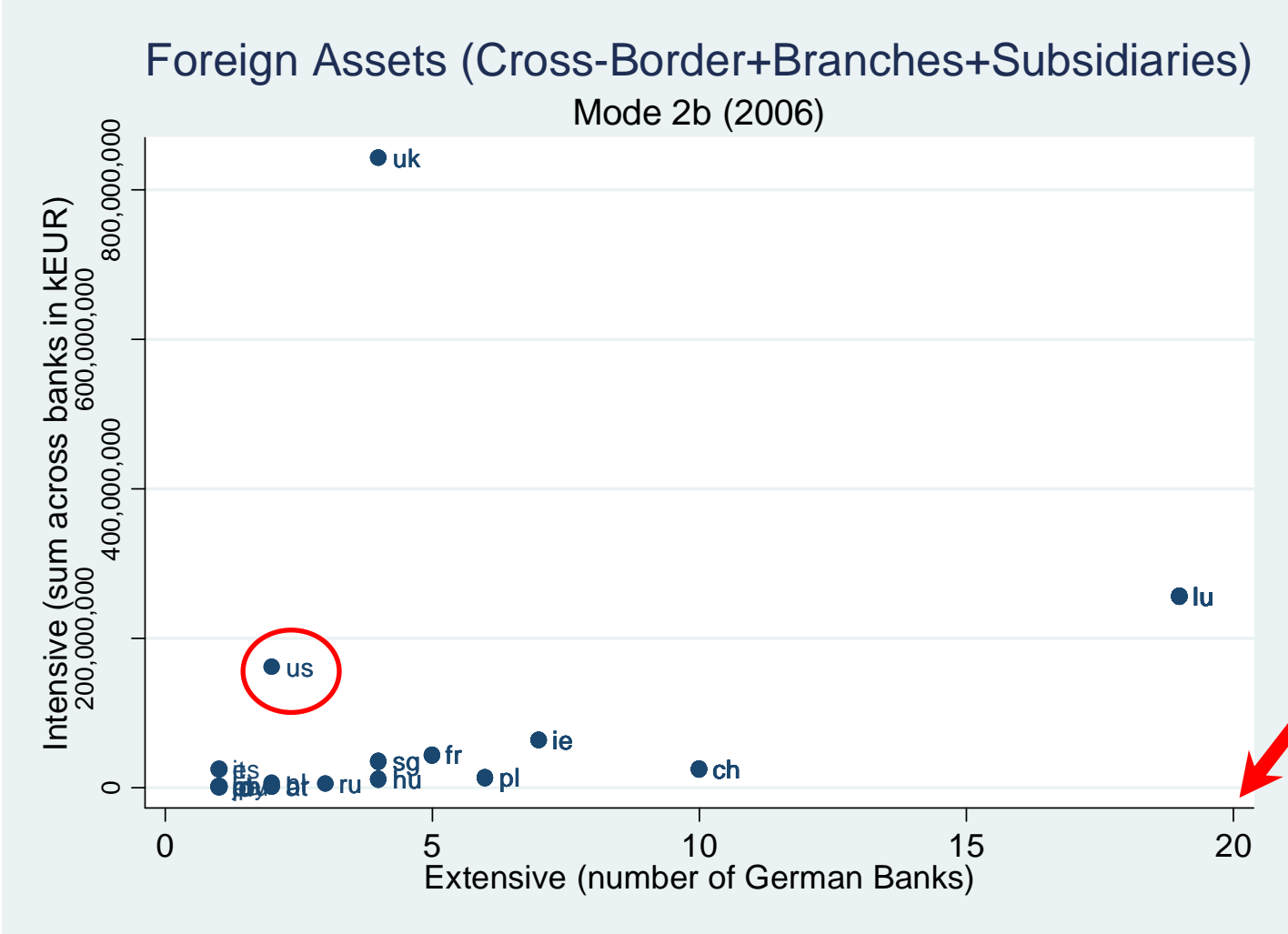
# Almost all German banks have some foreign assets ...



# But only few banks have foreign branches ...



... or foreign subsidiaries.





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

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- **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:

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

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

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- Previous literature has focused on the determinants of international banking: Geography, regulations, market size, productivity matter.
- The risk-competition nexus 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?

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- 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

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- 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

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- 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

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- 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

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	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

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- **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**

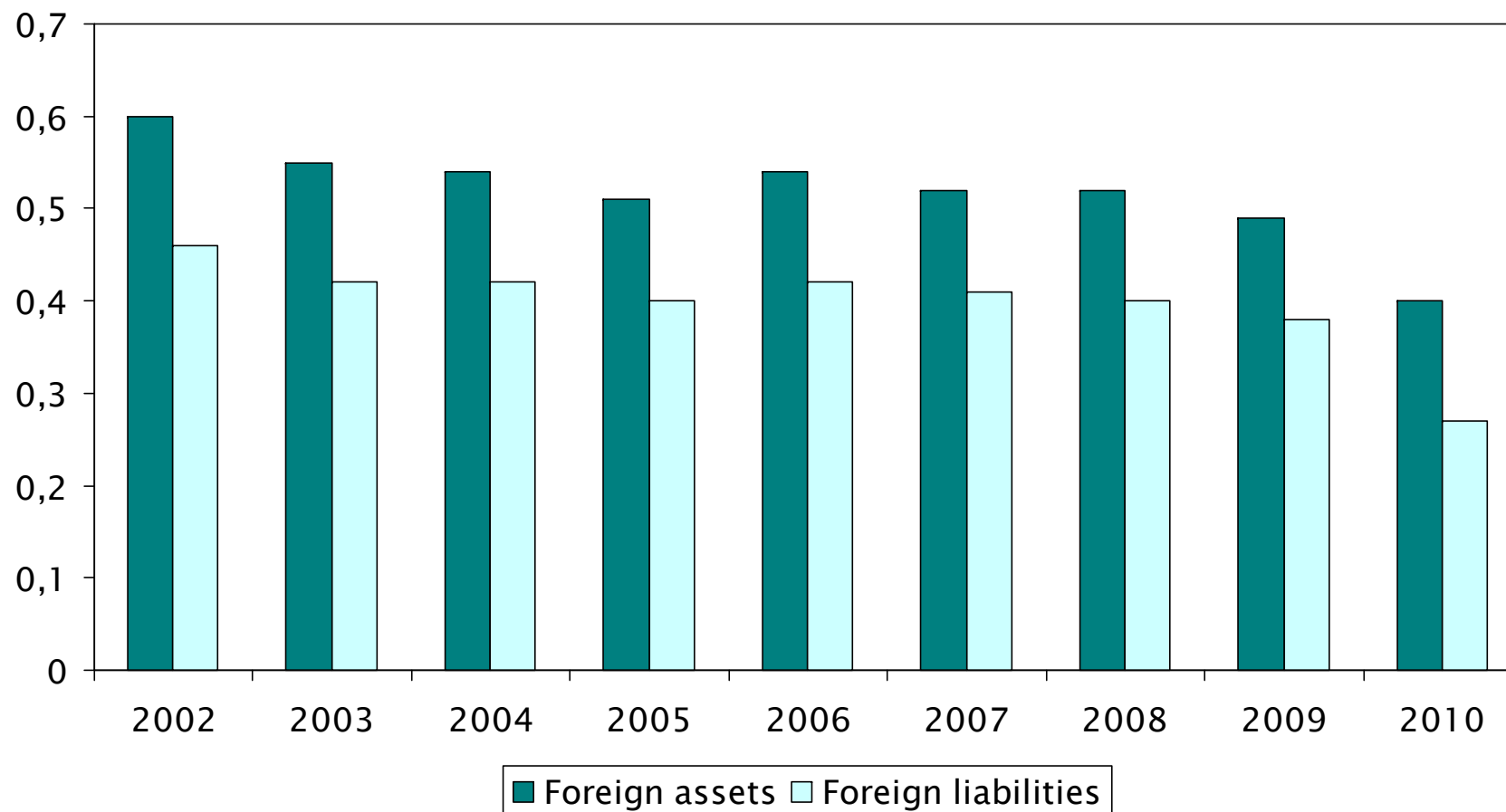
## Question 3:

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

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



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

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- German banks have increased 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 withdrawn from foreign markets during the crisis.
- Rescue measures and liquidity assistance have had an impact:
  - Banks receiving German government support have increased foreign activities after the crisis.
  - ... but have scaled down relative to other banks.
  - Banks receiving TAF assistance have lowered foreign activities
  - ... but have increased activities relative to other banks.

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# 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?

# References

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