The Impact of Financial Regulation on Bank Risk and Performance: The Basel III Spillover Experiment

Klenio Barbosa[1]; Rafael Matta[1]; Apinyapon Seingyai[2]
[1]SKEMA Business School, France; [2]Insper Institute of Education and Research, Brazil

Abstract

- To study the **causal effects of Basel lll regulation** on bank risk and performance.
- Using two features of the Basel III regulation
  (i) the sequential adoption of the Basel III regulation in different countries
  (ii) the ultimate parent rule[1,2]
- **Difference-in-difference**:
  ○ **Treated**: Subsidiaries of banks from Basel III countries, operate in non-Basel lll countries
  ○ **Control**: Domestic banks in non-Basel lll countries
- The results show that treated banks improve their performance and risk measurements

Introduction

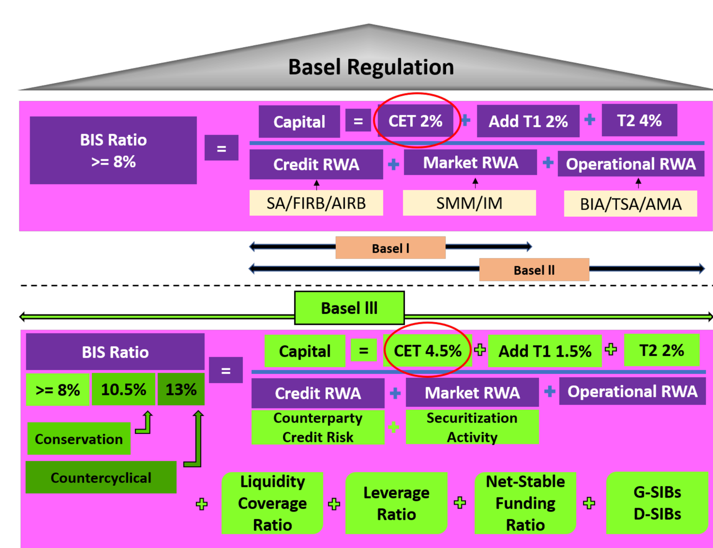

Figure 1: Components of Basel I, II, III regulations

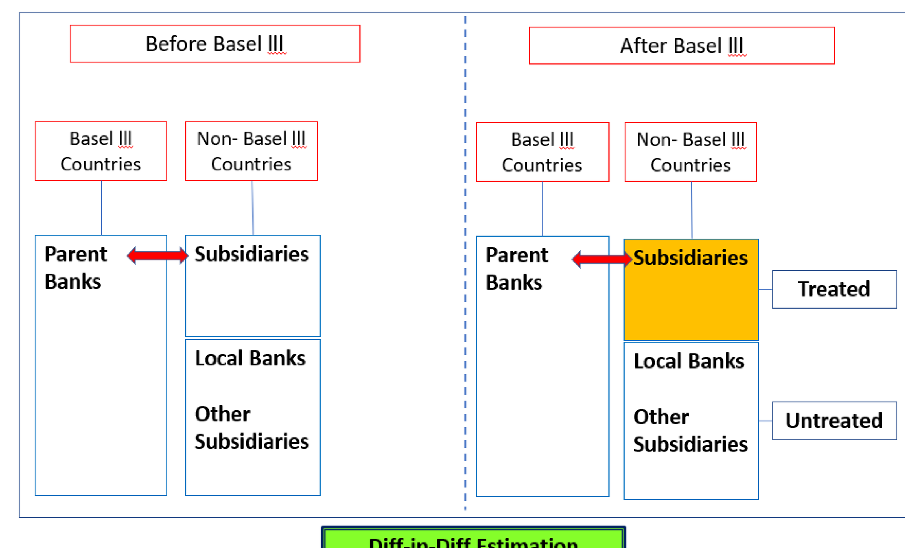

Figure 2: Difference-in-Difference Estimation

Identification Strategy

$$Y_{ict} = \alpha_i + \alpha_{ct} + \beta_1 Post_t + \beta_2 Post_t D_i + \gamma X_{ict} + \epsilon_{ict}$$

- Y_{ict} = Risk / Performance measures of bank i in country c at time t
- c = Non-Basel lll countries
- i = banks from Basel lll and non-Basel lll countries
- $Post_t$ = 0; t < 2015
  1; t >= 2015
- D_i = 0; Bank i is from a non-Basel lll country (Untreated)
  1; Bank i is from a Basel lll country (Treated)
- X = Control variables
  1) Size: log of asset
  2) Leverage: Long-term debt to asset ratio
  3) Non-main-activity income: net non-interest income to pre-taxed income

Data

- **Bank-level data**: Balance sheet, Income statement, Merger and Acquisition
- **Sources**: Thomson Reuters, Orbis Bank Focus
- **Period**: Annual data from 2010 - 2017
- **Final sample**: 232 banks, 41 countries, 1,375 bank-year observations
- **Treated banks**
  Basel lll implementation: In 2014
  Subsidiaries of Basel lll banks:
  22 countries, 42 banks
- **Untreated Banks**
  Basel lll implementation: After 2014
  Local banks (Locals): 35 countries, 182 banks
  Subsidiaries of non-Basel lll countries' banks (Others): 7 countries, 8 banks

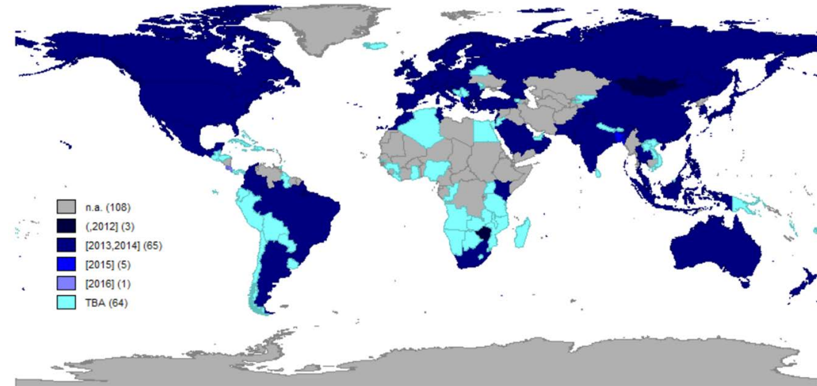

Figure 3: Basel III Adoption Timeline of Different Countries [3]

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Results

- Treated banks:
  Increase: Tier 1 capital, profitability (ROA and ROE) and liquidity ratio
  Decrease: risk measurement (NPL/Loan)

Table 1. Summary of the main results of the effect of Basel lll regulation on treated banks, compared to control groups

Effect	Category	Outcome Variables	Magnitude
Positive	Compliance	Tier 1 Capital	2.7 pp
	Profitability	ROA	0.2 pp
		ROE	5.3 pp
		Customer Loan Income	3 %
	Liquidity	Cash / Asset	4.4 pp
		Cash / Deposit	6.5 pp
		Deposit Growth	4.5 pp
	Risk	Z-Score	4.5 %
Negative	Risk	NPL / Loan	5.6 pp

Mechanisms

1. **Portfolio Adjustment Discipline**: Improve quality of asset
   (i) To select better borrowers for the new granted loans[4]
   (ii) To reduce non-performing loans (NPLs) by writing off bad loans
   This could result in
   (a) Positive impacts on customer-loan income, ROA, ROE, tier 1 capital ratio
   (b) Negative impacts on ratio between NPL and gross loans
2. **Reputation**
   - The motivation of Basel III regulation is majorly driven by the concerns of financial institution stability after Sub-prime crisis.
   - The concerns regarding banks' reputation and depositor/investor attraction could be one of the motivations explaining the behaviors of treated banks to start improving their liquidity ratio[5,6].
3. **Competition**
   In a country where it used to be very competitive, after Basel III requirement, treated banks could altogether adjust to have better risk and performance without confronting with the adverse effect of deviating from peers. This could also be the result of regulation that nurtures the coordination equilibrium between banks in high competition countries to curve the lending behavior.

Conclusion

- This research aims at studying the effect of Basel lll regulation on bank risks and performances.
- Main results show that treated banks improve both their risk and performance measurements.
- This is the improvement of agency problem where stakeholders such as depositors, debt holders, shareholders, or even borrowers, have a better access of bank's information.
- As a result, Basel regulation with an improvement of specific requirements in Basel lll could shape behaviors of banks in the way that it reflects more credibility and stability.

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Apinyapon Seingyai
Insper Institute of Education and Research
Email: apinyapon.seingyai@gmail.com
Phone: +55 31 99304-0346

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