Bank loan forbearance: evidence from a million restructured loans

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Disclaimer

The opinions expressed herein are those of the authors and do not necessarily reflect those of the Central Bank of Brazil.
Loan forbearance

• What is it?

  • “forbearance is a concession granted to a counterparty for reasons of financial difficulty that would not be otherwise considered by the lender”. (BCBS, 2016)
Loan forbearance

• “Good” forbearance
the borrower has **good payment capacity** but is facing a **temporary liquidity problem**

• prevents a viable business from closing;
• **reduces potential losses** with troubled loans;
• **avoids costs** with the process of seizing and selling the collateral.
Loan forbearance

• “Bad” forbearance:
  conceived to **hide expected losses** from debtor with solvency problems

  • **easing the terms** of the loan **will not suffice**: borrower unlikely to honor the new obligations in the future
  • value of collateral, if any, is likely to decrease over time

• **Real effects** of pervasive bad forbearance
  • **Zombie lending** affects economic growth (Hoshi and Kashyap, 2004)
## Motivation

**Never paid loan ($10,000; 2% p.m. interest)**

<table>
<thead>
<tr>
<th></th>
<th>Period</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0</td>
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<tr>
<td>Panel A</td>
<td></td>
</tr>
<tr>
<td>Days Past Due</td>
<td>0</td>
</tr>
<tr>
<td>Rating</td>
<td>B</td>
</tr>
<tr>
<td>Provision (%)</td>
<td>1%</td>
</tr>
<tr>
<td>Provision ($)</td>
<td>100</td>
</tr>
<tr>
<td>Interest Earned</td>
<td>-</td>
</tr>
<tr>
<td>Provision expenses</td>
<td>100</td>
</tr>
<tr>
<td>Acumulated Profit</td>
<td>(100)</td>
</tr>
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</table>

**loan is not forborne**

**loan is forborne every 60 days**

<table>
<thead>
<tr>
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<tr>
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<td>0</td>
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<td>Panel B</td>
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<tr>
<td>Days Past Due</td>
<td>0</td>
</tr>
<tr>
<td>Rating</td>
<td>B</td>
</tr>
<tr>
<td>Provision (%)</td>
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<tr>
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<td>-</td>
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<td>Provision expenses</td>
<td>100</td>
</tr>
<tr>
<td>Acumulated Profit</td>
<td>(100)</td>
</tr>
</tbody>
</table>
Motivation

• Delinquency ratio “culture”
  • Bradesco 1Q2019 press release

• Forbearance Impact
  • FSR (BCB, 2019)
Motivation

• Resolution 2,682 (CMN, 1999) in Brazil
  • Minimum rating and provision based on number of days past due

<table>
<thead>
<tr>
<th>Rating</th>
<th>Days Past Due</th>
<th>Minimum Provision</th>
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<tbody>
<tr>
<td>AA</td>
<td>- - -</td>
<td>- - -</td>
</tr>
<tr>
<td>A</td>
<td>- - -</td>
<td>0.5%</td>
</tr>
<tr>
<td>B</td>
<td>15 to 30</td>
<td>1%</td>
</tr>
<tr>
<td>C</td>
<td>31 to 60</td>
<td>3%</td>
</tr>
<tr>
<td>D</td>
<td>61 to 90</td>
<td>10%</td>
</tr>
<tr>
<td>E</td>
<td>91 to 120</td>
<td>30%</td>
</tr>
<tr>
<td>F</td>
<td>121 to 150</td>
<td>50%</td>
</tr>
<tr>
<td>G</td>
<td>151 to 180</td>
<td>70%</td>
</tr>
<tr>
<td>H</td>
<td>more than 180</td>
<td>100%</td>
</tr>
</tbody>
</table>

• All loans issued to a borrower must be classified in the same category as the riskiest loan
What is novel in this paper?

• Renegotiation of Financial Contracts
  • Gilson et al. (JFE, 1990); Roberts & Sufi (JFE, 2009); Demiroglu & James (JFE, 2015); Roberts (JFE, 2015); Campello et al. (RF, 2019)
  • larger sample (loan-level data)
  • characteristics not explored before
What is novel in this paper?

• Law and Finance - Creditor rights, collateral, and firm financing
  • Vig (JF, 2013); Assunção et al. (RFS, 2014); Campello & Larrain (RFS, 2016)
  • how increase in creditors’ rights affects forbearance

• Financial Stability
  • Rojas-Suarez & Weisbrod (1996); OECD (2001); Kanaya & Woo (2000); Peek & Rosengren (2005); Gunther & Moore (2003)
  • successive forbearances (zombie lending)
  • regulation incentives
Data

• Period: April 2012 to October 2018

• Loans
  • Almost 13 Million non-accrual loans
  • + 1 Million forborne loans
  • + 1,000 financial institutions
  • + 2M non-financial firms

• Forborne Measure
  • Covers all loans
  • Loan-level data
  • Does not rely on subjective judgement (other measures)
Other Measurements of forbearance or zombie lending in the literature

- Peek & Rosengren (2005)
  - increase of loans to firms with poor performance variables

- Caballero, Hoshi & Kashyap (2008)
  - loans to firms with subsidized interest rate

- Arrowsmith et al. (2013)
  - surveys with banks about loans to specific firms

  - comprehensive asset quality review

- Bonfim et al. (WP, 2019)
  - Loans to firms with negative equity
Univariate Analysis

Time to forbear in months

Accumulate % of forborne loans

Number of Periods
Univariate Analysis

Unconditional probability of forbearance x loan size

More than one fourth of the 0.1% largest loans are forborne
Larger loans are more likely to be forborne across all modalities.
What drives loan forbearance?

Forborne_{i,j,k} = \alpha + \beta_1 \text{Has Performing}_{i,j,k} + \Lambda' \text{ Guarantee Type}_{i,j,k}
+ \beta_3 \text{Previous Forbearances}_{j,k} + \beta_4 \log\left(\text{Number of Periods}_{i,j,k}\right)
+ \beta_5 \log\left(\text{Loan Value}_{i,j,k} + 1\right) + \Gamma' X_{i,j,k} + \epsilon_{i,j,k} \quad (2.1)
What drives loan forbearance?

<table>
<thead>
<tr>
<th>Forborne Status</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
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<tbody>
<tr>
<td>Has Performing Loan</td>
<td>0.0100 **</td>
<td>0.0111 ***</td>
<td>0.0113 ***</td>
<td>0.0104 **</td>
<td>0.0102 **</td>
</tr>
<tr>
<td></td>
<td>(0.0040)</td>
<td>(0.0040)</td>
<td>(0.0038)</td>
<td>(0.0047)</td>
<td>(0.0044)</td>
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<tr>
<td>Guarantee Type</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lien</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mortgage</td>
<td>0.0292</td>
<td>0.0312</td>
<td>0.0301</td>
<td>0.0367 **</td>
<td>0.0362 **</td>
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<tr>
<td></td>
<td>(0.0206)</td>
<td>(0.0206)</td>
<td>(0.0206)</td>
<td>(0.0147)</td>
<td>(0.0165)</td>
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<tr>
<td>Other</td>
<td>0.0483 ***</td>
<td>0.0497 ***</td>
<td>0.0491 ***</td>
<td>0.0385 ***</td>
<td>0.0360 ***</td>
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<tr>
<td></td>
<td>(0.0131)</td>
<td>(0.0133)</td>
<td>(0.0129)</td>
<td>(0.0121)</td>
<td>(0.0114)</td>
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<tr>
<td>Prev. Forb. (# Months)</td>
<td>0.0150 ***</td>
<td>0.0130 **</td>
<td>0.0118 **</td>
<td>0.0083 *</td>
<td>0.0084 *</td>
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<tr>
<td></td>
<td>(0.0050)</td>
<td>(0.0052)</td>
<td>(0.0051)</td>
<td>(0.0043)</td>
<td>(0.0044)</td>
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<tr>
<td>Ln(Number of Periods)</td>
<td>-0.0832 ***</td>
<td>-0.0849 ***</td>
<td>-0.0845 ***</td>
<td>-0.0839 ***</td>
<td>-0.0858 ***</td>
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<tr>
<td></td>
<td>(0.0075)</td>
<td>(0.0080)</td>
<td>(0.0081)</td>
<td>(0.0082)</td>
<td>(0.0090)</td>
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<tr>
<td>Ln(Loan Value + 1)</td>
<td>0.0164 ***</td>
<td>0.0161 ***</td>
<td>0.0162 ***</td>
<td>0.0164 ***</td>
<td>0.0166 ***</td>
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<tr>
<td></td>
<td>(0.0029)</td>
<td>(0.0030)</td>
<td>(0.0030)</td>
<td>(0.0035)</td>
<td>(0.0035)</td>
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<tr>
<td>Month FE</td>
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<td>Yes</td>
<td>Yes</td>
<td>No</td>
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<td>Yes</td>
<td>No</td>
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<td>Bank FE</td>
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<td>Bank-Month FE</td>
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<td>No</td>
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<td>No</td>
<td>Yes</td>
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<td>Municipality-Month FE</td>
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<td>No</td>
<td>No</td>
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## Results / Takeaways

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<thead>
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<th>Forborne Status</th>
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<tbody>
<tr>
<td>(5)</td>
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</tr>
<tr>
<td>Has Performing Loan</td>
<td>0.0102 **</td>
<td>(0.0044)</td>
</tr>
<tr>
<td>Guarantee Type</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lien</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Mortgage</td>
<td>0.0362 **</td>
<td>(0.0165)</td>
</tr>
<tr>
<td>Other</td>
<td>0.0360 ***</td>
<td>(0.0114)</td>
</tr>
<tr>
<td>Prev. Forb. (# Months)</td>
<td>0.0084 *</td>
<td>(0.0044)</td>
</tr>
<tr>
<td>Ln(Number of Periods)</td>
<td>-0.0858 ***</td>
<td>(0.0090)</td>
</tr>
<tr>
<td>Ln(Loan Value + 1)</td>
<td>0.0166 ***</td>
<td>(0.0035)</td>
</tr>
<tr>
<td>Observations</td>
<td>12,776,251</td>
<td></td>
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<tr>
<td>Adj. Within R-Sq</td>
<td>0.0852</td>
<td></td>
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</tbody>
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- Having a performing loan increases forbearance
- Creditor rights decrease forbearance
- Suggests successive “bad” forbearances
- Decision of forbearance made quickly
- Loans of higher values are more prone to be forborne
Next steps

• **Bank relationship**
  • Does it affect likelihood and terms of forbearance?
  • What is the effect of multiple relationships

• **Are weak banks more likely to forbear?**
  • If so, what is the causal direction?
  • What is the channel? Capital requirements? Income smoothing?

• **What happens after forbearance?**
  • Are loans paid? Defaulted again?
  • Are there observable features driving repayment or new default?

• **Real effects of forbearance**
  • What are the long run effects for firms’ employment and investment?
  • Does forbearance induce moral hazard?
Thank you