Credit Guarantees and New Bank Relationships

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Patricio Toro (Central Bank of Chile)

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Disclaimer

This paper reflects the views of the authors only

The paper does not reflect the view of Chile’s

- Ministry of Finance
- Superintendencia de Bancos
- FOGAPE
- or the view of the Central Bank of Chile
Focus of this paper: guarantees of bank loans

- **Credit guarantees** = Govt. pays $X\%$ of *loan principal* in case of default
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  - Do they do anything else?
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- For small (but not tiny) firms: sales $\approx$ US $1m$
  - “SMEs” henceforth
Relevance: Guarantees widely used to improve SME credit access

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- CGS at heart of **most Governments’** strategies to help Small Businesses
  - CGS viewed as most effective policy, esp. vs direct subsidies
  - Used as counter-cyclical policy tool throughout OECD
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- **Volume of covered lending** often vast:
  - Government CGS guaranteed loans (2014) =
    - 5.7% of GDP in Japan; 4.1% in Korea
  - US’s SBA 7(a) guarantees ~ US $27 billion of loans in FY 2017
Potential **benefits** of CGSs

A CGS increases the bank’s expected profit by:

- reducing risk to bank
- providing higher quality collateral with faster execution
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CGSs may *reduce two sources of credit rationing* for some SMEs:

1. Allowing banks to lend to **firms without collateral**
2. Offsetting **fixed costs** of SME lending (loan officer time, IT) that are high relative to loan size
Potential costs... are large

China Faces Default Chain Reaction as Credit Guarantees Backfire

by Justina Lee
	@justinaknrope

October 8, 2015 — 12:00 PM EDT Updated on October 8, 2015 — 11:11 PM EDT

Failures of guaranteed loans surged 86 percent last year to about 400 billion yuan ($63 billion), according to UBS Group AG. At the nation’s Big Five lenders, such borrowings made up 18 percent of the total and 29 percent of non-performing financing, the Swiss bank said in a note. Standard & Poor’s said specialist guarantee firms are suffering, while the industry’s second-largest company halted operations amid accusations that it took on too much financial risk.
"SME loan guarantee programs are **globally ubiquitous** and countries have invested significantly in them...

Unfortunately, it is my sense that academic research on the **effectiveness of these programs has not matched their policy importance.**” Udell (2015)
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Robust result in literature: credit ↑, default rates ↑

- Causal? Mechanism?
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- Causal? Mechanism?

Empirical challenges: data availability and selection bias
Setting for this paper

- **Chile’s Govt. credit guarantee scheme for new loans, 2011-2012**
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- **Banks decide** if borrower gets a Govt. guarantee to go with loan
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- **Exploit eligibility rule**: “sales” cannot exceed US $1m
  - Regression discontinuity in narrow bandwidth (8,000 firms)
Main findings: effects of the Credit Guarantee Scheme (CGS)

- *Causes* ↑ in credit from bank providing private loan with Govt. guarantee - **Additionality**

- No RDD evidence of increased defaults for firms at threshold...But

- Power to detect default in RDD is limited

- Fixed effect evidence suggests a higher default propensity for smaller firms

- Scale up: 10% ↑ in credit ⇒ Sales, input purchases, and workers ↑ by 4.4%, 3.9%, and 4.8%
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Novel findings

- CGS used to build new bank relationships
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- CGS used to build **new bank relationships**

- **Amplification effect** in year following guarantee:
  - additional new bank relationships
  - more debt from bank(s) not providing guarantee
Establishing effects of CGS: key Empirical Challenge

Selection into scheme by firms or banks

- **Selection bias** such that firms receiving guarantee are systematically different from available “control” or comparison firms
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- \(\Rightarrow\) **Selection bias** such that firms receiving guarantee are systematically different from available “control” or comparison firms

- **Our solution:** \(\Rightarrow\) *Compare all eligible firms to all ineligible firms in a RDD*
Empirical strategy: exploit eligibility cutoff

- Eligibility threshold based on 12 month moving sum of "sales"
- Strategy: (Fuzzy) RDD comparing eligible vs ineligible firms
  - Intuition: locally random assignment of firms around cutoff
Why use a Fuzzy RDD?

Many eligible firms do not receive guarantee, because:

- Guarantee amounts are limited
- Firm may have no demand for additional credit ("never takers")
Specification

Reduced Form RD: effect of eligibility

\[ \text{Outcome}_{it} = c + \rho \text{Eligible}_{it} + \gamma_1 \text{Sales}_{it} + \delta_t + \epsilon_{it} \]

Fuzzy RD: effect of receiving a guaranteed loan on “compliers”

\[ \text{Treatment}_{it} = c + \gamma_0 \text{Eligible}_{it} + \gamma_1 \text{Sales}_{it} + \delta_t + u_{it} \]
\[ \text{Outcome}_{it} = c + \beta \text{Treatment}_{it} + \phi_1 \text{Sales}_{it} + \eta_t + \nu_{it} \]

Key assumption: firms have only imprecise control of the assignment variable (sales)
Are firms manipulating assignment variable?

Tests indicate **no manipulation** of assignment variable:

- No change in estimates when include covariates
- No difference in firm characteristics on either side of cutoff

Unsurprising – costly for firms to manipulate eligibility:
- Banks decide which firms receive guarantee
- Firms could delay sales, but Sales formula is highly opaque: web query informs banks if clients eligible Yes/No
- Firms could delay reporting of sales, but need clients to cooperate (VAT fraud) + no evidence
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Data

For all firms in Chile:

- credit registry
- employment
- IRS data (sales, purchases)
Debt: doubling relative to 6m average

### Panel A: Debt growth in focal period (Reduced form)

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>No assignment</th>
<th>Controls</th>
<th>Triangle kernel</th>
<th>Poly.(4th°)</th>
<th>CCT(2014)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1500UF</td>
<td>1250UF</td>
<td>1750UF</td>
<td>500UF</td>
<td>1500UF</td>
<td>1500UF</td>
</tr>
<tr>
<td>Coefficient</td>
<td>0.026**</td>
<td>0.028**</td>
<td>0.025**</td>
<td>0.027***</td>
<td>0.033***</td>
<td>0.029**</td>
</tr>
<tr>
<td>s.e.</td>
<td>[0.012]</td>
<td>[0.013]</td>
<td>[0.011]</td>
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<td>[0.013]</td>
</tr>
<tr>
<td># obs.</td>
<td>30,937</td>
<td>25,857</td>
<td>36,066</td>
<td>10,379</td>
<td>29,843</td>
<td>30,937</td>
</tr>
</tbody>
</table>

### Panel B: Debt growth in focal period (Fuzzy RDD)

<table>
<thead>
<tr>
<th></th>
<th>Baseline</th>
<th>No assignment</th>
<th>Controls</th>
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</tr>
<tr>
<td>Coefficient</td>
<td>0.947**</td>
<td>1.034**</td>
<td>0.928**</td>
<td>0.987***</td>
<td>1.213***</td>
<td>1.057**</td>
</tr>
<tr>
<td>s.e.</td>
<td>[0.431]</td>
<td>[0.489]</td>
<td>[0.420]</td>
<td>[0.366]</td>
<td>[0.422]</td>
<td>[0.475]</td>
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</table>
dots are averages for bins of 50 UF; lines estimated from granular data
P(loan delinquency) - suggestive evidence

- Smaller firms default more with guarantees in fixed effect estimator
- No RDD evidence of increased default at threshold, but:

![Default Indicator Graph]

- Treated firms (avg)
- Untreated firms (avg)

Months relative to treatment month (0)
Real effects

- Large elasticities strengthen evidence for credit constraints
- Similar magnitudes (although from different data sets) suggests general **scaling up of firm**

Elasticity of real variables with respect to bank debt at 12 months

<table>
<thead>
<tr>
<th></th>
<th>Employment</th>
<th>Permanent workers</th>
<th>Temporary workers</th>
<th>Cumulative sales</th>
<th>Cumulative input purchases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coefficient</td>
<td>0.48**</td>
<td>0.45*</td>
<td>0.06</td>
<td>0.50*</td>
<td>0.56*</td>
</tr>
<tr>
<td>s.e.</td>
<td>[0.24]</td>
<td>[0.24]</td>
<td>[0.80]</td>
<td>[0.28]</td>
<td>[0.29]</td>
</tr>
<tr>
<td># obs.</td>
<td>14,059</td>
<td>13,691</td>
<td>9,110</td>
<td>23,596</td>
<td>23,624</td>
</tr>
</tbody>
</table>
Recap

- Additionality: credit increase is causal
- Default: some evidence of increased default; not large
- Real effects: firms use credit to scale up

Novel results: New bank relationships
- F used for new clients to mitigate uncertainty about firm type
- Amplification effect in year following F:
  - new bank relationships
  - more debt from other banks (causal)
- Mechanism: information externality or net worth increase
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Guarantees: 44% given to firms in first 2yrs of relationship, (24% to firms with <2yrs in banking system)
New bank relationships | only 1 bank 4m before
Amplification effect: Dynamics of ∆ Debt

### Panel A: total debt growth dynamics (Reduced form)

<table>
<thead>
<tr>
<th>lags and leads from focal period (months)</th>
<th>-6</th>
<th>-4</th>
<th>-1</th>
<th>0</th>
<th>3</th>
<th>6</th>
<th>9</th>
<th>12</th>
<th>15</th>
<th>18</th>
</tr>
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<tbody>
<tr>
<td>Coefficient</td>
<td>-0.013</td>
<td>0.003</td>
<td>0.016*</td>
<td>0.026**</td>
<td>0.039***</td>
<td>0.042**</td>
<td>0.036**</td>
<td>0.051**</td>
<td>0.051**</td>
<td>0.048*</td>
</tr>
<tr>
<td>s.e.</td>
<td>[0.011]</td>
<td>[0.009]</td>
<td>[0.010]</td>
<td>[0.012]</td>
<td>[0.014]</td>
<td>[0.017]</td>
<td>[0.018]</td>
<td>[0.021]</td>
<td>[0.024]</td>
<td>[0.027]</td>
</tr>
<tr>
<td># obs.</td>
<td>30,154</td>
<td>30,409</td>
<td>30,808</td>
<td>30,937</td>
<td>30,509</td>
<td>30,256</td>
<td>30,056</td>
<td>27,267</td>
<td>23,204</td>
<td>19,304</td>
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<th>lags and leads from focal period (months)</th>
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<td>1.302*</td>
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<td>1.713**</td>
<td>1.611*</td>
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<td>[0.369]</td>
<td>[0.431]</td>
<td>[0.539]</td>
<td>[0.612]</td>
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- Amplification effect: Growth after F treatment month is due to ↑ at Non-F bank
Conclusion

Clear causal evidence regarding major policy intervention: CGS

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- Real effects: firms use credit to scale up
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Suggests credit constraints for SMEs in steady state

- Results here are a lower bound - they are for “good times”
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Novel results: F causes establishment of New bank relationships

- F causes used to mitigate uncertainty about firm type
- Amplification effect in year following F:
  - new bank relationships
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  - Mechanism: information externality or net worth increase
How Chile’s FOGAPE works

- **Bank assigns guarantee** to borrower
- Guarantee for individual loans, maximum coverage = 80%
- Interest surcharge of 1-2% paid to FOGAPE

- Otherwise, **loan interest rates the same as for normal loans**
- Historical default rate ~4-7% (similar to SME default rate of 6-7%)
- **Eligibility rule:** “sales” < 25,000 UF = US $1m
Where is cutoff in size distribution of firms?