# Creditor Rights and Bank Losses: A Cross-Country Comparison

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# Creditor Rights Overview

**Creditor rights** protect creditors during default and ensure availability of debt capital

- Largely be based on legal origin (La Porta, Lopez-de-Silanes, Shleifer, and Vishny, 1998)
- Stable over time but vary by country (Djankov, McLiesh, and Shleifer, 2007)

Effect of creditor rights on bank risk-taking is of considerable interest.

# Further Motivation

Existing literature provides incongruous results

- Bank risk increases (Houston, Lin, Lin, and Ma, 2010)

- Borrower risk decreases for public and private firms (Acharya et. al. 2011, Boyd, Hakenes, Heitz, 2018)
- Debt is cheaper (Qian and Strahan, 2007)

# Further Motivation

Existing literature provides incongruous results

- Bank risk increases (Houston, Lin, Lin, and Ma, 2010)
- Instances of bankruptcy goes up (Claessens and Klapper, 2005)

- Borrower risk decreases for public and private firms (Acharya et. al. 2011, Boyd, Hakenes, Heitz, 2018)
- Debt is cheaper (Qian and Strahan, 2007)

How is it possible for bank risk to go up, yet debt is cheaper and borrowers are reducing risk?

# Research Purpose

Unlike prior studies, we focus on the **loan portfolio**

- Risk-taking reflected in anticipated and realized losses
- Expected losses: Loan Loss Reserves
- Realized losses: Future Net Charge-Offs

- Impact of creditor rights on bank lending risk is unclear
  - During bankruptcy, bank loss given default (LGD) is lower
  - Banks may lend to a wider pool of borrowers, increasing probability of default (PD)
  - Loan Portfolio Risk = PD*LGD

# Creditor Rights Variables

- Creditor Rights Variable from Djankov, McLiesh, Shleifer (2007)
    1. Restrictions on reorganization ($Reorg$): Creditors have to approve restructuring similar to Chapter 11
    2. No automatic stay of assets ($NoAutostay$): On reorganization, creditors can retrieve assets immediately
    3. Secured creditor paid first ($Secured$): Secured creditors have absolute priority over government and employees
    4. No management stay ($Manages$): Creditors or the courts can remove firm management and appoint management to run the firm during reorganization
- Creditor Rights Index goes from [0,4]
    - Problems with aggregating these measures
    - $NoAutostay$ and $Manages$ are functions of $Reorg$
    - It's common to contract around $NoAutostay$

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# Bank Accounting

- *Ex-Ante* expectations of loan losses
  - Loan Loss Reserves: Allowances anticipated from the loan portfolio
- *Ex-Post* loan loss realizations
  - Future Charge-Offs: Actual loan portfolio losses
  - We focus on a one-year horizon (Harris, Khan, and Nissim, 2018)

# Data

- Bankscope
  - Bank-level data from 97 countries from 2005-2014
  - Comparable across countries
  - Bank-level data for 90% of assets at the country-level
  - Focus on non-US bank data for commercial and savings banks
- Macro controls (World Bank)
  - Real Per Capita GDP
  - Inflation
- Enforcement controls (Kaufmann et al., 2008):
  - Voice and Accountability
  - Political Stability
  - Government Effectiveness
  - Quality of Regulation
  - Rule of Law
  - Control of Corruption

# Summary Statistics

Table 1: Descriptive Statistics

| Panel A: Bank-Level Variables excluding US banks | | | | | | |
|---|---|---|---|---|---|---|
| Variable | mean | sd | p25 | p50 | p75 | N |
| TotalAssets (million USD) | 37,162 | 102,131 | 642 | 2,670 | 15,579 | 8,701 |
| TotalLoans (million USD) | 19,372 | 50,055 | 378 | 1,566 | 9,264 | 8,701 |
| LoansToAssets | 0.6046 | 0.1604 | 0.4981 | 0.6220 | 0.7216 | 8,701 |
| LnTotalAssets (million USD) | 8.1524 | 2.2207 | 6.4638 | 7.8898 | 9.6537 | 8,701 |
| LoanLossReserve | 0.0423 | 0.0448 | 0.0130 | 0.0264 | 0.0522 | 8,701 |
| NetChargeOff | 0.0104 | 0.0186 | 0.0013 | 0.0036 | 0.0100 | 8,701 |
| NonPerformingLoans | 0.0628 | 0.0802 | 0.0152 | 0.0343 | 0.0719 | 8701 |
| UnreserImpairedLoans | 0.0198 | 0.0481 | -0.0027 | 0.0083 | 0.0265 | 8,701 |
| ROA | 0.0073 | 0.0153 | 0.0025 | 0.0071 | 0.0133 | 8,701 |
| NetInterestRevenue | 0.0336 | 0.0231 | 0.0197 | 0.0256 | 0.0402 | 8,701 |
| LoanLossProvisions | 0.0081 | 0.0131 | 0.0012 | 0.0036 | 0.0093 | 8,701 |
| OtherProfit | -0.0114 | 0.0144 | -0.0137 | -0.0076 | -0.0038 | 8,701 |
| Panel D: Country-Level Variables | | | | | | |
| CRights | 2.0412 | 1.0500 | 1 | 2 | 3 | 97 |
| Reorg (cr1) | 0.3711 | 0.4856 | 0 | 0 | 1 | 97 |
| NoAutostay (cr2) | 0.4536 | 0.5004 | 0 | 0 | 1 | 97 |
| Secured (cr3) | 0.6907 | 0.4646 | 0 | 1 | 1 | 97 |
| Manages (cr4) | 0.5258 | 0.5019 | 0 | 1 | 1 | 97 |

# Hypothesis 1: Creditor Rights and Loan Losses

Hypothesis 1a (alternative): *Risk in lending portfolios, as reflected in loan losses, is lower for lenders in regimes with restrictions on reorganization.*

Hypothesis 1b (null): *Risk in lending portfolios, as reflected in loan losses, is no different for lenders in regimes with and without the secured creditor being paid first.*

- The effect creditor rights have on bank loan losses is an empirical question

  **Loan Portfolio Risk = LGD * PD**

- Loan losses are the realization of risk-taking within the loan portfolio
- *Secured* reduces LGD and likely increases PD.
- *Reorg* likely decreases LGD and also decreases PD.

# Creditor Rights Lead to Lower Loan Loss Reserves

Table 2: Creditor Rights and Loan Loss Reserves

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| CRights | -0.00181*** | | | |
| | (0.000481) | | | |
| Reorg (cr1) | | -0.0105*** | | -0.0100*** |
| | | (0.00101) | | (0.00104) |
| Secured (cr3) | | | -0.00549*** | -0.00424*** |
| | | | (0.00129) | (0.00132) |
| Bank-Level Controls | Yes | Yes | Yes | Yes |
| Macro Controls | Yes | Yes | Yes | Yes |
| Enforcement Controls | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 8,701 | 8,701 | 8,701 | 8,701 |
| $R^2$ | 0.200 | 0.207 | 0.200 | 0.209 |

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

# Creditor Rights Lead to Fewer Future Charge-Offs

Table 3: Creditor Rights and Realized Losses

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| CRights | -0.000774*** | | | |
| | (0.000277) | | | |
| Reorg (cr1) | | -0.00181*** | | -0.00123** |
| | | (0.000570) | | (0.000560) |
| Secured (cr3) | | | -0.00474*** | -0.00455*** |
| | | | (0.000765) | (0.000760) |
| Bank-Level Controls | Yes | Yes | Yes | Yes |
| Macro Controls | Yes | Yes | Yes | Yes |
| Enforcement Controls | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Observations | 5,275 | 5,275 | 5,275 | 5,275 |
| $R^2$ | 0.130 | 0.131 | 0.137 | 0.138 |

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

# However, Risk Increases Outside the Loan Portfolio

Table 6: Creditor Rights and Risk
Outside the Loan Portfolio

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| CRights | 0.000122 | | | |
| | (0.000101) | | | |
| Reorg (cr1) | | 0.000111 | | 0.0000376 |
| | | (0.000234) | | (0.000237) |
| Secured (cr3) | | | 0.000691*** | 0.000687*** |
| | | | (0.000218) | (0.000222) |
| Observations | 429 | 429 | 429 | 429 |
| $R^2$ | 0.210 | 0.208 | 0.225 | 0.225 |

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

# Hypothesis 2

- Egregious lending in the pre-crisis has been blamed for the financial crisis in the United States
- We hypothesize that other countries where the secured creditor is paid first exhibit similar egregious lending in pre-crisis periods

Hypothesis 2a (null): *Risk in lending portfolios due to restrictions on reorganization does not vary between pre-crisis and post-crisis periods .*

Hypothesis 2b (alternative): *Risk in lending portfolios due to the secured creditor being paid first is greater in the pre-crisis period relative to the post-crisis period .*

# Financial Crisis

| Table 7: Creditor Rights and Financial Crisis | | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Reorg * Precrisis | -0.0177*** | | -0.00470*** | |
| | (0.00237) | | (0.00160) | |
| Reorg * Crisis | -0.00836*** | | -0.00251** | |
| | (0.00187) | | (0.00102) | |
| Reorg * Postcrisis | -0.0112*** | | -0.00133* | |
| | (0.00137) | | (0.000775) | |
| Secured * Precrisis | | 0.00685*** | | 0.000797 |
| | | (0.00246) | | (0.00159) |
| Secured * Crisis | | -0.00233 | | -0.00309*** |
| | | (0.00200) | | (0.00118) |
| Secured * Postcrisis | | -0.00929*** | | -0.00753*** |
| | | (0.00162) | | (0.00102) |
| Maco Controls | yes | yes | yes | yes |
| Bank-Level Controls | yes | yes | yes | yes |
| Year Fixed Effects | yes | yes | yes | yes |
| Observations | 8,701 | 8,701 | 5,275 | 5,275 |
| $R^2$ | 0.209 | 0.203 | 0.132 | 0.142 |

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

# Loan Losses: PD vs. LGD

Bank risk-taking framework shows:

$$\text{Loan Portfolio Risk} = \text{LGD} * \text{PD}$$

- Creditor rights likely decrease LGD
- Effect on PD is more ambiguous

LGD and PD are difficult to measure

- Net Charge-Off is a *relatively pure* measure of LGD
- Bankscope's Unreserved Impaired Loans variable is a more powerful measure of PD: UIL = NPL - LLR

# Hypothesis 3

- *Secured* reduces LGD and likely increases PD.
- *Reorg* likely decreases LGD and also decreases PD.
- *NCO* reflects LGD more than PD.
- *UIL* reflects PD rather than LGD.

Hypothesis 3a (alternate): *Relative to net charge-offs (NCO), Unreserved Impaired Loans (UIL) will be more positively associated with Secured.*

Hypothesis 3b (alternate): *Relative to net charge-offs (NCO), Unreserved Impaired Loans (UIL) will be more negatively associated with Reorg.*

# Hypothesis 3: Chow Test Implementation

We cannot directly compare coefficients from two different regressions:

$$
\begin{aligned}
\mathrm{UnreserImpairedLoans}_{b,c,t} &= \zeta_1' \,\mathrm{CRights}_c + \zeta_2' \,\mathrm{Controls}_{b,c,t} \\
\mathrm{NetChargeOff}_{b,c,t} &= \eta_1' \,\mathrm{CRights}_c + \eta_2' \,\mathrm{Controls}_{b,c,t}
\end{aligned} \tag{1}
$$

Chow (1960) provides a framework:

- Pool the data, cloning each observation
- Define a dependent variable: $\mathrm{ModifiedNCO}$
  - NCO from the first set of dataset, UIL from second set
- Create dummy variable indicating data source

$$
\begin{aligned}
\mathrm{ModifiedNCO}_{b,c,t} = {} & \delta_1' \,\mathrm{CRights}_c + \delta_2' \,\mathrm{SecondSetDum} \\
& + \delta_3' \,\mathrm{CRights}_c \times \mathrm{SecondSetDum} \\
& + \delta_4' \,\mathrm{LogTotalAssets}_{b,c,t} + \delta_5' \,\mathrm{MacroControls}_{c,t} + \zeta_{b,c,t}
\end{aligned}
$$

# More Positive Impact on UIL than NCO

Table 9: Unreserved Impaired Losses and Net Charge-offs Chow Test

| | (1) | (2) | (3) |
|---|---|---|---|
| | | Excluding US | |
| CRights * Secondset | 0.00475*** | | |
| | (0.000455) | | |
| Reorg * Secondset | | -0.00631 | |
| | | (0.00107) | |
| Secured * Secondset | | | -0.00857*** |
| | | | (0.00116) |
| Bank-Level Controls | yes | yes | yes |
| Macro Controls | yes | yes | yes |
| Year Fixed Effects | yes | yes | yes |
| Observations | 17,402 | 17,402 | 17,402 |
| $R^2$ | 0.079 | 0.077 | 0.076 |

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

# Bank-level Risk and Lending Risk

- HLLM show that bank risk increases when creditor rights are stronger
  - Bank risk comes from risk inside and outside the loan portfolio
- We find that increased bank-level risk comes from outside the loan portfolio
  - Specifically, it comes from gains from trading, derivatives, and other securities

# Additional Analysis in the Paper

## Manager Discretion

- Managers anticipate fewer losses when creditor rights are strionger
- Even after controlling for risk within the loan portoflio

## *NoAutostay* and *Manages* behave differently

- Contracting environment is endogenous to *NoAutostay*
- Court (or creditor) could remove management and appoint someone, which leads to ambiguity in loan risk

# Battery of Robustness Tests

Main robustness tests presented in paper

1. Control for cross-country variation in bank accounting
2. Weighted regressions by bank-size
3. Matched sample by peer group, geographic region, and size
4. Instrumental Variable regression (using legal origin)

Other Robustness Tests

- Additional bank-level controls
- Loan Composition
- Bank Holding Companies
- Exclude countries with more sample representation (Germany, Italy, Norway, Russia)
- Alternative horizons for future net charge-off calculations

# Summary of Results

Stronger creditor rights lead to:

- Fewer anticipated and realized future losses
- Decreased bank risk-taking within the loan portfolio
- Increased bank risk-taking outside the loan portfolio

Highlight the richness in the creditor protection measures

- Intertemporal effects
- PD vs. LGD

# Contribution

Four Contributions:

- Higher creditor rights in $Reorg$ and $Secured$ lead to less (not more) risk in lending.
- Introduce empirical measures of portfolio-wide PD and LGD
- Document intertemporal differences in the effects of $Reorg$ and $Secured$ around crisis times
- Find differences across creditor protection measures.
    - Questions reliability of index.

# Thank You
# Questions?