The role of dynamic renegotiation and asymmetric information in financial contracting

Paper Presentation

FIN803 – Corporate Finance

Tim Martens and Christian Schmidt
The role of dynamic renegotiation and asymmetric information in financial contracting☆

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D82

A B S T R A C T

Using data from Securities and Exchange Commission filings, I show that the typical bank loan is renegotiated five times, or every nine months. The pricing, maturity, amount, and covenants are all significantly modified during each renegotiation, whose timing is governed by the financial health of the contracting parties and uncertainty regarding the borrowers’ credit quality. The relative importance of these factors depends on the duration of the lending relationship. I interpret these results in light of financial contracting theories and emphasize that renegotiation is an important mechanism for dynamically completing contracts and for allocating control rights ex post.

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### Theory

#### Renegotiation

- Parties are unable to commit to the terms of their agreement
- Consequence of an ex post inefficiency arising under the terms of the contract

#### Reasons

- Inefficient outcomes could be means to punish agents for deviations from equilibrium
- Inefficient outcomes could arise due to contractual incompleteness [Hart (1995)]
## Sample

### Data

- 114 firms
  - (intersection of S&P Compustat Database and Thomson Reuters-Dealscan Database and SEC files)
- 501 loan paths
- 1,773 renegotiations
- 1994 - 2010

<table>
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<tr>
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What happens in renegotiation? (1/3)
No clear relation between the renegotiation round and propensity to modify different terms of the contract (except commitment fee)

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<th>2–5</th>
<th>&gt; 5</th>
<th>( \beta )</th>
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<td>Renegotiation Frequency</td>
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<td>Probability of change to contract terms</td>
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<td>0.30</td>
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<td>0.00</td>
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<td>Probability of change to covenant structure</td>
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<td>0.05</td>
<td>0.06</td>
<td>0.07</td>
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</table>

- Changes are often caused by changes in operational, investment or financial policy rather than financial distress
- Renegotiation leads to significant changes in the amount, pricing and maturity of the contract in and independent of every round
- Renegotiations are persistently addressing contractual incompleteness throughout the lending relationship
What happens in renegotiation? (2/3)
Covenant modifications are the most probable outcome

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<th>Probability</th>
<th>Cumulative probability</th>
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<th>Pricing</th>
<th>Maturity</th>
<th>Covenant structure</th>
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<td>No</td>
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<td>93.45</td>
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<td>No</td>
<td>No</td>
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<td>Yes</td>
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<td>Yes</td>
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What happens in renegotiation? (3/3)

Borrowers yield strong decision rights to lenders at all times during the life of the contract.

- Macroeconomic conditions in credit markets and financial strength of the lender play a significant role.
- Growing borrower leverage increases the probability of covenant modification.
- Firms facing great uncertainty (about future profitability) experience the highest probability of covenant modification.
- Lending relationship and period since last event decrease the probability of a covenant modification.

---

Panel A: Covenant Modification Logit Regression

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<th>Variable</th>
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<th>Coefficient Standard Error</th>
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<td>Tight Lending Standards</td>
<td>0.084***</td>
<td>(2.447)</td>
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<td>Bank Leverage</td>
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<td>(0.027)</td>
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<td>S&amp;P 500 Return</td>
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<td>(0.602)</td>
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When does renegotiation occur? (1/2)

Early renegotiations (2nd-5th round) show an annual pattern

- Initial and early renegotiations are substantially more likely to occur at all durations (by design)
- Firms face an increasing in renegotiation likelihood soon after the origination or previous renegotiation
  - 10-12 months for initial and early renegotiations
  - 3 months for late renegotiations
- Annual pattern among initial and early renegotiations suggest that follow-on renegotiation could be driven in part by transaction costs / seasonal effects (rather than random shocks)
- Three year peak among early renegotiations is due to a change in loan composition and maturity
- Puzzling drop in likelihood for initial renegotiation from 26 months to 36 months
When does renegotiation occur? (2/2)
The timing of renegotiations is driven by three main factors:

- Financial health of the parties to the loan
- Uncertainty about borrowers’ future profitability
- Renegotiation outcome

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<td>(6.267)</td>
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<td>1.002*</td>
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<td>1.000</td>
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<td>1.006***</td>
<td>1.004**</td>
<td>1.003</td>
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<td>1.000</td>
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<td>1.009**</td>
<td>1.031***</td>
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<td>(1.648)</td>
<td>(3.919)</td>
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<td>(3.281)</td>
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<td>336</td>
<td>721</td>
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</table>
## Summary & Discussion

### Insights

- Renegotiation can be interpreted as a tool to persistently address contractual incompleteness.
- Lenders are granted significant control rights due to asymmetric information (moral hazard) opposed to traditional contracting theory.
- Renegotiations tend to appear frequently and on a regular basis inducing significant changes to the terms of the loan contract.

### Critical Remarks

- Generalization of the findings could be questionable.
- How representative is the random sample?
  - Significantly higher use of debt for takeovers.
  - Lender distribution.
  - Local distribution.
Thank you for your attention!
What happens in renegotiation?
Interest changes are monotonically negative related to news about the borrower

- Reinvestigation of the hypothesis that changes in the interest rate reflect *moral hazard* as opposed to credit risk
- Pricing changes are monotonically related to news about the borrower
- Relationship is supported by considering the relation between changes in the yield spread and changes in the market-to-book ratio
- Findings do not imply that *moral hazard* is irrelevant but potentially responsible for a statistically undetectable fraction of the change in interest rates

<table>
<thead>
<tr>
<th>News</th>
<th>Yield spread</th>
<th>Commitment fee</th>
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<tr>
<td></td>
<td>Market-to-book</td>
<td>Profitability</td>
</tr>
<tr>
<td>Bad</td>
<td>0.273***</td>
<td>0.180***</td>
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<tr>
<td></td>
<td>(4.245)</td>
<td>(2.906)</td>
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<tr>
<td>Moderate</td>
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<td>-0.011</td>
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<tr>
<td></td>
<td>(-0.173)</td>
<td>(-0.110)</td>
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<tr>
<td>Good</td>
<td>-0.349***</td>
<td>-0.314***</td>
</tr>
<tr>
<td></td>
<td>(-2.749)</td>
<td>(-2.050)</td>
</tr>
</tbody>
</table>
| Number of Observations | 394 | 376 | 121 | 119
When does renegotiation occur?
Bank leverage, loan maturity and investment restrictions predict the number of renegotiation rounds

- Renegotiation is not associated with a particular type of borrower (at least not based on observable characteristics)
- Robust findings suggest that financial health of the bank sector, loan maturity and the presence of investment restrictions predict the number of negotiations rounds
- Loans with longer maturities might require more renegotiations due to unforeseeable contingencies
- Renegotiations are an ex post mechanism designed to address information problems at the contracting stage

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<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
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<td>Investment Restriction</td>
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- Yes
- No

- Loan type fixed effects: Yes
- Terminal event fixed effects: Yes
- Average number of amendments: 2.689
- Number of observations: 338
Sample statistics
### Sample statistics

#### Panel A: Sample statistics for the entire sample

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<thead>
<tr>
<th></th>
<th>Count</th>
<th>Mean</th>
<th>Minimum</th>
<th>Median</th>
<th>Maximum</th>
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<tbody>
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<td>12.13</td>
<td>0.69</td>
<td>10.00</td>
<td>49.38</td>
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<tr>
<td>Duration to amend and restate (months)</td>
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<td>7.40</td>
<td>0.03</td>
<td>5.51</td>
<td>55.51</td>
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<tr>
<td>Duration to amend (months)</td>
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<td>17.20</td>
<td>1.74</td>
<td>11.34</td>
<td>179.70</td>
</tr>
<tr>
<td>Duration to rollover (months)</td>
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<td>11.34</td>
<td>179.70</td>
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*Terminal events*

<p>| | | | | |</p>
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<td>Censor</td>
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#### Panel B: Sample statistics for the subsample with at least one renegotiation

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<td>1.00</td>
<td>4.00</td>
<td>30.00</td>
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<td>Number of Renegotiations</td>
<td>1,773</td>
<td>12.13</td>
<td>0.69</td>
<td>10.00</td>
<td>49.38</td>
</tr>
<tr>
<td>Duration to amend and restate (months)</td>
<td>303</td>
<td>7.40</td>
<td>0.03</td>
<td>5.51</td>
<td>55.51</td>
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<td>Duration to amend (months)</td>
<td>1,354</td>
<td>17.20</td>
<td>1.74</td>
<td>11.34</td>
<td>179.70</td>
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<tr>
<td>Duration to rollover (months)</td>
<td>116</td>
<td>17.20</td>
<td>1.74</td>
<td>11.34</td>
<td>179.70</td>
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*Terminal events*

<p>| | | | | |</p>
<table>
<thead>
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<tbody>
<tr>
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<tr>
<td>Terminate</td>
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<tr>
<td>Mature</td>
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<td>Censor</td>
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### Panel C: Contract characteristics

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<th>Dealscan data</th>
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<td></td>
<td>Number of Observations</td>
<td>Mean</td>
<td>Standard Deviation</td>
<td>Median</td>
<td>Number of Observations</td>
<td>Mean</td>
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<td><strong>Terms</strong></td>
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<td>196.62</td>
<td>307.12</td>
<td>100.00</td>
<td>245,329</td>
<td>216.11</td>
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<td>50.56</td>
<td>26.04</td>
<td>60.00</td>
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<td>21.49</td>
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<td>38,734</td>
<td>22.20</td>
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</table>

### Panel D: Borrower characteristics

|                                | SEC data |                     |                | Compustat data |                     |                |
|                                | Number of Observations | Mean | Standard Deviation | Median | Number of Observations | Mean | Standard Deviation | Median |
| Sales (millions)               | 2,759    | 412.11              | 540.32         | 179.05        | 394,885            | 500.66         | 1,489.35       | 48.63   |
| Total debt/EBITDA             | 2,474    | 12.75               | 20.38          | 10.29         | 366,664            | 5.65           | 24.06          | 2.90    |
| Total debt/Book assets (percent) | 2,651   | 35.01               | 19.95          | 33.34         | 400,737            | 31.54          | 51.15          | 21.58   |
### Sample statistics

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<th>Compustat data</th>
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<td>EBITDA/Book assets (percent)</td>
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<td>Market-to-Book</td>
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<td>Physical capital/Book assets (percent)</td>
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