Debt Contracting on Management

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- "Financial Reporting Quality and Uncertainty about Credit Risk among the Ratings Agencies" The Accounting Review 93(4), (2018) 1-22.
- "Corruption in Bank Lending: The Role of Timely Loan Loss Recognition" with Yiwei Dou and Jeff Ng. Journal of Accounting and Economics 63(2-3), (2017) 454-478.
- "Bank Competition and Financial Stability: Evidence from the Financial Crisis" with LynnLi, Jeff Ng, and Tjomme Rusticus. Journal of Financial and Quantitative Analysis 51(1),(2016) 1-28.

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Publications:

- Relative Performance Evaluation in CEO Compensation: A Talent-Retention Explanation (with Yaniv Grinstein), Journal of Financial and Quantitative Analysis 55 (2020), 2099-2123. (Lead Article)
- The Effects of Short-Selling Threats on Incentive Contracts: Evidence from an Experiment (with Gustavo Grullon and Sébastien Michenaud), The Review of Financial Studies 30 (2017), 1627-1659.

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WORKING PAPERS:

- The Salience of Creditors' Interests and CEO Compensation with Brian Akins, Jonathan Bitting, and David De Angelis, 2018
- Risk Fact or Fiction: The information content of risk factor disclosures, 2018

1. Introduction

2. Database

3. Why Do Lenders Use CMRs?

4.What Are the Implications of CMR Inclusion for CEO Turnover and Future Firm Performance?

5. Additional Analysis

6. Conclusion

Abstract

- Change of management restrictions (CMRs) in loan contracts give lenders explicit ex ante control rights over managerial retention and selection.
- This paper shows that lenders use CMRs to mitigate risks arising from CEO turnover, especially those related to the loss of human capital and replacement uncertainty, thereby providing evidence that human capital risk affects debt contracting.
- With a CMR in place,the likelihood of CEO turnover decreases by more than half, and future firm performance improves when retention frictions are important, suggesting that lenders can influence managerial turnover, even outside of default states, and help the borrower retain talent.

1.Introduction

A. Examples of Change of Management Restriction Clauses

- **St. Mary Land & Exploration Co.**, June 30, 1998, $200,000,000 par amount:

Section 8.1. Events of Default. Each of the following events constitutes an Event of Default under this Agreement: [. . .]

(l) Any *Change in Management* occurs; [. . .]

“Change of Management” means that Mark A. Hellerstein shall cease to act as President and chief executive officer of Borrower or that Ronald D. Boone shall cease to be Executive Vice President and chief operating officer of Borrower.

- **Telespectrum Worldwide Incorporated**, January 24, 1997, $70,000,000 par amount:

SECTION 7. NEGATIVE COVENANTS: [. . .]

7.11 *Change in Executive Management*: Borrowers shall not remove or replace any Person who is a member of Executive Management without the prior written consent of the Majority Lenders, such consent not to be unreasonably withheld. In the event of the death or any member of Executive Management, Borrowers shall have ninety (90) days to replace such Person, and any such replacement shall be acceptable to the Majority Lenders in their reasonable discretion.

LENDERS CAN INCLUDE CHANGE OF management restrictions (CMRs) in loan contracts. These restrictions give lenders explicit ex ante control rights over retention and/or selection decisions. The presence of these covenants directly speaks first to the possibility of lenders addressing the human capital risk associated with a manager and second to lenders having an active role in corporate governance.

Hart and Moore (1994) develop a theory of debt based on firms' inability to transfer human capital from the individual to the firm, but little is known about how debtholders address this risk.They predict that lenders should adjust debt maturity, capacity, and payment streams to compensate for the inalienability of human capital.

B.The main work

- Gilson (1989): Lenders can force executive replacement in the case of bankruptcy.
- Nini, Smith, and Sufi (2012):Covenant violations of financial covenants tend to lead to CEO removal.

✓ These studies focus on ex post renegotiation and infer creditors' roles by testing outcomes.

What unique role does a CMR play?

Like other covenants, CMRs provide a mechanism for creditors to influence the borrower's governance.

Unlike other covenants, CMRs do not restrict managerial actions or require that financial thresholds be met; rather,they restrict managerial selection.

- Berkovitch and Israel (1996);Grinstein (2006):A change in CEO is, in general, risky due to uncertainty about the potential change in operations.
- Jensen and Meckling(1976):creditors are likely to favor less risky corporate policies.
- Becker (1964):CEO turnovers are also risky because the human capital associated with the current CEO is lost, and the board's ability to find an appropriate replacement is uncertain.

- Novaes (2003)—Lenders have incentives to gain the support of the current CEO as managers, not shareholders, choose financing options.
- Bebchuk and Fried (2003)—similar to the rent extraction and managerial power arguments proposed in the CEO compensation literature , it is possible that the debt contracting process has been captured by the current CEO, who simply petitions for a CMR to be included in the loan contract.

Why do lenders use CMRs?

Lenders include CMRs to mitigate risks arising from CEO turnover

lenders include a CMR in exchange for securing the lending relationship or for a higher interest rate.

- Nini, Smith, and Sufi (2012): The effect of covenant violations on CEO turnover is less pronounced

What are the implications of CMR inclusion for CEO turnover?

What are the implications of CMR inclusion for future firm performance?

2. Database

A. Sample Construction

We obtain our sample of contracts from an initial merge of the Compustat database with a 2015 extract of DealScan using the link data.

- Valid firm data from **Compustat**
- Deal active dates, price information, and deal amounts from **DealScan**
- Download full private loan contracts available through the **SEC's Electronic Data Gathering, Analysis, and Retrieval (EDGAR) system**

- Match these **DealScan** packages to **EDGAR** filings using a keyword search approach
- Download and search through all **10-K, 10-Q, and 8-K filings** for credit agreements, amendments,and restatements.
- Search for any collocated combination of the terms “credit,” “loan,” “debt,” “borrowing,”“borrower,” “financing,” or “revolving” with “agreement,” “contract,” or “facility.”

B. CMR Clauses

- Conduct a broad, **textual search** based on some indication of change and managerial position terms, such as “change” followed shortly in the paragraph by “management,” “CEO,” etc.
- **Filter** the paragraphs to eliminate clauses that did not specifically limit changes to management.
- **Manually read** through and filter this reduced set of paragraphs
- **Remove** further contracts with either signing date,syndicate members, or deal amount that does not match the associated values in DealScan.

✓ Our sample consists of 15,501 private loan contracts for 4,411 borrowing firms.

C. Main Explanatory Variables

- Retrieve firm accounting information, market information, loan characteristics, and CEO information from **Compustat, CRSP, DealScan,** and **ExecuComp, respectively.**

Variable definitions

Firm/borrower characteristics

CMR Firm	Dummy equal to 1 if the firm has a CMR clause at some point during our sample period	EDGAR
Assets	Book value of total assets (in millions, AT)	Compustat
Book Value of Equity	Total assets – total liabilities – preferred stock ($AT - LT - PSTK$)	Compustat
Leverage	Ratio of total debt to total assets (Book Leverage) $(DLTT + DLC)/AT$	Compustat
Operating CF	Ratio of operating income before depreciation to lagged total assets ($OIBDP/AT_{t-1}$)	Compustat
Tangibility	Logged ratio of one plus net PP&E to total assets $Ln(1 + PPENT/AT)$	Compustat
Market Cap	Equity value measured at most recent fiscal year end ($PRCC\_F * CSHO$)	Compustat
MtB	Ratio of Market Cap to Book Value of Equity, omitted for negative Book Equity	Compustat

Rated	Dummy equal to 1 if borrower has a current credit rating	Compustat
Z-Score	Modified Altman's Z-score of the borrower: $(1.2 \times Working\ Capital + 1.4 \times Retained\ Earnings + 3.3 \times Pretax\ Income + 0.999 \times Net\ Sales)/(Total\ Assets)$	Compustat
ROA	Ratio of earnings before interest and taxes to lagged total assets ($EBIT/AT_{t-1}$)	Compustat
Tobin's Q	Ratio of market value of assets to book value of assets ($AT - Book\ Value\ Equity + Market\ Cap)/AT$	Compustat
TSR 1 year	One-year stock return including dividend payments	CRSP
TSR 3 years	Three-year stock return including dividend payments	CRSP
% Insider (Ind.)	Fama-French 48 industry measure of the percent of CEO turnover replacements that come from inside the firm	Cremers and Grinstein (2014)
Noncompete Index	Ranking from 0 (least) to 9 (most) of how well noncompete clauses are enforced at the state level	Garmaise (2011)
Low NC Enforcement	Dummy equal to 1 for firms headquartered in a state with *Noncompete Index* less than the sample median (4)	Garmaise (2011)

Manager characteristics

Founder CEO	Dummy equal to 1 if CEO tenure ≥ firm CRSP age	ExecuComp/CRSP
CEO Ownership %	Percent of outstanding firm shares owned by the CEO	ExecuComp/Compustat
CEO High Ownership	Dummy equal to 1 if the CEO owns more than 5% of outstanding firm shares	ExecuComp/Compustat
CEO No Unvested Equity	Dummy equal to 1 if the CEO does not own unvested (or has no unearned) stock (*shrs_unvest_num*), option (*opts_unex_unexer*; *opts_unex_unearn*), and equity incentive plan share (*eip_shrs_unvest_num*)	ExecuComp
CEO Retirement Age	Dummy equal to 1 if CEO age is between 63 and 66 inclusive for the CEO turnover tests following Jenter and Kanaan (2015), and 63 and 65 inclusive for the CMR tests following Jenter and Lewellen (2015)	ExecuComp
No Heir Apparent	Dummy equal to 1 if none of the top five executives (excluding the CEO) has president or COO in her title	ExecuComp
CEO Age	Age of CEO at fiscal year-end	ExecuComp
CEO Tenure	Number of months the CEO has held her current position as of package initiation date	ExecuComp/Dealscan
New CEO	Dummy equal to 1 if CEO Tenure is two years or less	ExecuComp

Loan/lender characteristics

CMR Clause	Dummy equal to 1 if the loan contract contains a CMR clause	EDGAR
All-In Spread Drawn	Spread over LIBOR plus fees (basis points) of largest facility in package	DealScan
Scaled Amount	Face value of facility in millions of U.S. dollars of largest facility in package scaled by the firm's total assets	DealScan/Compustat
Maturity	Maturity in months of largest facility in package	DealScan
Collateralized	Dummy equal to 1 if the loan is secured	DealScan
# of Financial cov.	Number of financial covenants included in contract	DealScan
Perf. pricing	Dummy equal to 1 if the loan uses performance pricing	DealScan
Loan Purpose	Primary loan purposes of the largest facility in the package, for example, Acquis. line and Equipment Purchase	DealScan
Loan Type	Loan type of the largest facility in the package, for example, Revolver and Term Loan A	DealScan
% Lead Allocation	Percentage of facility amount held by lead arranger	DealScan
Local Lead	Dummy equal to 1 if the firm and lead lender are in the same state	DealScan
Number of Lenders	Number of lenders included in syndicate	DealScan

Macro characteristics

Credit Spread	The difference between the Moody's seasoned Baa and Aaa corporate bond yields	Federal Reserve Bank, St. Louis
Term Spread	The difference between the 10-year and 2-year Treasury constant maturity yields	Federal Reserve Bank, St. Louis

3.Why Do Lenders Use CMRs?

Panel B: Univariate Analysis

	Loan Contract with a CMR		Loan Contract with no CMR		Difference in Mean		Wilcoxon Rank-Sum Test
	Mean	Median	Mean	Median	Difference	*t-stat*	*z-stat*
Firm characteristics							
Log(AT)	5.17	4.98	6.82	6.81	−1.64***	−21.10	−20.08***
Z-score	0.77	0.83	1.43	1.48	−0.66***	−9.36	−8.67***
Tangibility	0.22	0.16	0.26	0.22	−0.04***	−4.21	−5.36***
MtB	2.65	1.61	2.67	1.83	−0.02	−0.16	−3.70***
Operating CF	0.10	0.11	0.15	0.14	−0.05***	−6.78	−6.03***
Leverage (Book)	0.31	0.31	0.32	0.30	−0.01	−0.77	−0.72
Rated	0.14	0.00	0.46	0.00	−0.32***	−14.87	−14.77***
Term Spread	0.94	0.51	1.15	1.23	−0.21***	−4.95	−4.42***
Credit Spread	0.90	0.83	0.94	0.88	−0.04***	−2.66	−3.57***
Tobin's Q	1.65	1.25	1.66	1.36	−0.01	−0.12	−3.57***
Low NC Enforcement	0.51	1.00	0.46	0.00	0.05**	2.01	2.01**
% Insider (Ind.)	0.64	0.67	0.68	0.69	−0.03***	−6.13	−5.05***
Founder CEO	0.45	0.00	0.20	0.00	0.25***	5.61	5.60***
CEO Ownership %	0.04	0.01	0.02	0.00	0.02***	4.63	3.91***

Panel A: Year and Industry Distributions

	Firms (Packages) with CMR		Firms (Packages) without CMR			
	Frequency	Percent	Frequency	Percent	Difference	t-stat
Industry (FF 12)						
1—NonDurb	31	5.88	1,026	6.89	-1.01	-0.74
2—Durbl	13	2.47	450	3.02	-0.56	-0.62
3—Manuf	54	10.25	2,035	13.67	-3.42	-2.01
4—Energy	34	6.45	1,098	7.38	-0.92	-0.59
5—Chems	6	1.14	452	3.04	-1.90	-2.57
6—BusEqp	79	14.99	1,815	12.19	2.80	1.51
7—Telcm	14	2.66	560	3.76	-1.11	-1.10
8—Utils	9	1.71	723	4.86	-3.15	-2.51
9—Shops	56	10.63	2,322	15.60	-4.97	-2.52
10—Health	43	8.16	961	6.46	1.70	1.26
11—REIT	111	21.06	1,282	8.61	12.45	4.40
12—Other	77	14.61	2,163	14.53	0.08	0.04

	Dependent Variable = CMR Clause				
	(1)	(2)	(3)	(4)	(5)
Log(AT)	-0.302***	-0.316***	-0.308***	-0.268***	-0.232***
	(-14.39)	(-14.19)	(-11.52)	(-8.74)	(-6.58)
Z-score	-0.040***	-0.048***	-0.055**	-0.054**	-0.052**
	(-2.63)	(-2.73)	(-2.34)	(-2.33)	(-2.21)
Tangibility		-0.445*	-0.498**	-0.510**	-0.418
		(-1.82)	(-1.97)	(-2.02)	(-1.62)
MtB		-0.002	-0.004	-0.003	-0.002
		(-0.28)	(-0.42)	(-0.38)	(-0.22)
Operating CF			0.170	0.214	0.246
			(0.74)	(0.94)	(1.04)
Leverage (Book)			0.263	0.283	0.281
			(1.46)	(1.58)	(1.54)
Rated			-0.129	-0.114	-0.119
			(-1.29)	(-1.14)	(-1.15)
Term Spread			0.156	0.153	0.142
			(1.63)	(1.60)	(1.45)
Credit Spread			-0.017	-0.028	-0.059
			(-0.14)	(-0.23)	(-0.47)
Log(# of Lenders)				-0.132**	-0.120*
				(-2.20)	(-1.76)
Scaled Loan Amount					0.084
					(0.69)
Log(Maturity)					-0.193***
					(-3.19)
Collateralized					0.146*
					(1.83)
# of Financial Covenants					0.041*
					(1.71)
Performance Pricing					0.012
					(0.17)

Risk Hypothesis

a. CMR Inclusion and Human Capital

- Under the risk hypothesis, we expect CMRs to be included when replacing the current CEO is more difficult and/or there is more uncertainty about the potential replacement.

① we examine whether the **CEO is also the founder**.—We expect founder CEOs to have firm specific skills that make them difficult to replace, leading to an increase in the use of CMR clauses.（***Founder CEO***）

② we examine the percentage of new CEOs in the industry who were promoted from **within the firm rather than hired** externally.—As argued in Cremers and Grinstein (2014), industries with a higher percentage of insiders promoted to CEO are more heterogeneous in nature, implying that managerial skills from inside the firm are harder to reproduce and transfer across firms. In these industries, the impact of a change in management on firm performance and viability is likely to be more important, making a CMR more beneficial.（***% Insider (Ind.)***）

③ we examine t**he lack of a CEO heir apparent** on the executive team.—The lack of an heir apparent is likely to increase the human capital risk faced by lenders because it increases uncertainty about the potential change in operations if the current CEO leaves. We thus expect a **positive** relation between the use of a CMR and the lack of an heir apparent.（***No Heir Apparent***）

	Dependent Variable = CMR Clause					
X =	Founder CEO		% Insider (Ind.)		No Heir Apparent	
	(1)	(2)	(3)	(4)	(5)	(6)
X	0.392**	0.375**	0.722**	0.653**	0.247**	0.275**
	(2.21)	(2.00)	(2.29)	(2.03)	(1.96)	(2.26)
Average marginal effect	0.011	0.010	0.044	0.040	0.006	0.007
Firm controls	Y	Y	Y	Y	Y	Y
Loan/syndicate controls	N	Y	N	Y	N	Y
Loan purpose fixed effects	N	Y	N	Y	N	Y
Loan type fixed effects	N	Y	N	Y	N	Y
Year fixed effects	Y	Y	Y	Y	Y	Y
Industry fixed effects	Y	Y	Y	Y	Y	Y
Pseudo R^2	0.23	0.27	0.17	0.19	0.22	0.26
Observations	5,818	5,347	11,685	11,180	5,561	5,100

b. CMR Inclusion and Contracting Frictions

- Under the risk hypothesis, we expect lenders to use a CMR when it is more difficult for a firm to retain its CEO and when CMR inclusion could improve the likelihood of retention.

◆ Arguments concerns the **potential costs** to a CEO for leaving the company, specifically, the **costs related to a CMR violation** and those that can be **imposed by shareholders**.

① we examine the percentage of outstanding firm shares held by the CEO (***CEO Ownership %***).

② we examine whether the CEO has outstanding equity that is unvested or unearned （***CEO No Unvested Equity***）.

◆ Arguments concerns the **extent to which shareholders are able to retain talent**.

① we examine whether firms with CMRs are located in states where noncompete clauses are less enforceable.（***Low NC Enforcement***）

② we examine whether CMRs are more common in contracts for firms whose CEOs are likely to retire.（***CEO Retirement Age***）

Panel A: CMR Inclusion and Contracting Frictions								
	Dependent Variable = CMR Clause							
X =	CEO Ownership %		CEO No Unvested Equity		Low NC Enforcement		CEO Retirement Age	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
X	2.506***	2.576***	0.602**	0.637***	0.126*	0.123*	0.359*	0.374*
	(2.65)	(2.53)	(2.50)	(2.74)	(1.93)	(1.87)	(1.70)	(1.88)
Average marginal effect	0.060	0.063	0.012	0.013	0.008	0.008	0.011	0.012
Firm controls	Y	Y	Y	Y	Y	Y	Y	Y
Loan/syndicate controls	N	Y	N	Y	N	Y	N	Y
Loan purpose fixed effects	N	Y	N	Y	N	Y	N	Y
Loan type fixed effects	N	Y	N	Y	N	Y	N	Y
Year fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Industry fixed effects	Y	Y	Y	Y	Y	Y	Y	Y
Pseudo R^2	0.21	0.25	0.21	0.25	0.17	0.19	0.21	0.26
Observations	5,796	5,319	5,861	5,374	11,587	11,088	5,590	5,128

Panel B: Human Capital and Contracting Frictions—Noncompete Enforcement

	Dependent Variable = CMR Clause					
	(1)	(2)	(3)	(4)	(5)	(6)
High NC Enforcement × Founder CEO	0.240	0.206				
	(1.18)	(1.01)				
Low NC Enforcement × Non-Founder CEO	0.149	0.155				
	(0.94)	(0.98)				
Low NC Enforcement × Founder CEO	0.663***	0.651***				
	(2.71)	(2.62)				
High NC Enforcement × % Insider (Ind.)			0.593*	0.532		
			(1.82)	(1.60)		
Low NC Enforcement × % Insider (Ind.)			0.788**	0.721**		
			(2.46)	(2.20)		
High NC Enforcement × No Heir Apparent					0.230*	0.276*
					(1.65)	(1.96)
Low NC Enforcement × Heir Apparent					0.359**	0.398**
					(2.03)	(2.25)
Low NC Enforcement × No Heir Apparent					0.484***	0.508***
					(2.65)	(2.76)
Firm Controls/Year & Industry fixed effects	Y	Y	Y	Y	Y	Y
Syndicate & Loan Controls	N	Y	N	Y	N	Y
Pseudo R^2	0.24	0.28	0.17	0.19	0.22	0.27
Observations	5,732	5,267	11,528	11,031	5,906	5,408

Panel C: Human Capital and Contracting Frictions—CEO Retirement Age

	Dependent Variable = CMR Clause					
	(1)	(2)	(3)	(4)	(5)	(6)
Not Retirement Age x Founder CEO	0.410**	0.427**				
	(2.15)	(2.17)				
Retirement Age x Non-Founder CEO	0.246	0.269				
	(0.92)	(1.04)				
Retirement Age x Founder CEO	0.867***	0.879***				
	(3.47)	(3.46)				
Not Retirement Age x % Insider (Ind.)			1.219*	0.972		
			(1.85)	(1.45)		
Retirement Age x % Insider (Ind.)			1.728**	1.506**		
			(2.39)	(2.09)		
Not Retirement Age x No Heir Apparent					0.275**	0.309**
					(2.10)	(2.43)
Retirement Age x Heir Apparent					0.445**	0.484**
					(2.01)	(2.25)
Retirement Age x No Heir Apparent					0.510	0.490
					(1.49)	(1.44)
Firm Controls/Year & Industry fixed effects	Y	Y	Y	Y	Y	Y
Syndicate & Loan Controls	N	Y	N	Y	N	Y
Pseudo R^2	0.23	0.27	0.22	0.26	0.22	0.27
Observations	5,561	5,106	5,576	5,115	5,561	5,100

Collusion Hypothesis

The Motivation to Include a CMR and Its Implications on Loan Pricing

- Under the collusion hypothesis, the presence of a CMR in the loan contract is the outcome of lenders and the CEO colluding to protect CEO tenure.

- ◆ Lenders can include a CMR in exchange for securing the lending relationship.
- ◆ Lender may grant the request in exchange for a higher interest rate.

Identifying whether these arguments motivate CMR inclusion is difficult,because the cross-sectional implications are much as they would be if the CMRs resulted from an efficient, lender-protective bargaining process. Under the risk hypothesis, banks are more likely to adopt a CMR when the manager has unique skills or would be difficult to replace. These attributes could also give the manager more power over the board of directors, which is **consistent with the collusion hypothesis.**

One way to disentangle the two hypotheses is to **study the pricing of the loan**.

- If the motivation behind a CMR is to protect the bank, then,like other types of covenants, the CMR should be priced into the loan contract. (a **negative** relation)

- Under the collusion hypothesis, we expect lenders to include a CMR to secure the lending relationship or the CEO to petition for a CMR,with lenders agreeing but negotiating a higher loan rate at equity holders' expense. (a **positive** relation)

1. Retrieve the inverse Mills ratio (IMR) to correct for selection

We assume that the negotiation process simultaneously determines prices and CMR inclusion.Thus, the decision to include a CMR is determined by the costs of non-inclusion exceeding the benefits of inclusion, as shown in equation (IA.1):

$$Par * Yield_{NoCMR} > Par * Yield_{CMR} + Cost\ of\ CMR, \tag{IA.1}$$

$$Yield_{NoCMR} - Yield_{CMR} > Cost\ of\ CMR/Par,$$

$$CMR\ Cost \sim Z\beta_{cc} + \varepsilon_{cc}:$$

$$CMR^* = \alpha + \delta(LogYield_{NoCMR} - LogYield_{CMR}) + Z\beta_c + \varepsilon, \tag{IA.2}$$

$$LogYield_{NoCMR,i} = X_{NoCMR,i}\beta_{NoCMR} + \nu_{NoCMR,i}, \tag{IA.3}$$

$$LogYield_{CMR,i} = X_{CMR,i}\beta_{CMR} + \nu_{CMR,i}. \tag{IA.4}$$

$$CMR_i^* = \alpha + X_i\theta + Z_i\xi + \zeta_i, \tag{IA.5}$$

X is a vector of characteristics that affect loan pricing
Z is a vector of characteristics that affect CMR inclusion.

2. Using this retrieved IMR,we estimate the loan yield conditional on including or not including a CMR:

- ✓ IMR的作用是为每一个样本计算出一个用于修正样本选择偏差的值。如果IMR大于0，表明样本存在选择性偏差，此时采用Heckman两步法选择模型估计是恰当的修正。

$$LogYield_{NoCMR,i} = X_{NoCMR,i}\beta_{NoCMR} + IMR_{NoCMR,i} + \nu_{NoCMR,i} \quad \text{(IA.6)}$$

$$LogYield_{CMR,i} = X_{CMR,i}\beta_{CMR} + IMR_{CMR,i} + \nu_{CMR,i}. \quad \text{(IA.7)}$$

$$\widehat{LogYield}_{NoCMR,i} - \widehat{LogYield}_{CMR,i} = X_i\left(\hat{\beta}_{NoCMR} - \hat{\beta}_{CMR}\right). \quad \text{(IA.8)}$$

3. Test the association between the presence of a CMR and the difference in estimated yields associated with the loan including or not including a CMR:

$$CMR^* = \alpha + \delta\left(\widehat{LogYield}_{NoCMR} - \widehat{LogYield}_{CMR}\right) + Z\beta_c + \varepsilon, \quad \text{(IA.9)}$$

Under the collusion hypothesis, we expect δ to be **null or negative**

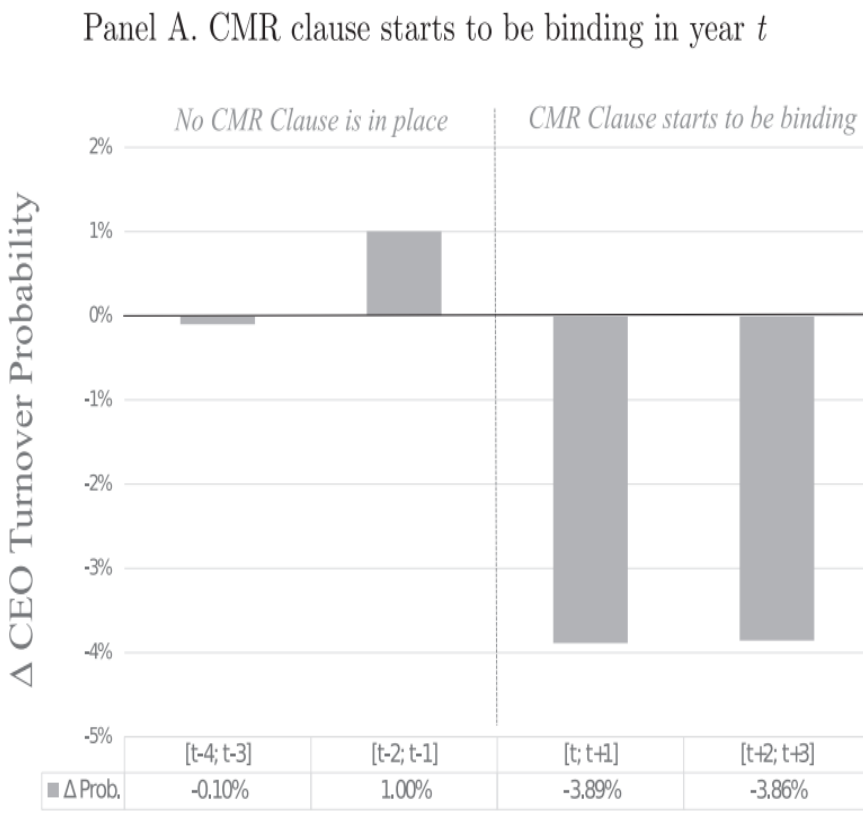
	Dependent Variable = CMR Clause		
	(1)	(2)	(3)
$\widehat{LogYield}_{NoCMR} - \widehat{LogYield}_{CMR}$	0.354***	0.701***	0.725***
	(3.12)	(3.98)	(3.79)
Average marginal effect	0.022	0.061	0.069
Firm controls	Y	Y	Y
Loan/syndicate controls	Y	Y	Y
Year fixed effects	Y	Y	Y
Industry fixed effects	Y	Y	Y
Pseudo R^2	0.17	0.16	0.16
Observations	11,237	6,080	4,562

4.What Are the Implications of CMR Inclusion for CEO Turnover and Future Firm Performance?

A. Implications of CMR Inclusion for CEO Turnover

The Presence of a CMR Clause and CEO Turnover

	Dependent Variable = CEO Turnover$_t$					
	(1)	(2)	(3)	(4)	(5)	(6)
CMR Clause Binding$_t$	−0.427**	−0.427***	−0.388**	−0.409**	−0.417**	−0.386**
	(−2.54)	(−2.59)	(−2.03)	(−2.45)	(−2.54)	(−2.03)
TSR 1 year$_{t-1}$	−0.209***	−0.217***	−0.217***			
	(−6.12)	(−5.60)	(−5.60)			
TSR 3 year$_{t-1}$				−0.071***	−0.081***	−0.081***
				(−4.24)	(−4.50)	(−4.50)
ROA$_{t-1}$	−0.461***	−0.467***	−0.469***	−0.342**	−0.334**	−0.336**
	(−3.14)	(−3.11)	(−3.12)	(−2.22)	(−2.13)	(−2.14)
CEO High Ownership$_{t-1}$	−0.284***	−0.278***	−0.278***	−0.284***	−0.280***	−0.279***
	(−5.50)	(−5.37)	(−5.35)	(−5.47)	(−5.39)	(−5.37)
CEO Retirement Age$_{t-1}$	0.604***	0.609***	0.609***	0.601***	0.604***	0.604***
	(15.87)	(15.84)	(15.84)	(15.78)	(15.74)	(15.74)
CEO Tenure$_{t-1}$	0.001***	0.001***	0.001***	0.001***	0.001***	0.001***
	(5.30)	(5.16)	(5.16)	(5.29)	(5.15)	(5.15)
CMR Firm			−0.040			−0.032
			(−0.47)			(−0.37)
CMR clause binding: Average marginal effect	−0.053	−0.052	−0.049	−0.051	−0.052	−0.049
Year fixed effects	N	Y	Y	N	Y	Y
Pseudo R^2	0.04	0.04	0.04	0.04	0.04	0.04
Observations	16,645	16,645	16,645	16,645	16,645	16,645



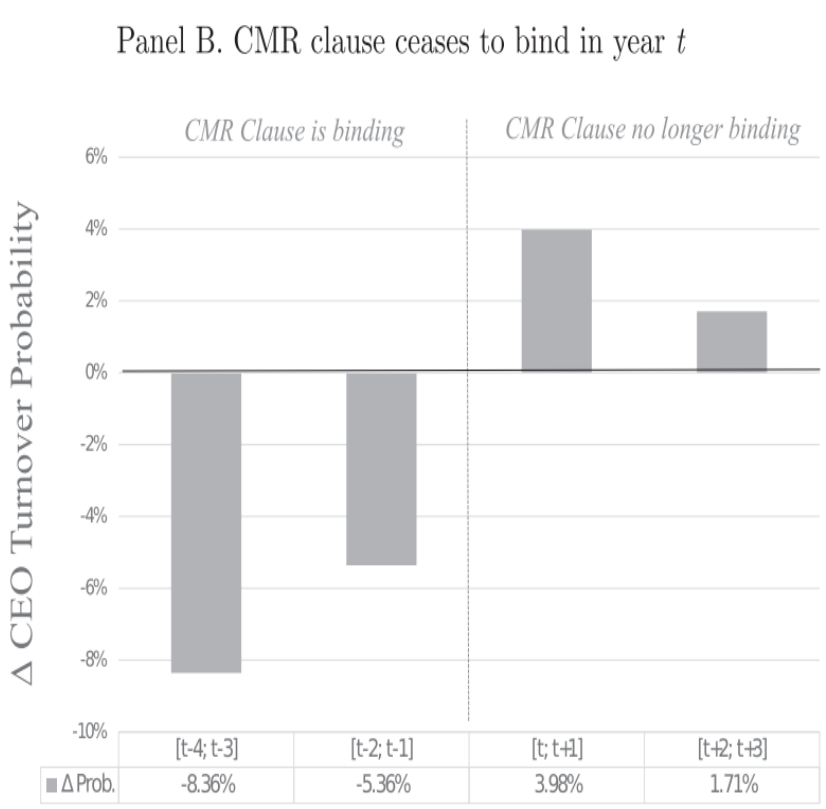


Figure 1. The presence of a CMR clause and abnormal CEO turnover.

B. Implications of CMR Inclusion for Future Firm Performance

Firm Value

Panel A: Dependent Variable = Tobin's Q

	All Firms		Low NC Enforcement		CEO Retirement Age		Z-score Low		Junk Rating	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CMR Clause	0.009	0.034								
	(0.26)	(0.91)								
CMR * X = 1			0.028	0.057	0.107**	0.100**	0.007	0.022	0.050	0.101**
			(0.56)	(1.10)	(2.25)	(2.03)	(0.14)	(0.56)	(1.05)	(2.16)
CMR * X = 0			−0.016	0.007	0.013	0.062	−0.017	0.015	0.020	0.002
			(−0.30)	(0.14)	(0.15)	(0.76)	(−0.35)	(0.29)	(0.35)	(0.03)
Lag Dep. Var.	N	Y	N	Y	N	Y	N	Y	N	Y
R^2	0.09	0.10	0.09	0.10	0.11	0.11	0.11	0.11	0.11	0.11
Observations	12,798	11,616	12,479	11,321	6,914	6,697	11,901	10,824	6,123	5,844

Operating Performance

Panel B: Dependent Variable = Operating CF

	All Firms		Low NC Enforcement		CEO Retirement Age		Z-score Low		Junk Rating	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
CMR Clause	0.003	0.003								
	(0.36)	(0.37)								
CMR * X = 1			−0.007	−0.009	0.026**	0.020*	0.040***	0.027**	0.018	0.028*
			(−0.75)	(−0.94)	(2.47)	(1.87)	(3.12)	(2.18)	(1.09)	(1.73)
CMR * X = 0			0.013	0.013	−0.036	−0.016	−0.008	−0.007	0.023	0.020
			(1.24)	(1.37)	(−1.64)	(−0.89)	(−0.95)	(−0.86)	(1.32)	(1.33)
Lag Dep. Var.	N	Y	N	Y	N	Y	N	Y	N	Y
R^2	0.04	0.07	0.04	0.07	0.06	0.08	0.05	0.08	0.05	0.08
Observations	12,397	11,322	12,085	11,033	6,680	6,525	11,453	10,525	5,984	5,749

Conclusions

- Using a unique, hand-collected sample of 15,501 private loan contracts, we find that 8.5% of the sample firms have an explicit change of management restriction (CMR) in at least one of their loans.
- We find that lenders use CMRs to mitigate risks arising from a CEO turnover, especially those related to the loss of human capital and replacement uncertainty.
- We also find that CMRs can serve as a mechanism to retain talent, mitigating the human capital risk faced by lenders.
- And when firms face difficulty retaining their CEOs, the presence of a CMR is positively related to the firm's future value and operating performance.

- By imposing a CMR, lenders can influence CEO turnover, even outside of default states, and can help firms retain their CEO when these firms face contracting frictions, thereby improving firm performance.

THANKS !