Taking a big bath upon a sovereign downgrade

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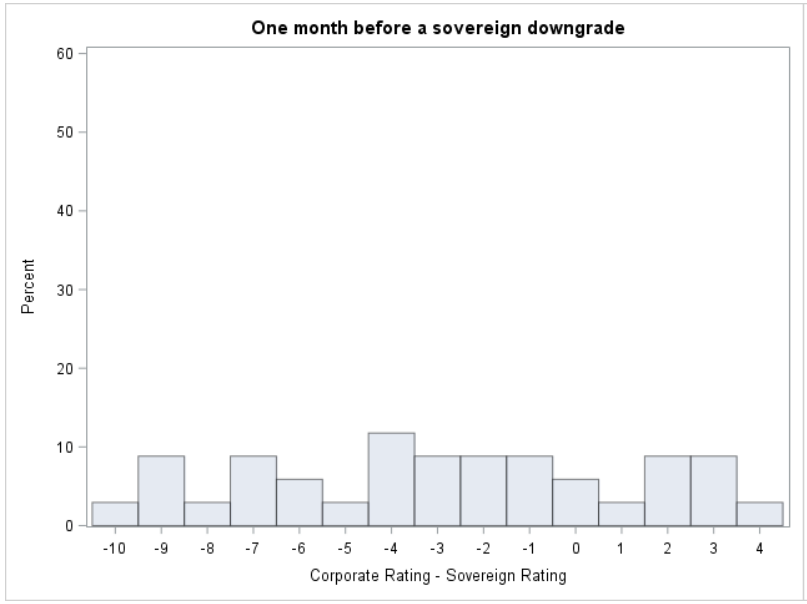
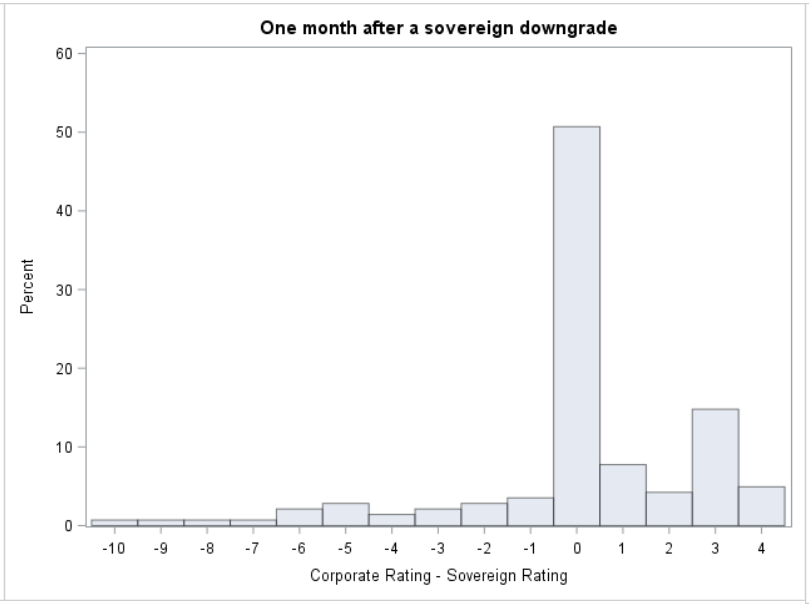
Ceiling rule of credit ratings

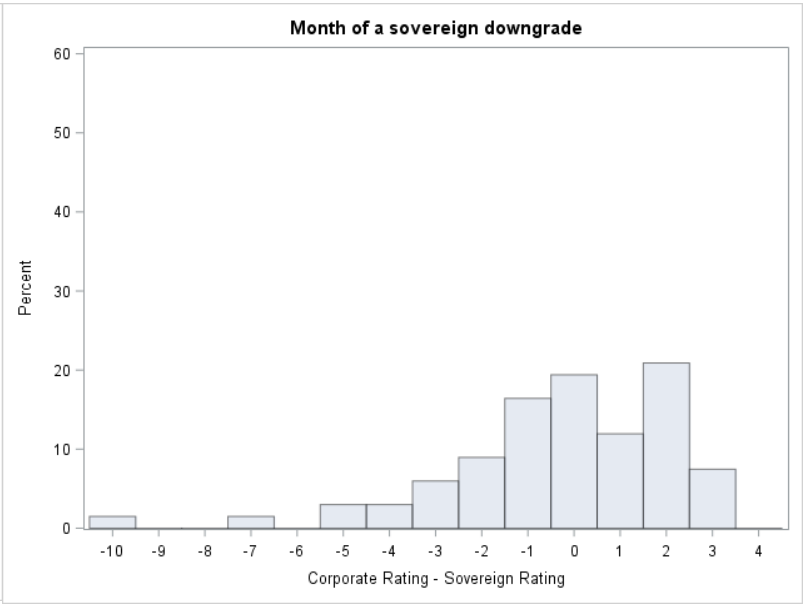
- Unless exceptional, a firm's credit ratings are bound by the sovereign rating of its country of domicile (foreign currency long-term issuer ratings).

Bound firms (treated firms)

- Firms with a rating equal to or higher than the sovereign rating (bound firms) are more likely to be downgraded following a sovereign rating downgrade.







Important findings (Almeida et al. 2017)

- The rating downgrade of bound firms are due to neither of the following reasons:
  - The change in default probabilities can be non-linear.
  - S&P will reevaluate only firms that have a credit rating above the sovereign by performing stress tests.

Exogeneity

- Generally, credit rating changes are (almost) exclusively determined by firm fundamentals.

- However, ceiling rule is a predetermined, arbitrary rule. The discrete change in the likelihood of rating downgrade is not caused by a similar discrete change in firm fundamentals.

Research question

- How does a (potential) rating downgrade caused by the sovereign ceiling rule affect firms' earnings management?

Traditional view

- Prior studies find that firms engage in income-increasing earnings management to influence credit ratings, especially when they are below their “expected” ratings (Alissa et al. 2013; Liu et al. 2018).

- The credit ratings of bound firms after sovereign downgrades would be lower than what they expect due to the mechanical ceiling rule.

- An exogenous downgrade in a firm’s credit rating would increase the degree of the firm’s financial constraint (Tang 2009; Almeida et al. 2017).

In our setting…

- The possibility of a big bath accounting (income-decreasing earnings management)

- The credit rating change is caused by a macro shock (sovereign downgrade) that is external and exogenous.
  - A perfect scapegoat: Managers can write down earnings, and attribute the poor earnings to the sovereign ceiling rule both safely and credibly.
  - A reversal opportunity: A mechanical reversal after taking a big bath; and the firm is not fundamentally problematic, which increases chances for the reversal to happen.

- Moreover, it is difficult to have a rating upgrade via manipulating earnings up after a sovereign downgrade.

Hypotheses

- Income Increasing Hypothesis: After sovereign rating downgrades, firms bound by the ceiling rule will manipulate up their discretionary accruals to a greater extent than other firms.

- Big Bath Hypothesis: After sovereign rating downgrades, firms bound by the ceiling rule will manipulate down their discretionary accruals to a greater extent than other firms.

Position in the literature

- Most accounting studies center on the discussion of big bath accounting upon CEO turnovers (e.g., Strong and Meyer, 1987; Elliott and Shaw, 1988; Pourciau, 1993).

- Tons of anecdotes suggest that managers engage in big bath accounting upon negative shocks or economic downturns.
  - Accelerate expenses or write off asset as to reduce future expenses and increase future earnings (e.g., Fortune, 2012; Bloomberg, 2016).

- Surprisingly, few academic studies investigate such big bath accounting upon economic downturns.

Challenges to the literature

- One needs to identify an external shock (ideally orthogonal to firm fundamentals) on which the manager could blame the lower earnings when conducting a big bath.
- However, negative shocks affect (or are caused by) various aspects of firms.
- With unobserved or unmodeled firm fundamentals, we can hardly pinpoint managers' big bath incentive.

Identification

- Matched sample difference-in-differences (DID)
  - $\Delta EM_{i,t} = \beta_0 + \beta_1 \Delta Downgrade_{i,t} + \beta_2 \Delta X_{i,t-1} + \tau_t + \varepsilon_{i,t}$
  - *EM*: discretionary accruals (MJones model, MKLW model, and DD model)
  - *X*: firm size, book-to-market, leverage, analyst coverage, institutional ownership, stock returns, stock return volatility, capital expenditure, debt issuance and equity issuance.

- Regression discontinuity (RD)
  - Ceiling rule creates a discontinuous change in firms' credit ratings.
  - Discretionary earnings should evolve smoothly around the sovereign rating.

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Data and sample

- Accounting and stock market information: **Factset**
- Corporate and sovereign credit ratings (foreign currency long-term issuer rating): **Capital IQ** and **Bloomberg**.
- Our sample includes 19,697 firm-year observations for 2,606 non-financial firms from 61 countries between 1999 and 2013.

Summary statistics

	N	Std.Dev.	Mean	Median	P25	P75
Downgrade	19,697	0.321	0.060	0.000	0.000	0.000
Accr_MJones	19,697	0.062	0.010	0.010	-0.022	0.042
Accr_MKLW	19,697	0.066	-0.004	-0.003	-0.036	0.030
Accr_DD	19,697	0.053	-0.002	-0.003	-0.028	0.020
Size	19,697	1.467	15.415	15.317	14.353	16.455
BTM	19,697	0.492	1.044	0.986	0.695	1.303
Leverage	19,697	0.179	0.333	0.312	0.213	0.428
Capex	19,697	0.154	0.203	0.165	0.104	0.251
Return	19,697	0.515	0.153	0.095	-0.143	0.351
RetStD	19,697	0.233	0.369	0.306	0.213	0.451
Analyst	19,697	0.969	2.748	2.944	2.303	3.434
InstOwn	19,697	0.389	0.354	0.064	0.000	0.751
Debtissue	19,697	0.123	0.025	-0.000	-0.027	0.041
Equityissue	19,697	0.055	0.000	0.000	-0.006	0.003

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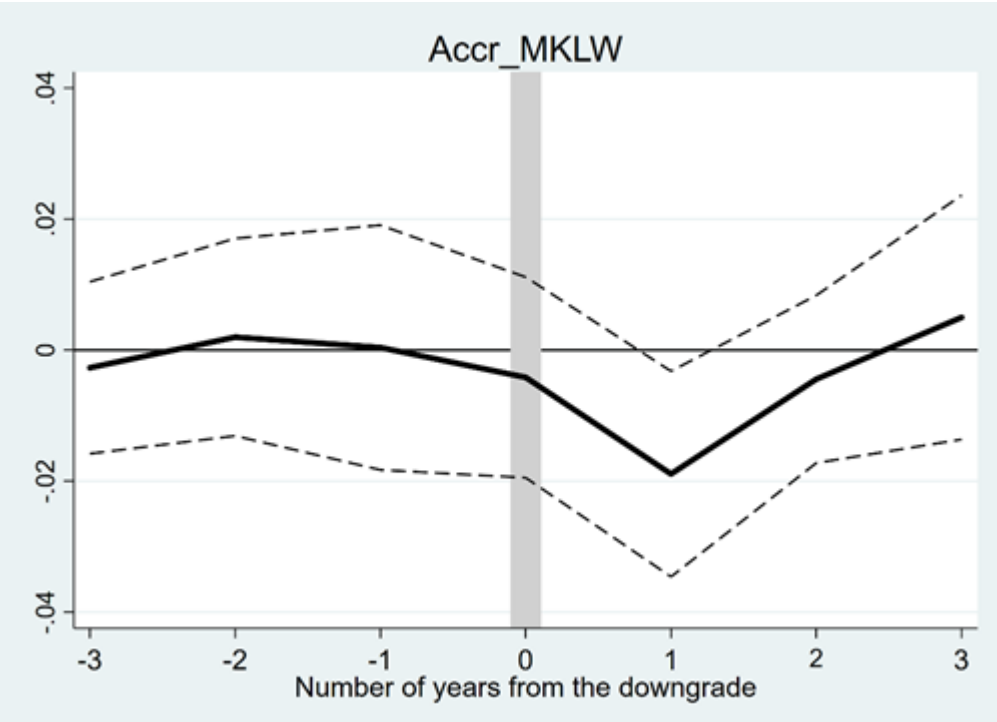
DID regressions: First-diff

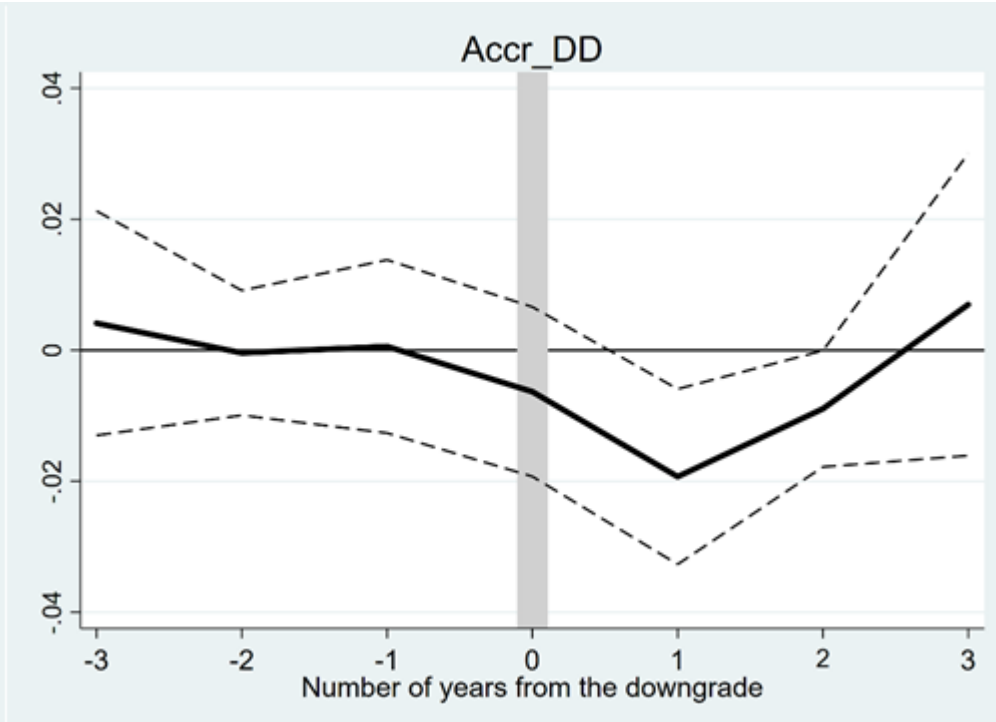
	△Accr_MJones	△Accr_MKLW	△Accr_DD	△Accr_MJones	△Accr_MKLW	△Accr_DD
△Downgrade	-0.013**	-0.016***	-0.017**	-0.012**	-0.016***	-0.017**
	[-2.64]	[-3.15]	[-2.27]	[-2.46]	[-3.11]	[-2.32]
All controls	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	No	No	No	Yes	Yes	Yes
Adj.R-sq	0.020	0.015	0.027	0.020	0.015	0.028
N.of Obs.	19,697	19,697	19,697	19,697	19,697	19,697

DID regressions: levels

	Accr_MJones	Accr_MKLW	Accr_DD	Accr_Mjones	Accr_MKLW	Accr_DD
△Downgrade	-0.015***	-0.011***	-0.011***	-0.011***	-0.009**	-0.010***
	[-3.87]	[-3.20]	[-4.41]	[-2.66]	[-2.50]	[-4.16]
All controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry*Year FE	No	No	No	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	No	No	No
Adj.R-sq	0.516	0.322	0.203	0.538	0.339	0.221
N.of Obs.	20,408	20,408	20,408	20,408	20,408	20,408

Dynamic responses of discretionary accruals





Regression discontinuity design

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	△Accr_MKLW				△Accr_DD			
Distance ∈	[-2, +1]	[-1, +1]	[-2, 0]	[-1, 0]	[-2, +1]	[-1, +1]	[-2, 0]	[-1, 0]
△Downgrade	-0.013***	-0.013***	-0.014***	-0.013***	-0.016**	-0.016**	-0.017**	-0.017***
	[-3.28]	[-3.08]	[-3.33]	[-3.18]	[-2.60]	[-2.70]	[-2.65]	[-2.81]
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R-sq	0.025	0.034	0.024	0.034	0.028	0.028	0.024	0.025
N.of Obs.	2,807	2,294	2,733	2,220	2,807	2,294	2,733	2,220

Robustness checks

	(1)	(2)	(3)	(4)	(5)	(6)
	△Accr_MKLW	△Accr_DD	△Accr_MKLW	△Accr_DD	△Accr_MKLW	△Accr_DD
	Propensity-score match		Excluding countries with fewer than 10 obs.		Excluding countries without a treated firm	
△Downgrade	-0.019***	-0.017**	-0.016***	-0.017**	-0.016**	-0.018**
	[-2.87]	[-2.43]	[-3.16]	[-2.20]	[-2.70]	[-2.29]
Other controls	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R-sq	0.073	0.069	0.015	0.028	0.020	0.033
N.of Obs.	829	829	19,642	19,642	14,435	14,435

Falsification test (2007-2009 financial crisis as a pseudo event)

	(1)	(2)	(3)	(4)
	Accr_MKLW	Accr_DD	Accr_MKLW	Accr_DD
	[2003, 2013]		[2005, 2011]	
Bound08*Post	0.008	0.004	0.004	0.001
	[1.57]	[1.01]	[0.68]	[0.18]
Other controls	Yes	Yes	Yes	Yes
Industry*Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	No	No
Adj.R-sq	0.379	0.250	0.403	0.266
N.of Obs.	15,683	15,683	10,086	10,086

Heterogeneous effect of sovereign downgrades

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	△Accr_MKLW				△Accr_DD			
△Downgrade*DiscReq	-0.051***				-0.015*			
	[-8.764]				[-1.782]			
△ Downgrade *InvProfile		-0.037***				-0.032**		
		[-3.725]				[-2.505]		
△ Downgrade *AntiSD			-0.025**				-0.018	
			[-2.555]				[-1.384]	
△ Downgrade *AntiDir				-0.015*				-0.027*
				[-1.725]				[-1.952]
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R-sq	0.015	0.015	0.015	0.015	0.029	0.029	0.029	0.029
N.of Obs.	18,972	19,227	19,172	19,172	18,972	19,227	19,172	19,172

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DID: Provisions and impairments

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	△Provision				△Impairment		Impairment	
	Bad debt	Risk	Operation	PPE	Goodwill	Intangibles	Goodwill	Intangibles
(△)Downgrade	-0.001	0.003	0.001	-0.000	0.006*	0.002**	0.012***	0.002*
	[-0.48]	[1.16]	[0.93]	[-0.11]	[1.96]	[2.55]	[3.25]	[1.84]
Other controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adj.R-sq	0.028	0.066	0.017	0.111	0.113	0.072	0.585	0.531
N.of Obs.	9,324	14,143	5,053	3,906	4,291	4,386	6,134	6,456

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Sovereign rating reversals and earnings management

	(1)	(2)	(3)	(4)
	△Accr_MKLW	△Accr_DD	△Accr_MKLW	△Accr_DD
△Upgrade	0.023	0.025**	0.023	0.025**
	[1.62]	[2.51]	[1.63]	[2.47]
Other controls	Yes	Yes	Yes	Yes
Industry FE	No	No	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Adj.R-sq	0.015	0.028	0.015	0.028
N.of Obs.	19,697	19,697	19,697	19,697

Conclusions

- The sovereign downgrade and associated ceiling rule combined provide an ideal opportunity to test managers' incentive of taking a big bath.
- We find that the bound firms are associated with negative discretionary accruals after the sovereign debt downgrades.
  - More significant in countries with stronger institutions, consistent with the notion that firms facing difficulty in taking a big bath are more likely to take advantage of some peculiar negative shock to do it.
- As an embodiment of the big bath accounting, bound firms increase impairments of intangibles compared to unbound firms.
- There is a reversal of earnings subsequent to the reduction of discretionary accruals.

Big bath in the media

- “Big bath accounting is alive and well at Merrill Lynch, Citigroup and GM”, Accounting Onion November 8, 2007.
- “Will JP Morgan take a ‘big bath’ on the London Whale”, Fortune June 20, 2012.
- “Samsung needs a bath”, Bloomberg October 6, 2016
  - In 2016, Samsung reported having battery problems in the Galaxy Note 7 release. This unexpected problem adversely affected the company’s image and forced it to recall all Galaxy Note 7 smartphones. Although the scale of the recall is unprecedented for Samsung, Samsung reported a cost around 3 billion dollars which is much higher than expected. Samsung was accused of implementing the big bath accounting to lower its net income in 2016 and then will increase it in 2017 via washing away bad debts.