Swiss Institute
of Banking and Finance

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Information or Insurance?

On the Role of Loan Officer Discretion in Credit Assessment

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Information or insurance?

- Discretion enables and motivates loan officers to produce "soft" information

  Stein, JF 2002

- Discretion enables loan officers to insure borrowers against shocks to lending terms

  Fried & Howitt, JMCB 1980

Research questions

- To what extent do loan officers use their discretion in ongoing bank relationships ?
  - how does their qualitative assessment respond to changes in the quantitative assessment of a client ?

- Is the use of discretion by loan officers driven by soft information or insurance considerations ?

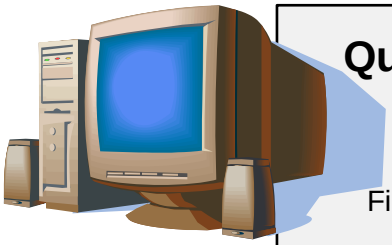
Data

- Proprietary dataset covering 9 banks
  - credit assessments for 3’756 small businesses
  - annual reviews of existing loans / roll-over loans
  - period 2006 to 2011

- All banks employ the same credit rating model
  - created and serviced by an external provider

- Banks differ in other aspects of the credit process (e.g. pricing)

Credit assessment process



Quantitative Score
[0,1]

Financial ratios, Firm age
Repayment behavior

Qualitative Score
[0,1]

Firm characteristics
Industry conditions

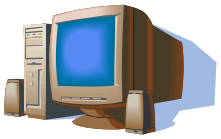
Calculated Rating
(1= worst, 8= best)

Override
(-/0/+)

Proposed Rating
(1= worst, 8= best)

Rating shocks and discretion

Identification strategy



Quant. Score $_{t=0}$

Qual. Score $_{t=0}$
Override $_{t=0}$

Quant. Score$_{t=1}$

Qual. Score $_{t=1}$
Override $_{t=1}$

Proposed Rating$_{t=0}$

Δ

Proposed Rating$_{t=1}$

Rating shocks and discretion

Identification strategy

Quant. Score $_{t=0}$

Qual. Score $_{t=0}$
Override $_{t=0}$

Quant. Score$_{t=1}$

Qual. Score $_{t=1}$
Override $_{t=1}$

Proposed Rating$_{t=0}$

Δ

Rating shock

Hypothetical Rating $_{t=1}$

Proposed Rating$_{t=1}$

Rating shocks and discretion

Identification strategy

Quant. Score $_{t=0}$

Qual. Score $_{t=0}$
Override $_{t=0}$

Quant. Score$_{t=1}$

Qual. Score $_{t=1}$
Override $_{t=1}$

Proposed Rating$_{t=0}$

Δ

Rating shock

Hypothetical Rating $_{t=1}$

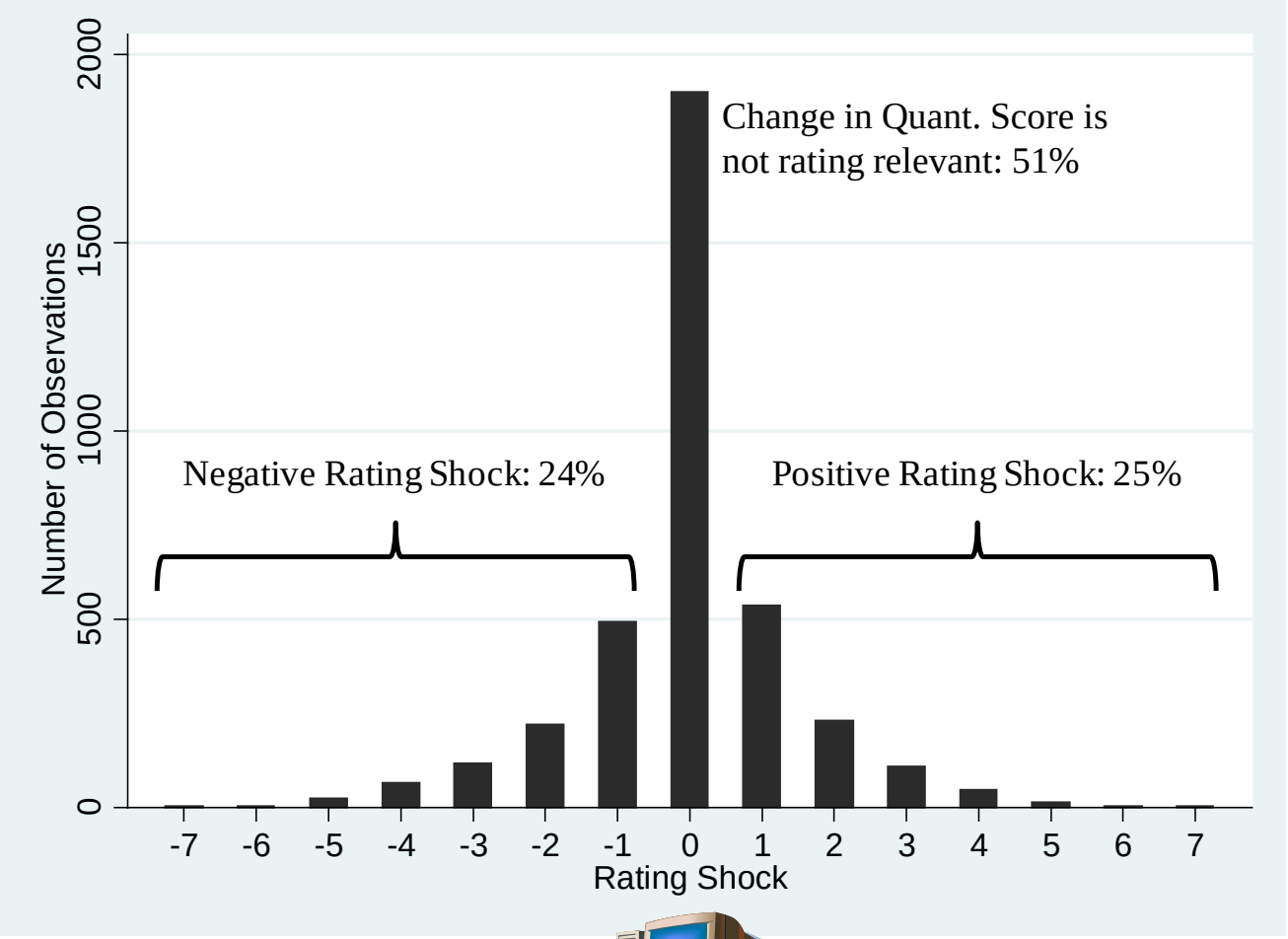
Δ

Discretion

Proposed Rating$_{t=1}$

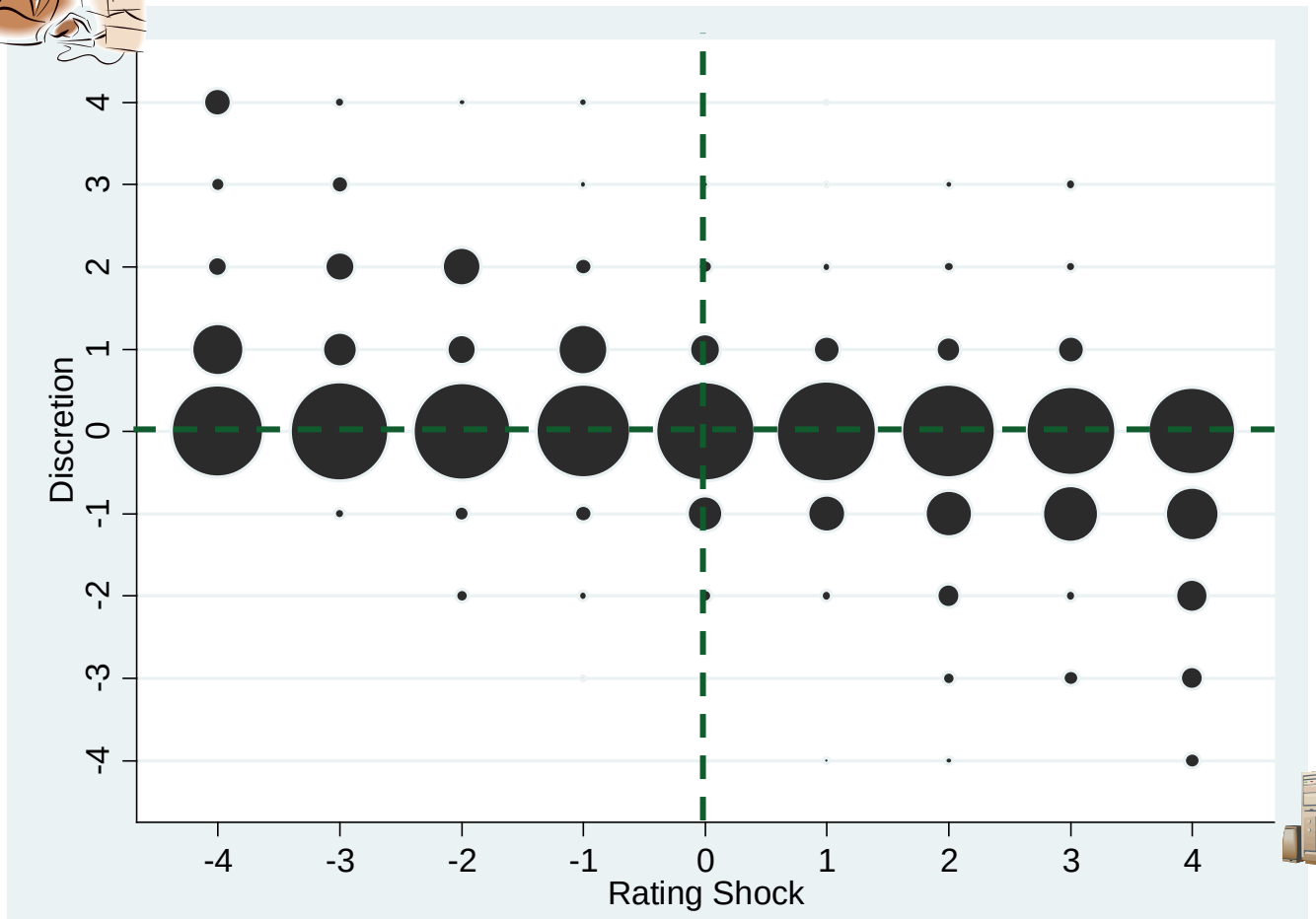
Rating shocks are frequent

49 % of observations display a rating shock of at least 1 notch

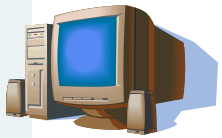


Smoothing of credit ratings

Loan officers smooth rating shocks



- One in five shocks are reversed (-0.184***)
- Negative and positive shocks are smoothed
  - negative : (-0.191***)
  - positive : (-0.162***)



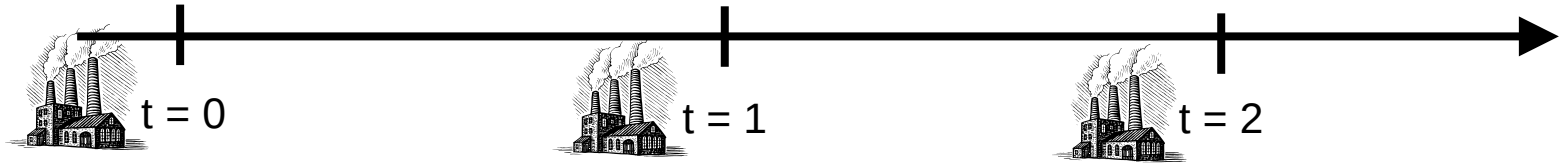
$$Discretion = \alpha_{Rating,t=0} + \alpha_{Industry} + \alpha_{Bank*Year} + \beta_1 \cdot RatingShock + \beta_2 \cdot Size + \varepsilon$$

Information: Identification strategy

Temporary vs. persistent shocks

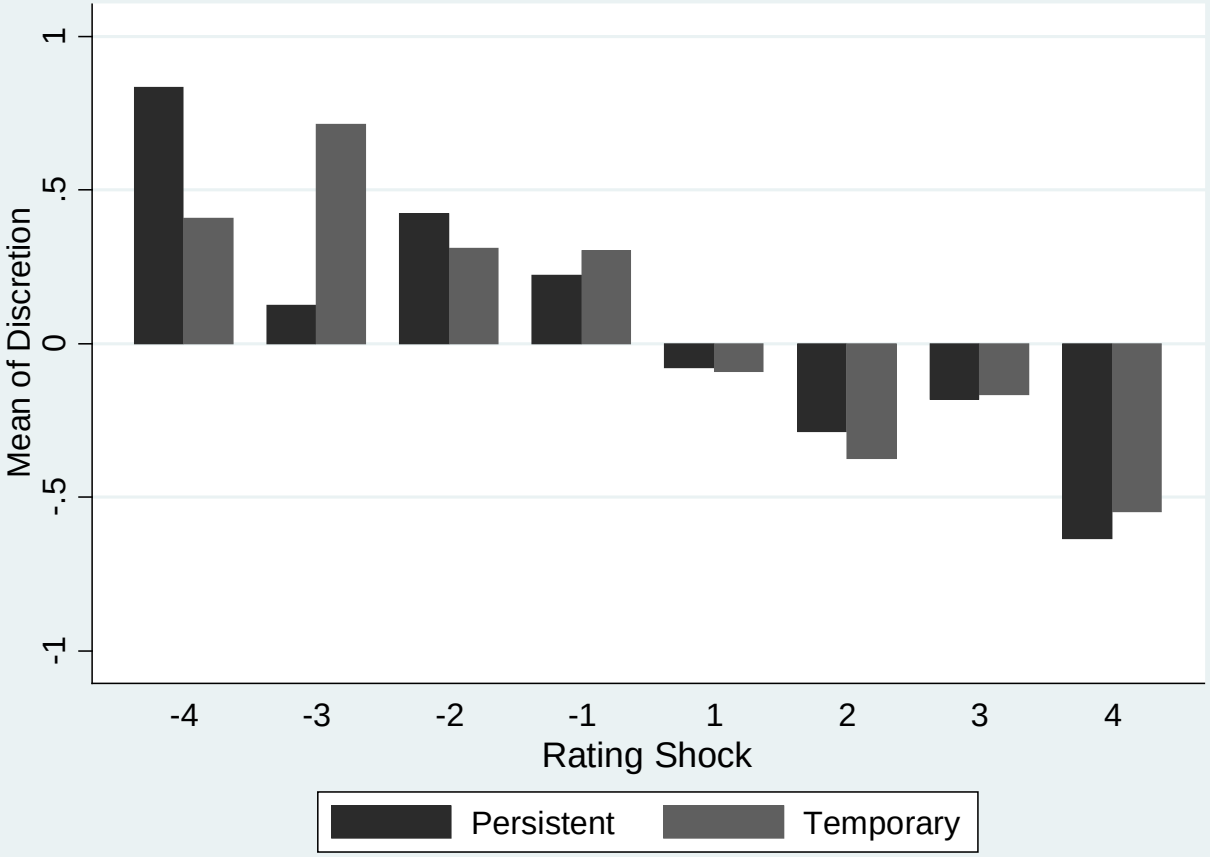
- Temporary shock
  - Rating shock between t=0 and t=1 is (partly) reversed between t=1 and t=2
  - 46% of rating shocks are temporary !

- Reduced sample
  - firms must be observed in 3 consecutive years
  - 1027 of these firms have a non-zero rating shock in t=1



Information - Results

Loan officers smooth temporary and persistent rating shocks



- No difference between smoothing of temporary shocks (-.218***) and persistent (-.197***) shocks
- This finding is independent of loan officer experience

$$Discretion = \alpha_{Rating,t=0} + \alpha_{Industry} + \alpha_{Bank*Year} + \beta_1 \cdot RatingShock + \beta_2 \cdot Size + \varepsilon$$

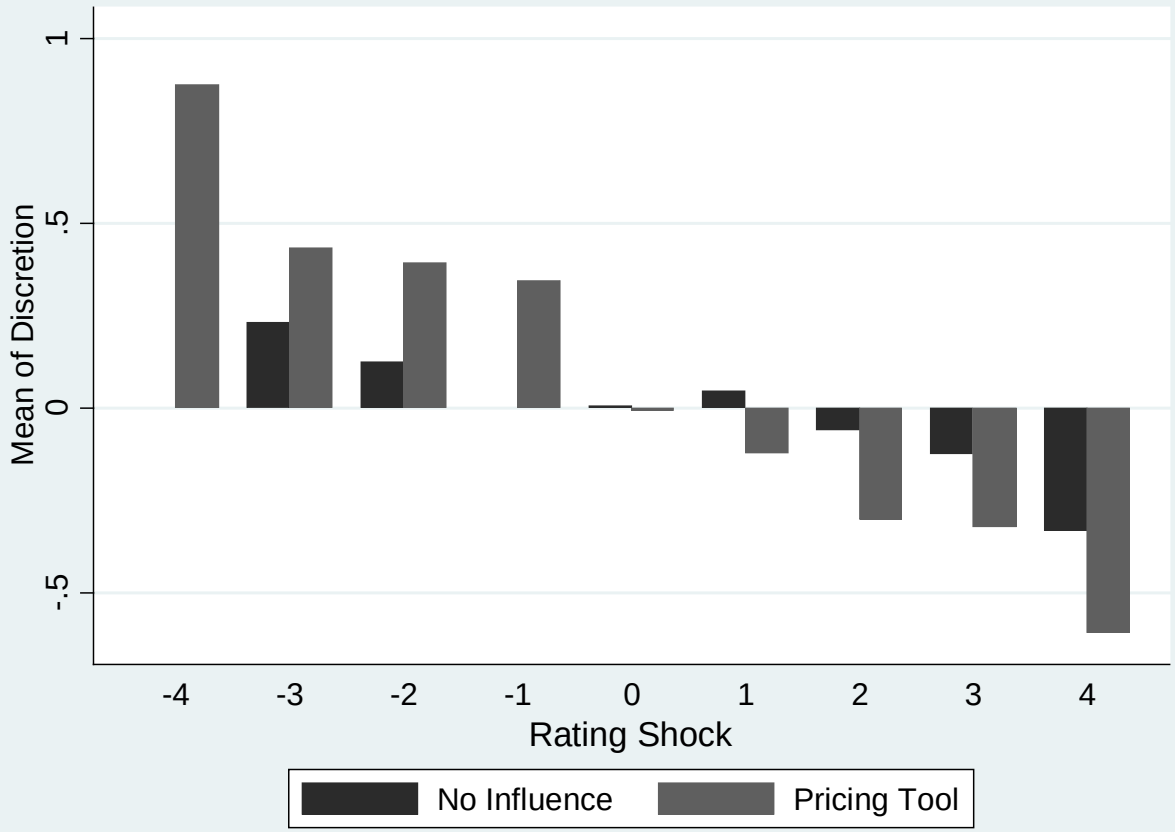
Insurance – Identification strategy

Pricing regimes differ across banks

- Pricing tool:
  - bank uses the pricing tool of the rating provider
  - 3 banks, 2003 observations (53.3%)
- Risk-adjusted pricing:
  - bank ties interest rates to rating classes
  - 5 banks, 1384 observations (36.8%)
- No influence:
  - rating has no influence on a clients' interest rate.
  - 1 bank, 369 observations (9.8%)

Insurance - Results

Loan officers smooth more when ratings have stronger price impact



- Smoothing is stronger at banks with risk-sensitive interest rates:
  - Pricing tool: -0.229***
  - Risk-adjusted pricing: -0.161***
  - No Influence: -.0685*

$$Discretion = \alpha_{Rating,t=0} + \alpha_{Industry} + \alpha_{Bank*Year} + \beta_1 \cdot RatingShock + \beta_2 \cdot Size + \varepsilon$$

Summary and conclusion

- Loan officers use their discretion to smooth clients' ratings
  - smoothing is not driven by soft information
  - smoothing insures borrowers against interest rate changes

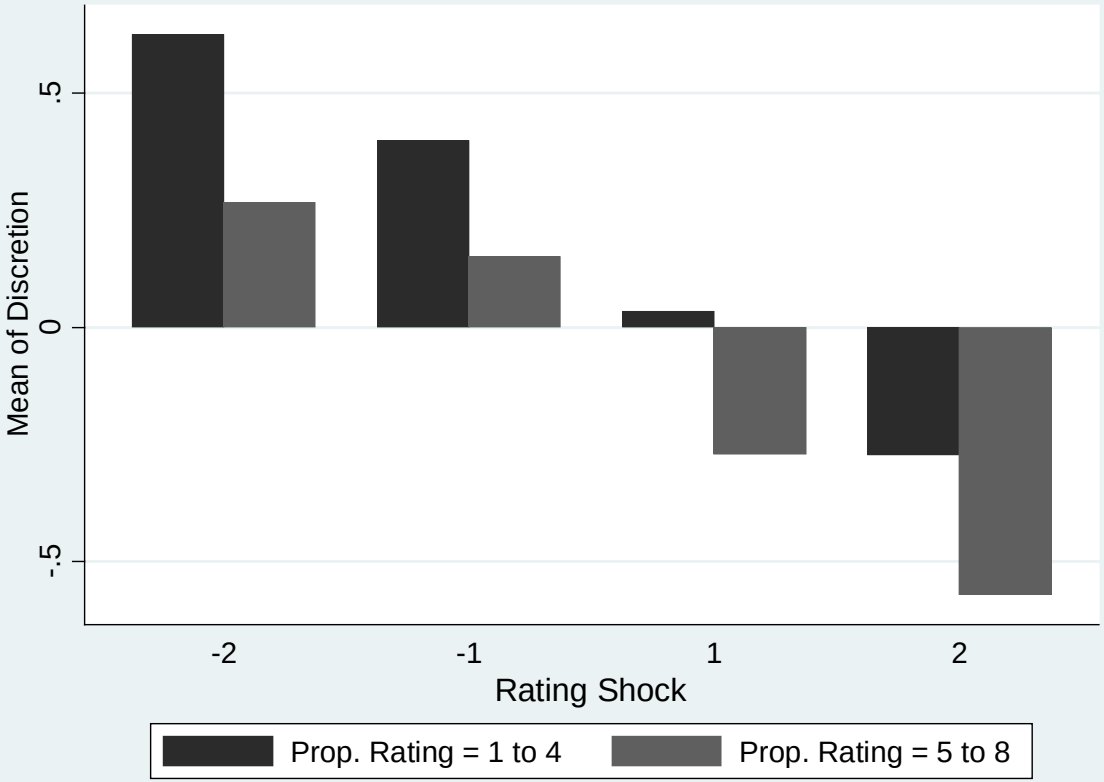
    …. but is not necessarily the outcome of an implicit contract

- Banks (and their regulators) should be aware that loan officer discretion may not improve credit assesstment throughout lending relationships
  - especially with highly-sensitive (point-in-time) rating models

Insurance: Within bank analysis

Banks with the pricing tool

- Rating shock has stronger price impact if initial rating class is low



- Smoothing of negative shocks is more likely for clients with low initial rating (-0.185)
- Smoothing of positive shocks is less likely for clients with high initial rating (0.258***)

$$Discretion = \alpha_{Rating,t=0} + \alpha_{Industry} + \alpha_{Bank*Year} + \beta_1 \cdot RatingShock + \beta_2 \cdot Size + \varepsilon$$

Smoothing of credit ratings

18% of rating shocks are reversed by loan officers

Dependent variable:	*Discretion*				
	(1)	(2)	(3)	(4)	(5)
Sample:	All	All	All	Negative Rating Shock	Positive Rating Shock
Rating Shock	-0.185***	-0.184***	-0.179***	-0.191***	-0.162***
	[0.0239]	*[0.0239]*	*[0.0258]*	*[0.0265]*	*[0.0268]*
Size	0.426**	0.394**	0.378**	0.447**	0.368***
	[0.167]	*[0.167]*	*[0.164]*	*[0.206]*	*[0.105]*
Calculated $Rating_{t-1}$ FE	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes
Bank FE	Yes	No	No	No	No
Year FE	Yes	No	No	No	No
Bank * Year FE	No	Yes	No	Yes	Yes
Loan officer * Year FE	No	No	Yes	No	No
Method	OLS	OLS	OLS	OLS	OLS
R-squared	0.155	0.145	0.153	0.136	0.114
Observations	3,756	3,756	3,756	2,819	2,837

Information?

Are loan officers able to distinguish between temporary and persistent rating shocks?

- No significant differences in smoothing of Temporary and Persistent rating shocks.
- Ability to distinguish the nature of rating shocks does not increase over time.
- Smoothing activities in general increase.

Dependent variable:	*Discretion*		*Discretion*			
	(1)	(2)	(5)	(6)	(7)	(8)
Sign of Rating shock	Positive & negative		Low Experience Bank		High Experience Bank	
Type of rating shock	Temporary	Persistent	Temporary	Persistent	Temporary	Persistent
Rating Shock	-0.218***	-0.197***	-0.145***	-0.129***	-0.313***	-0.275***
	[0.0509]	*[0.0378]*	*[0.0370]*	*[0.0296]*	*[0.0547]*	*[0.0468]*
Size	0.665	0.538*	0.140	0.387*	1.153*	0.892
	[0.411]	*[0.314]*	*[0.301]*	*[0.189]*	*[0.598]*	*[0.649]*
Calculated $Rating_{t-1}$ FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Bank * Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Method	OLS	OLS	OLS	OLS	OLS	OLS
R-squared	0.233	0.182	0.229	0.187	0.314	0.240
Observations	477	550	237	277	240	273

Insurance?

3x more smoothing of shocks with automatic pricing effect

- Strongest smoothing for banks that use the pricing tool, followed by bank with risk-adjusted pricing.
- Differences statistically significant.

Dependent variable:	*Discretion*		
Sample:	Pricing Tool (Bank C, E, G)	All Risk-adjusted Pricing (Bank A,B, F, H, I)	No Influence (Bank D)
	(1)	(2)	(3)
Rating Shock	-0.229***	-0.161***	-0.0685**
	[0.0400]	*[0.0363]*	*[0.0170]*
Size	0.762**	-0.0134	-0.0461
	[0.272]	*[0.112]*	*[0.175]*
Calculated $Rating_{t-1}$ FE	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Bank*Year FE	Yes	Yes	Yes
Method	OLS	OLS	OLS
R-squared	0.192	0.153	0.128
Observations	2,003	1,384	369

Weighting of Quant. Score and Qual. Score