

**Supervising Failing Banks**  
*(Correia, Luck, and Verner)*  
&  
**Bank Supervision as Information Production**  
*(Beyhaghi, Chae, Curti, and Gerlach)*

**Discussion by:**

**Rimmy E. Tomy**

*The University of Chicago Booth School of Business*

## Overall take

- ▶ Both papers study supervisory ratings
  - CLV: Are these ratings effective in identifying failing banks?
  - BCCG: Do these ratings contain private information?

## Overall take

- ▶ Both papers study supervisory ratings
  - CLV: Are these ratings effective in identifying failing banks?
  - BCCG: Do these ratings contain private information?
- ▶ **Connecting theme** is the amount and impact of human (examiner) discretion
  - To what extent do examiners exercise discretion in assigning supervisory ratings?
    - How can discretion be measured?
  - What gives rise to examiner discretion?
  - What are the consequences of such discretion?

## Measuring examiner discretion

- ▶ CLV: Different examiners vary in their ratings of the **same** bank at the **same** time
- ▶ Exploit institutional identity of the examiner to causally identify the impact of bank supervision
  - Federal examiners are systematically stricter than state examiners, even when evaluating the same bank ([Agarwal et al., 2014](#))
  - A predefined rotating schedule implies that time is randomly assigned
  - The rotating schedule stops for troubled banks
    - Examine the effect of stricter supervision on troubled banks

## Measuring examiner discretion

- ▶ BCCG: How much of the variation in ratings cannot be explained by publicly observable information?
  - Combined effect of access to private information and examiner discretion
  - Heavy reliance on the model that estimates public information in ratings
    - Estimate several models for robustness
- ▶ Isolate the portion of banks' supervisory ratings that cannot be explained by publicly available financial data ("examiner-specific effect" or ESE)
  - ESE is the residual between actual and predicted ratings
  - Attribute 20%–30% of the variation in ratings to an examiner-specific effect

## What drives examiner discretion?

- ▶ CLV: Examiner incentives drive discretion
- ▶ Incentives vary based on institutional identity
  - State examiners care more about the local economy and may be reluctant to give stricter ratings
    - Maintaining credit supply and jobs in the state
  - Federal examiners may care more about financial stability at the national level

# What drives examiner discretion?

- ▶ CLV: Examiner incentives drive discretion
- ▶ Incentives vary based on institutional identity
  - State examiners care more about the local economy and may be reluctant to give stricter ratings
    - Maintaining credit supply and jobs in the state
  - Federal examiners may care more about financial stability at the national level
- ▶ BCCG attribute examiner-specific effects to several factors
  - Access to private information
    - On-site vs off-site examinations, geographic proximity, public vs privately-held banks
  - Examiner identity and judgment
    - Supervisory strictness persists
  - Macro trends and changing regulatory risk tolerance
    - Examiners are stricter during economic downturns and following crises

## What are the consequences of examiner discretion?

- ▶ Both papers show that examiner discretion in supervisory ratings has real consequences for future bank outcomes

## What are the consequences of examiner discretion?

- ▶ Both papers show that examiner discretion in supervisory ratings has real consequences for future bank outcomes
- ▶ Being assigned a stricter supervisor creates a path dependency or persistent effects
  - The bank receives heightened scrutiny throughout a crisis

## What are the consequences of examiner discretion?

- ▶ Both papers show that examiner discretion in supervisory ratings has real consequences for future bank outcomes
- ▶ Being assigned a stricter supervisor creates a path dependency or persistent effects
  - The bank receives heightened scrutiny throughout a crisis
- ▶ Stricter supervision has benefits
  - Impose tighter constraints on bank risk-taking and balance sheet expansion
  - Require earlier and more accurate loss recognition
  - Enforce higher effective regulatory capital ratios
  - Restrict dividend payments and other payouts
  - Facilitate earlier closure of distressed banks
  - Lower expected costs to deposit insurance funds

## What are the consequences of examiner discretion?

- ▶ Both papers show that examiner discretion in supervisory ratings has real consequences for future bank outcomes
- ▶ Being assigned a stricter supervisor creates a path dependency or persistent effects
  - The bank receives heightened scrutiny throughout a crisis
- ▶ Stricter supervision has benefits
  - Impose tighter constraints on bank risk-taking and balance sheet expansion
  - Require earlier and more accurate loss recognition
  - Enforce higher effective regulatory capital ratios
  - Restrict dividend payments and other payouts
  - Facilitate earlier closure of distressed banks
  - Lower expected costs to deposit insurance funds
- ▶ But also costs
  - Contributes to reduced lending

## Overall take

- ▶ Both papers show that examiner discretion matters in bank supervision

## Overall take

- ▶ Both papers show that examiner discretion matters in bank supervision
- ▶ However, neither paper can address what the optimal level of discretion or strictness should be

## Overall take

- ▶ Both papers show that examiner discretion matters in bank supervision
- ▶ However, neither paper can address what the optimal level of discretion or strictness should be
  - Examiner strictness has benefits, but also costs in terms of reduced credit supply

## Overall take

- ▶ Both papers show that examiner discretion matters in bank supervision
- ▶ However, neither paper can address what the optimal level of discretion or strictness should be
  - Examiner strictness has benefits, but also costs in terms of reduced credit supply
  - Bank outcomes and consequently credit supply in an economy can depend on which examiner gets assigned to a bank, instead of on bank fundamentals

## Overall take

- ▶ Both papers show that examiner discretion matters in bank supervision
- ▶ However, neither paper can address what the optimal level of discretion or strictness should be
  - Examiner strictness has benefits, but also costs in terms of reduced credit supply
  - Bank outcomes and consequently credit supply in an economy can depend on which examiner gets assigned to a bank, instead of on bank fundamentals
  - Topical issue as one considers the potential role of AI in bank supervision

## Overall take

- ▶ Both papers show that examiner discretion matters in bank supervision
- ▶ However, neither paper can address what the optimal level of discretion or strictness should be
  - Examiner strictness has benefits, but also costs in terms of reduced credit supply
  - Bank outcomes and consequently credit supply in an economy can depend on which examiner gets assigned to a bank, instead of on bank fundamentals
  - Topical issue as one considers the potential role of AI in bank supervision
- ▶ Both papers focus on supervisory ratings, but examiner discretion can work through other channels
  - Don't say much about the impact of behind-the-scenes activity and the full range of supervisory tools
    - These activities could be correlated with ratings discretion and be directly responsible for bank outcomes

## Comments on CLV (“Supervising Failing Banks”)

- ▶ CLV find that CAMELS ratings predict bank failures, but only over short horizons (one year in advance)
- ▶ Interpret this result to mean that “supervisors are well informed”

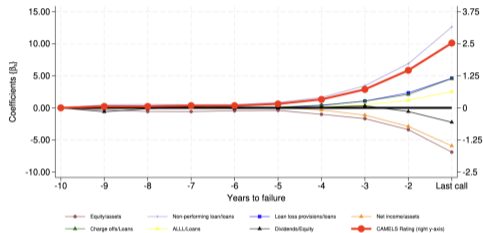
## Comments on CLV (“Supervising Failing Banks”)

- ▶ CLV find that CAMELS ratings predict bank failures, but only over short horizons (one year in advance)
- ▶ Interpret this result to mean that “supervisors are well informed”
- ▶ An alternative interpretation: Ratings are endogenous
  - Supervisor assigns a 5 once it is obvious (for example, based on externally observable signals) that the bank will fail
    - Supervisor protecting their reputation
  - Enforcement actions could also be endogenous and issued too late

# Comments on CLV

- ▶ Figure 1 shows the evolution of various ratios and CAMELS ratings before failure

Figure 1: Losses, Solvency, and CAMELS Ratings of Failing Banks: 2000-2023



- ▶ Some variables other than CAMELS appear to react faster
  - Same scale for CAMELS and other ratios would make comparison easier
- ▶ Which CAMELS components are most predictive?
- ▶ Consider survival models to simultaneously model probability and time to failure
  - No need to partition sample by failing and non-failing banks
    - All banks assumed to have some nonzero probability of failure

## Comments on CLV

- ▶ CLV have a tighter research design to address the issue of ratings endogeneity
  - Examiner rotation and random assignment of federal and state supervisors to the same bank during the Global Financial Crisis
    - Stricter supervision “leads to more loss recognition, reduced dividend payouts, and an increase in the likelihood and speed of closure.”

## Comments on CLV

- ▶ CLV have a tighter research design to address the issue of ratings endogeneity
  - Examiner rotation and random assignment of federal and state supervisors to the same bank during the Global Financial Crisis
    - Stricter supervision “leads to more loss recognition, reduced dividend payouts, and an increase in the likelihood and speed of closure.”
  - These findings do not demonstrate that bank supervision is effective, but rather that *stricter supervision* is effective

## Comments on CLV

- ▶ That supervisory ratings can predict bank failure one year in advance is a low bar for evaluating the efficacy of supervisory ratings
- ▶ An old literature in bankruptcy prediction suggests:
  - Simple accounting ratios can predict bankruptcy over short horizons ([Beaver, 1966](#))
  - The Altman-z score predicts bankruptcy with 95% accuracy one year prior

## Comments on CLV

- ▶ That supervisory ratings can predict bank failure one year in advance is a low bar for evaluating the efficacy of supervisory ratings
- ▶ An old literature in bankruptcy prediction suggests:
  - Simple accounting ratios can predict bankruptcy over short horizons (Beaver, 1966)
  - The Altman-z score predicts bankruptcy with 95% accuracy one year prior
- ▶ Findings raise the question of whether ratings contain information that extends beyond examiner heterogeneity
  - Do bank examinations uncover private information not already embedded in public signals?

## Comments on BCCG (“Bank Supervision as Information Production”)

- ▶ Core of the paper is a two-step procedure to estimate an examiner-specific effect
  - Ratings regressed on bank characteristics

$$R_{i,t} = \alpha + \beta X_{i,t} + \epsilon_{i,t}$$

- Residuals from this regression are characterized as an “examiner-specific effect” (ESE)

## Comments on BCCG (“Bank Supervision as Information Production”)

- ▶ Core of the paper is a two-step procedure to estimate an examiner-specific effect
  - Ratings regressed on bank characteristics

$$R_{i,t} = \alpha + \beta X_{i,t} + \epsilon_{i,t}$$

- Residuals from this regression are characterized as an “examiner-specific effect” (ESE)
- ▶ ESE is the dependent variable in follow-on regressions on private information access proxies, examiner stringency, and as an independent variable predicting future bank outcomes

## Comments on BCCG (“Bank Supervision as Information Production”)

- ▶ Core of the paper is a two-step procedure to estimate an examiner-specific effect
  - Ratings regressed on bank characteristics

$$R_{i,t} = \alpha + \beta X_{i,t} + \epsilon_{i,t}$$

- Residuals from this regression are characterized as an “examiner-specific effect” (ESE)
- ▶ ESE is the dependent variable in follow-on regressions on private information access proxies, examiner stringency, and as an independent variable predicting future bank outcomes
- ▶ The approach is problematic (Chen, Hribar & Melessa, 2018)

## Comments on BCCG

- ▶ Ratings depend on public signals  $X$  and examiners' information access  $Z$ :

$$R_{i,t} = \alpha + \beta X_{i,t} + \gamma Z_{i,t} + u_{i,t}$$

- ▶ The paper estimates a restricted model omitting  $Z$ :

$$R_{i,t} = \alpha^* + \beta^* X_{i,t} + \epsilon_{i,t} \quad \implies \quad \widehat{\text{ESE}}_{i,t} \equiv \hat{\epsilon}_{i,t}$$

Because  $Z$  is omitted,  $\hat{\beta}^* \xrightarrow{p} \beta + \gamma \frac{\text{Cov}(X,Z)}{\text{Var}(X)}$ , so the residual converges to:

$$\hat{\epsilon}_{i,t} \xrightarrow{p} \gamma \left( Z_{i,t} - \frac{\text{Cov}(X,Z)}{\text{Var}(X)} X_{i,t} \right) + u_{i,t}$$

## Comments on BCCG

- ▶ Theoretically, ESE should only include examiner's judgment and soft information. However, it also includes:
  - Examiners' judgment and soft information
  - Effect of variables omitted from the prediction model
  - Random noise and measurement error

## Comments on BCCG

- ▶ Theoretically, ESE should only include examiner's judgment and soft information. However, it also includes:
  - Examiners' judgment and soft information
  - Effect of variables omitted from the prediction model
  - Random noise and measurement error
- ▶ Using ESE as a dependent variable introduces bias if second stage predictors are correlated with bank characteristics (because  $\hat{\epsilon}_{i,t} \xrightarrow{p} \gamma \left( Z_{i,t} - \frac{\text{Cov}(X,Z)}{\text{Var}(X)} X_{i,t} \right) + u_{i,t}$ )
  - For example, bank size is likely correlated with publicly traded status

## Comments on BCCG

- ▶ Theoretically, ESE should only include examiner's judgment and soft information. However, it also includes:
  - Examiners' judgment and soft information
  - Effect of variables omitted from the prediction model
  - Random noise and measurement error
- ▶ Using ESE as a dependent variable introduces bias if second stage predictors are correlated with bank characteristics (because  $\hat{\epsilon}_{i,t} \xrightarrow{p} \gamma \left( Z_{i,t} - \frac{\text{Cov}(X,Z)}{\text{Var}(X)} X_{i,t} \right) + u_{i,t}$ )
  - For example, bank size is likely correlated with publicly traded status
- ▶ When ESE is used as a predictor of bank outcomes, ignores the fact that it was estimated with noise
  - Coefficients are statistically more significant

## Comments on BCCG

- ▶ Theoretically, ESE should only include examiner's judgment and soft information. However, it also includes:
  - Examiners' judgment and soft information
  - Effect of variables omitted from the prediction model
  - Random noise and measurement error
- ▶ Using ESE as a dependent variable introduces bias if second stage predictors are correlated with bank characteristics (because  $\hat{\epsilon}_{i,t} \xrightarrow{P} \gamma \left( Z_{i,t} - \frac{\text{Cov}(X,Z)}{\text{Var}(X)} X_{i,t} \right) + u_{i,t}$ )
  - For example, bank size is likely correlated with publicly traded status
- ▶ When ESE is used as a predictor of bank outcomes, ignores the fact that it was estimated with noise
  - Coefficients are statistically more significant
- ▶ Consider a one-step procedure predicting ratings
  - Include public and soft information proxies in the same regression

## To summarize

- ▶ Bank supervision is an important mechanism for disciplining banks
- ▶ Examiner discretion is an important element of supervisory ratings
  - Both papers suggest examiner discretion has significant effects on bank outcomes
- ▶ Going forward, important to understand what level of discretion is optimal