

A case study on loan loss analysis of a community bank

Weiping Li ^{a,b,*}, Philip McMahan ^c

^a Southwest Jiaotong University, Chengdu, Sichuan Province, 610031, PR China

^b Oklahoma State University, Stillwater, OK, 74078-0613, USA

^c 5624 NW 130 St., Oklahoma City, OK, 73142, USA

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Abstract

In this paper, we perform a case study on a community bank from the aspect of the terms structure of the banks historical loan losses and the loan quality rating matrix used by the bank. The data source is from a small rural community bank located in a Midwestern state of the United States. The basic statistical analysis of the loan losses that is based on the banks internal loan quality rating system is presented.

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1. Introduction

The continued improvement of the credit analysis process of a bank is indispensable in the current financial environment for any bank, especially a community bank. Advances in information technology, the development of new financial instruments, and other innovations in banking, along with increased regulation and competition from non-regulated financial entities have made a much less friendly environment for community banks today than in the past.

During the most recent financial crisis, a large number of commercial banks in the United States were closed. The regulators closed 507 banks from 2008 to 2012, while only 25 banks were closed in the period 2001 through 2007. Commercial banks having less than one billion dollars in assets made up 85% of the number of banks closed between 2008 and 2014 and made up 92% of the number of banks closed from 2001 through 2007. The median level of leverage capital for the community banking industry as of June 2010 was 9.45%. This was roughly equal to the median

* Corresponding author. Southwest Jiaotong University, Chengdu, Sichuan Province, 610031, PR China.

E-mail addresses: w.li@swjtu.edu.cn, w.li@okstate.edu (W. Li), golf73521@gmail.com (P. McMahan).

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capital ratios of the banks that failed from 2008 thru 2009, 10 quarters before they failed. In those years, 165 banks failed with 123 (75%) having assets less than \$1 billion.^d

Given these facts regarding the number of smaller bank failures as a percentage of the total number of bank failures, improvement in both the methodology of developing an adequate loan loss reserve and the credit risk management of these banks is necessary for the survival of smaller banks in the future.

This paper examines how a community bank might use a loan quality rating system which contains both objective factors and judgmental adjustments to first stratify the loans held by the bank into risk categories and then use these risk categories to develop a robust methodology to calculate a loan loss reserve for the bank. In addition, this data can be used to develop stress test models regarding loan losses for the bank. Stress testing for community banks was called for in a paper presented to the Conference of State Bank Supervisors in 2010. The term structure of the loan loss analysis for the loan quality ratings in our study are the basic mean and variance for each rating is given through the years 2007–2014 as the bank had data for that period.

This paper will focus only on what a community bank could do to use data already available to improve its credit risk management process. In order to focus on a community bank, it is important to understand what we define as a community bank. A community bank can be referred to as a bank having, typically, less than or equal to one billion dollars in total assets. On the other hand, this single proxy used to define a community bank does not take into account other factors which may also define a community bank. We would like to adapt a more complete definition of a community bank has given by DeYoung et al (2004)⁴ as:

A community bank holds a commercial bank or thrift charter; operates physical offices within a limited geographic area; offers a variety of loans and checkable insured deposit accounts; and has a local focus that precludes its equity shares from trading in well-developed capital markets.

FDIC (2012)⁵ refers to the problem of defining community banks by size due to some factors such as inflation, economic growth and the size of the banking industry varying over time. We perform this case study for a community bank with total assets less than \$1 billion.

The financial crisis of 2007–2009 lead to the widespread failure of financial institutions and/or the freezing of capital markets. The financial regulations and insolvency procedures for large complex financial institutions, including those non-banking institutions that would pose a large systemic risk to the financial system, have been revisited in order to improve their ability to absorb losses and avoid a potential public bailout of these institutions.¹³ recommends that the capital requirement should depend on the liquidity of the assets held by a bank and should increase with the proportion of its short-term debt and with its size. The Dodd–Frank Wall Street Reform and Consumer Protection Act focused primarily on the largest financial institutions in the United States.^e

This paper takes the spirit of the Dodd-Frank Act to improve the credit risk aspect of the community bank. The data used in this study (loan quality rating system, term structure of the loan loss distribution, and the default rates on loans) was developed by the bank to meet the Interagency Policy Statement on the Allowance for Loan and Lease Losses dated December 21, 1993. The authors of this study empirically examine the loan quality ratings and loss distributions as well as the recovery rate (loss rate) for loans made by the community bank. The purpose code loans may have different loan losses varying from one code to another. These are related to the coordinate rating proposed by the first author Li (2014).⁹ The coordinate rating is given by the loan grade, collateral code and purpose code as the first, second and third coordinate rating component in this case study. Individual loan may be classified from the purpose code and from the collateral code as well as the loan grading, and those different perspectives formulate the coordinate rating.

It is important to note that the loan quality rating system being studied in this paper is not the same as the credit scoring systems used by many large complex banks for small business lending on loans which, depending upon the

^d Data based on the Bank Failures in Brief for FDIC-insured U.S community banks from the FDIC website. The worst year was 1992 when there were 179 banks failure in that year.

^e President Barack Obama signed the Dodd-Frank Wall Street Reform and Consumer Protection Act (The Dodd-Frank Act in short) into law on July 21, 2010. The Dodd-Frank Act makes considerable progress on the off-balance sheet activities in computing capital requirements among other issues. In July 2010, Basel III is also stricter on what constitutes capital, sets a minimum leverage ratio and higher capital requirement, and creates liquidity ratios that banks will eventually have to abide by (see Dodd-Frank Act (2014) for more current Supervisory stress test methodologies and results) Even in Basel Committee (2002), banks are required to estimate the probability of default (PD) and the loss given default (LGD) on their loan portfolios of the business cycle. The data of the community bank is not enough for us to estimate these important credit risk factors.

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