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Article

## A MULTIVARIATE STATISTICAL ANALYSIS OF THE CHARACTERISTICS OF PROBLEM BANKS

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## A MULTIVARIATE STATISTICAL ANALYSIS OF THE CHARACTERISTICS OF PROBLEM BANKS

JOSEPH F. SINKEY, JR.\*

THIS PAPER PRESENTS a multivariate statistical analysis of the balance-sheet and income-statement characteristics of problem banks.<sup>1</sup> Newly identified problem banks are matched with nonproblem (control) banks and multiple discriminant analysis (MDA) is used to test for group mean differences, to describe the overlap between groups, and to construct rules to classify observations (banks) into either the problem-bank group or the nonproblem-bank group. The empirical findings indicate that measures of banking factors such as asset composition, loan characteristics, capital adequacy, sources and uses of revenue, efficiency, and profitability are good discriminators between the groups (i.e., group mean differences exist). The chi-square measures of group overlap indicate that the distributions of the individual bank's characteristics (i.e., vector of variables) overlap substantially. Given the high degree of overlap between groups, the "descriptive" classification results are "better" than might be expected.

The first section of this paper deals briefly with the definition and importance of problem banks. In the next section, a description of the problem-bank group and its control group are presented. The data and methodology are given in the third section, while the empirical findings are presented in the fourth section. In the final section, the summary and conclusions and implications for future research are presented.

### I. PROBLEM BANKS: DEFINITION AND IMPORTANCE

A problem bank is one that, in the eyes of the Federal banking agencies, has violated a law or regulation or engaged in an "unsafe or unsound" banking practice to such an extent that the present or future solvency of the bank is in question.<sup>2</sup> Problem banks are identified during bank examinations. The purposes of a bank examination are:<sup>3</sup>

\* Financial Economist, Economic Research Unit, Federal Deposit Insurance Corporation. The views expressed in this paper are the responsibility of the author and in no way represent a policy determination endorsed by the FDIC. I thank Robert A. Eisenbeis for his constant and generous help in the preparation of this paper; William D. O'Brien for his research and computer-

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