Determinants of the Rate of Return on Commercial Bank Assets in the United States, 1959-1998

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ABSTRACT

This exploratory note empirically investigates determinants of the annual percentage rate of return on commercial bank assets (ROA) over the period 1959-1998. The findings indicate that the ROA has been an increasing function of the average annual interest rate yield on three-year U.S. Treasury notes and the Federal Deposit Insurance Corporation Improvement Act of 1991 and a decreasing function of inflation, the unemployment rate, and the increased competition that began in the 1980's.

INTRODUCTION

In recent years, the economic health of the financial services industry in the U.S. has been empirically studied by a number of authors, including Amos (1992), Barth (1990; 1991), Barth and Litan (1992), Cebula (1999 A; 1999 B), and Saltz (1997). This brief note uses the most recent data available on the annual rate of return on commercial bank assets (ROA) to provide an exploratory investigation into determinants of that ROA for the period 1959-1998. We begin with 1959 since certain needed data are unavailable prior thereto and end with 1998 since this the most recent year for which ROA data currently are available on an industrywide basis.

FRAMEWORK

The empirical model is based on an eccelectic framework involving the studies by Amos (1992), Barth (1990; 1991), Barth and Litan (1992), Cebula (1999 A, 1999B), and Saltz (1997). The basic arguments are summarized, as follows:

ROA=f(FDICIA, COMP, P, U, THREE) (1)

where:

ROA = rate of return on commercial bank assets

FDICIA = a variable to represent the combined effects of the various provisions of the Federal Deposit Insurance Corporation Improvement Act of 1991 ("FDICIA")

COMP = a variable to reflect the increased competition in the U.S. financial services industry, especially since 1980

P = the inflation rate

U = the unemployment rate

THREE = the average interest rate yield on three-year U.S. Treasury notes

Based on the aforementioned studies, it is argued that various provisions of FDICIA (including risk-related deposit insurance and the "prompt corrective action" provision) acted to improve the prudence and responsibility with which banks conducted business and thereby acted to yield improved bank performance, i.e., an improved ROA. Next, it is expected that the greater competition that began in the financial services industry in the 1980s acted to reduce the ROA. It also is expected that greater inflation brings a greater cost of deposits and arguably greater interest rate volatility, which in turn would act to reduce the ROA. Higher unemployment rates presumably would act to increase loan delinquencies and loan defaults and thereby to adversely impact on the ROA. Finally, the greater the yield on three-year Treasury notes, which commercial banks have been especially interested in

purchasing during the 1990s (Cebula 1999 B), the greater the expected ROA. Thus, the hypothesized signs on the partials in equation (1) are:

$$f_{FDICIA} > 0, f_{COMP} < 0, f_p < 0, f_U < 0, f_{THREE} > 0 \quad (2)$$

EMPIRICAL RESULTS

Based on the exploratory model in equations (1) and (2), the following reduced-form equation is to be estimated:

$$ROA_t = a_0 + a_1 FDICIA + a_2 COMP + a_3 P_{t-2} + a_4 U_{t-2} + a_5 THREE_{t-1} + \mu$$

where:

ROA_t = annual rate of return on bank assets in year t, as a percent [FDIC (1999, p. 10)];

a_0 = constant;

FDICIA = a dummy variable for the years during which the FDICIA of 1991 was implemented: FDICIA = 1 for 1992, …, 1998 and = 0 otherwise [Cebula (1999 A)];

COMP = a dummy variable for the more competitive years of the period: COMP = 1 for 1980,…, 1998 and = 0 otherwise [Barth (1991); Cebula (1999 B)];

P_{t-2} = percentage inflation rate of the consumer price index in year t-2 [Council of Economic Advisers (1991, Table B-64)];

U_{t-2} = percentage unemployment rate of the civilian labor force in year t-2 [Council of Economic Advisers (1999), Table B-42)];

$THREE_{t-1}$ = the average annual percentage interest rate yield on three-year U.S. Treasury notes in year t-1 [Council of Economic Advisers (1999, Table B-73)];

μ = stochastic error term.

The inflation rate and unemployment rate variables are lagged two periods to address multicollinearity, especially with the interest rate variable; similar, although less robust, results are obtained when the inflation and unemployment variables are lagged only one year. The study period runs from 1959 through 1988. The year 1959 marks the beginning year for availability of all of the variables in the analysis; 1998 marks the most recent year for which all the variables are available. The ADF test reveals the ROA, P, and U are all stationary in levels for the study period; however, the variable THREE is stationary only in first differences. Hence, in the estimation, the variable ROA, P, and U are expressed in levels whereas the variable THREE in expressed in first differences.

The OLS estimate of equation (3), using the White (1980) correction for heteroskedasticity, is given by:

$$ROI_t = +0.85 + 0.45\ FDICIA - 0.048\ COMP - 0.009\ P_{t-2}$$
$$(+8.67) \quad (-1.99) \quad (-2.24)$$
$$-0.017\ U_{t-2} + 0.022\ \text{Ə}THREE_{t-1},$$
$$(-2.37) \quad (+1.92)$$
$$DW = 1.68,\ Rho = 0.14,\ R^2 = 0.84,\ adjR^2 = 0.82,\ F = 34.14 \quad (4)$$

where terms in parentheses are t-values and Ə is the first-differences operator.

In equation (4), all of the estimated coefficients exhibits the expected signs, with one significant at the one percent level, two significant at the three percent level, one significant at the five percent level, and one significant at the six percent level. The F-statistic is significant at one percent level. Serial correlation is not a problem. Finally, the model explains over five-sixths of the variation in the ROA.

Thus, this exploratory empirical analysis finds that the percentage rate of return on commercial bank assets (ROA) may be an increasing function of the average interest rate yield on three-year Treasury notes (although the t-value on this estimated coefficient is significant at only the six percent level) and provisions of FDICIA, whereas this ROA may be a decreasing function of inflation, unemployment, and the increased competition in the industry that began in the early 1980s. Naturally, the topic at hand requires further investigation; nevertheless, it is hoped that the present study may be of use to those engaged in analysis of this topic in the future.

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