

FDIC BANK FAILURE ANNOUNCEMENTS: A TEST OF MARKET EFFICIENCY

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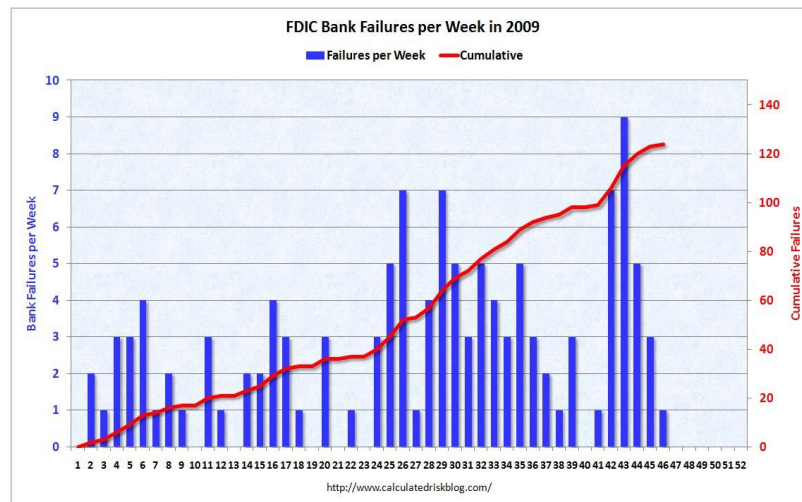
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ABSTRACT

The purpose of this study is to test the efficient market hypothesis by analyzing the effects of Federal Deposit Insurance Corporation (FDIC) bank failure announcements on stock price returns of bank holding companies. Specifically, is it possible to have an above-normal return on a publicly traded stock when the FDIC announces a bank failure? Past studies suggest that the negative signal embedded in the bank failure announcements significantly decreases the holding company’s stock price even after the failed bank is acquired by another firm. Likewise, the negative signal implies that the holding company of the failed bank will have repelled investors, thus driving down demand for the holding company’s stock. According to the semi-strong form efficient market hypothesis, it is not possible to consistently outperform the market, appropriately adjusted for risk, by using public information, such as FDIC bank failure announcements. This type of information should impound stock price sufficiently fast to disallow any investor the opportunity to earn an above normal risk adjusted return. Evidence here confirms a negative signal associated with the sample of FDIC bank failure announcements examined. Likewise, the study results support the semi-strong form efficient market hypothesis and show mixed evidence of pre-announcement trading on this information.

INTRODUCTION

Federal Deposit Insurance Corporation (FDIC) bank failure announcements become a regular event throughout 2008, 2009, 2010 as demonstrated by chart, *FDIC Bank Failures Week in 2009*. Under capitalization and poor portfolio performance caused the bank failures in study. Upon discovery of a problem, the FDIC generally gives a 90-day period for a bank to develop a corrective action plan from within. Before announcing the bank failure, the regulatory agency takes bids from banks that might want to acquire the failing bank’s assets. If the problem persists within the failing bank, the FDIC will announce its failure, gain control of the bank on a Friday, turn the assets over to another institution, and reopen the bank on Monday morning. Generally,



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the FDIC will take control of the failing bank shortly after the 90 day grace period to correct the problem. To prevent a run on the bank, the FDIC trains its employees to close the failing institution's doors without warning the public or the employees. The FDIC provides a seamless transition of the failed bank's assets to the new acquiring financial institution.

Often, banks are subsidiaries of a larger holding company, which sells stock publicly to investors. When the FDIC closes a bank, it generally does not close the holding company. Therefore, the failure announcement should send a negative signal to the bank holding company investors. Evidence of this negative signal is one objective of this paper. This study sample includes five banks that were their own holding companies.

How fast does the stock market react to publicly announced information, such as a bank failure announcement? According to Fama (1970), market efficiency can take on one of three forms: weak form efficiency, semi-strong form efficiency, and strong form efficiency. According to the semi-strong form efficient market hypothesis, the holding company's stock should respond to public announcements of bank failures so fast that an investor is unable to make an above-normal return by acting on the announcement. This study investigates whether an investor can achieve an above-normal return by acting on public announcements of bank failures.

BACKGROUND AND PURPOSE

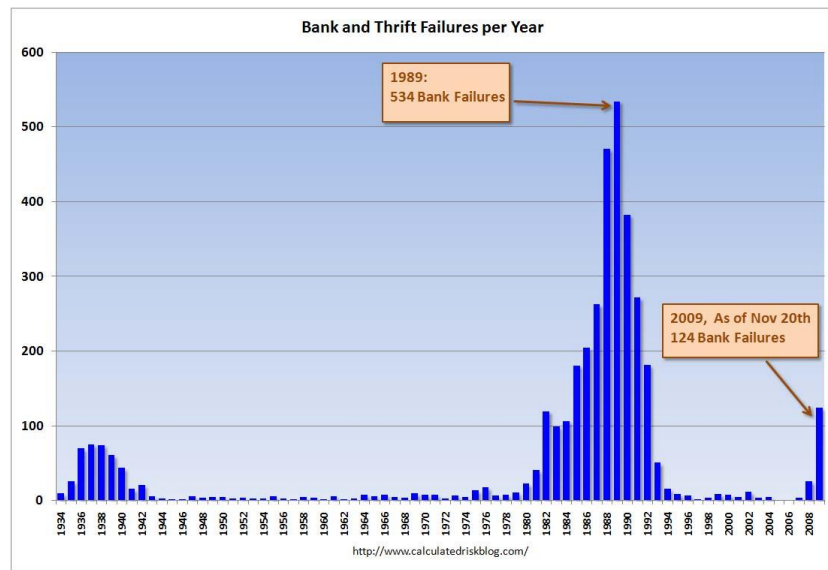
The purpose of this event study is to test the semi-strong form efficient market hypothesis by analyzing the reaction of the holding companies' risk adjusted rate of stock price return to a sample of 36 FDIC bank failure announcements. Specifically, how fast does the market price of the holding companies' stocks react to the sample of FDIC bank failure announcements? This analysis will test whether the announcement of bank failures demonstrates the strong form, semi-strong form, or weak form of the efficient market hypothesis by examining the timing of the bank failure announcements and the resulting changes in stock prices that occur.

This analysis examines the effects of a sample of 36 FDIC bank failure announcements on stock price returns using the standard risk adjusted event study methodology. The study has two objectives: to test bank failure announcements for a negative signal and to examine the timing or speed of the impact on stock price returns.

LITERATURE REVIEW

Weak-form, semi-strong-form and strong-form efficiency are the three forms of market efficiency as defined by Fama (1970, 1976). The weak-form hypothesis purports that investors can not earn an above normal return by acting on past price or return information. Alexander (1961) provides evidence of the random walk theory in support of weak form efficiency. If the market is weak form efficient, then stock price reacts sufficiently fast to all past information to disallow investors an above normal return by acting on this type of information. Semi-strong form market efficiency theory contends that the market reacts so fast to all public information that no investor can earn an above normal return by acting on this type of information. Strong-form efficiency theory suggests that no investor can earn an above normal return using any information whether it is public or private. Finnerty's 1976 test of the legitimacy of strong form efficiency offers mixed results. If the market is strong form efficient, then stock prices react so fast to all public and private information that no investor can earn an above normal return by acting on this type of information. For strong form efficiency to occur, it follows that investors must act on insider information, which is illegal in the United States.

Little research on market efficiency and bank failure announcements exists. According to Gropp, et als (2006), factors are examined to predict the fragility of banks. Gropp, et als conclude, “. . . that there might be considerable practical difficulties in using either of the indicators proposed in this paper.” Their study suggests that it is very difficult to predict bank failures. However, factors may be observed that could possibly predict bank fragility, meaning that it is possible for the market to respond based on certain indicators before bank failure announcement dates. According to Chen, et als (2006), modeling bank risk is important for regulatory institutions. Because banks view deposit insurance as a put option, it is important to make regulation that discourages that option. Likewise, according to Chen et als, traditionally, the deposit insurer’s liability has been viewed as a put option on the bank’s assets, which is assumed to conform to exogenously specified process. However, recently the regulations not strict enough to prevent banks from failing in the current recession. As demonstrated by the *Bank and Thrift Failures per Year*, bank failures are a common occurrence in recessions and depressions, such as the recession that climaxed 1989.



Bank failures have been a large part of world history since the creation of monetary instruments. The United States has experienced many recessions and depressions that have accelerated the bank failure rate. However, it was not until the Great Depression that the United State government decided to implement regulation to protect the American people from bank failures. According to Wheelock (1995), “In response to the bank failures of the Great Depression, Congress enacted federal deposit insurance, imposed new restrictions on the activities of commercial banks, and maintained a strict prohibition of interstate branching. Although these policies appeared to work well for many years, their weaknesses were exposed in the 1980s, prompting reforms.” The reform prompted in the 1980s included a risk-adjusted capital requirement for financial institutions. In the early 1990s, another act was passed that adopted risk-based deposit insurance premiums and risk-based capital standards to hold financial institutions accountable for their risk.

Past studies have examined the negative effect of a troubled bank on itself as well as the surrounding banks. Hendrickson (2000) discusses the effect of a small failing institution on the small institutions within the same community.

The negative estimated coefficient is consistent with the hypothesis that before a bank failure, risk taking increases by the troubled bank creating a perception that other banks are also more risky forcing all banks in the market to pay higher deposit rates. Thus this finding suggests that firm-specific bank contagion exists among small failures during times of relative stability (p. 410).

Therefore, bank failures in a particular area or region can cause a ripple effect for surrounding institutions. As the public loses faith in the failing institution, they also lose faith in surrounding institutions. Therefore, bank failures can fuel the fire of failing banks in a recession. However, the study by Hendrickson also states that failing banks have less effect on nearby institutions since the implementation of the FDIC.

METHODOLOGY AND STUDY SAMPLE

This study sample includes 36 FDIC bank failure announcements from publicly traded companies between February 13, 2009 and July 16, 2010. The sample was selected from FDIC bank failures traded on the NYSE, NASDAQ, or OTC. Table 1 describes the sample.

Table 1: DESCRIPTION OF STUDY SAMPLE

Firm Name	Announcement/ Closure of Bank
MainStreet Financial Corp.	July 16, 2010
Bay National Corp.	July 9, 2010
The Bank Holdings	June 18, 2010
Bank of Florida Corporation	May 28, 2010
1st Pacific Bancorp	May 7, 2010
Towne Bancorp, Inc.	May 7, 2010
Frontier Financial Corporation	April 30, 2010
W Holding Co. Inc.	April 30, 2010
EuroBancshares Inc.	April 30, 2010
AMCORE Financial, Inc.	April 23, 2010
Beach First National Bancshares Inc.	April 9, 2010
Appalachian Bancshares Inc.	March 19, 2010
Advanta Corp.	March 19, 2010
Sun American Bancorp	March 5, 2010
Rainier Pacific Financial Group Inc.	February 26, 2010
Marco Community Bancorp Inc.	February 19, 2010
First Regional Bancorp	January 29, 2010
WGNB Corp.	January 29, 2010
Columbia Bancorp.	January 22, 2010
Imperial Capital Bancorp, Inc	December 18, 2009
Greater Atlantic Financial Corp.	December 4, 2009
Guaranty Financial Corporation	October 23, 2009
San Joaquin Bancorp	October 16, 2009
Corus Bankshares, Inc.	September 11, 2009
ebank Financial Services, Inc.	August 21, 2009
First Coweta Bank	August 21, 2009
Security Bank Corporation	July 24, 2009
Metropacific Bank (CA)	June 26, 2009
Cooperative Bankshares, Inc.	June 19, 2009
Southern Community Bancshares	June 19, 2009
Beverly Hills Bancorp Inc.	April 24, 2009
Michigan Heritage Bancorp	April 24, 2009
Omni Financial Services, Inc.	March 27, 2009
Silver Falls Bank	February 20, 2009
Pinnacle Bank of Oregon	February 13, 2009
1st Centennial Bancorp	January 23, 2009

To test the semi-strong form market efficiency hypothesis with respect to public announcements of bank failures and to examine the effect of bank failure announcements on stock return around the announcement date, this study proposes the following null and alternate hypotheses:

H1₀: The risk adjusted return of the stock price of the sample of banks and holding companies that experienced an FDIC bank failure announcement is not significantly affected by this type of information on the announcement date.

H1₁: The risk adjusted return of the stock price of the sample of banks and holding companies that experienced an FDIC bank failure announcement is significantly negatively affected by this type of information on the announcement date.

H2₀: The risk adjusted return of the stock price of the sample of banks and holding companies that experienced an FDIC bank failure announcement is not significantly affected by this type of information around the announcement date as defined by the event period.

H2₁: The risk adjusted return of the stock price of the sample of banks and holding companies that experienced an FDIC bank failure announcement is significantly negatively affected around the announcement date as defined by the event period.

This study uses the standard risk adjusted event study methodology. The announcement date (day 0), obtained from <http://www.fdic.gov/>, is the date of the FDIC announcement of the bank failure and FDIC takeover of the bank. The required historical financial data, i.e. the stock price and S&P500 index during the event study period was also obtained from the internet website <http://finance.yahoo.com/>.

1. The historical stock prices of the sample companies and S&P 500 index for the event study duration of -180 to +30 days (with day -30 to day +30 defined as the event period and day 0 the announcement date) were obtained.
2. Then, holding period returns of the companies (**R**) and the corresponding S&P 500 index (**R_m**) for each day in this study period were calculated using the following formula:

$$\text{Current daily return} = \frac{\text{current day close price} - \text{previous day close price}}{\text{previous day close price}}$$

A regression analysis was performed using the actual daily return of each company (dependent variable) and the corresponding S&P 500 daily return (independent variable) over the pre-event period (day -180 to -31 or period prior to the event period of day -30 to day +30) to obtain the intercept alpha and the standardized coefficient beta. Table 2 shows alphas and betas for each firm.

Table 2: ALPHAS AND BETAS OF STUDY SAMPLE

Firm Name	Alpha	Beta
MainStreet Financial Corp.	0.071699	3.5155
Bay National Corp.	-0.00041	1.198556
The Bank Holdings	0.025793	1.448466
Bank of Florida Corporation	-0.00391	-0.62467
1st Pacific Bancorp	0.003096	-1.39232
Towne Bancorp, Inc.	0.007322	-1.9657
Frontier Financial Corporation	-0.00332	1.171788
W Holding Co. Inc.	0.001218	1.217628
EuroBancshares Inc.	-0.0059	-0.28712
AMCORE Financial, Inc.	0.003478	1.065475
Beach First National Bancshares Inc.	-0.00256	0.205222
Appalachian Bancshares Inc.	0.008218	0.033797
Advanta Corp.	-0.00725	1.613101

Sun American Bancorp	0.005988	0.401388
Rainier Pacific Financial Group Inc.	-0.00359	-0.50693
Marco Community Bancorp Inc.	-0.00602	-0.58234
First Regional Bancorp	-0.00788	0.518562
WGNB Corp.	0.000774	-2.35261
Columbia Bancorp.	-0.00047	0.390137
Imperial Capital Bancorp, Inc	-0.00094	1.485748
Greater Atlantic Financial Corp.	0.006531	0.699862
San Joaquin Bancorp	-0.0044032	0.0359501
Corus Bankshares, Inc.	0.006129879	2.88639547
ebank Financial Services, Inc.	0.044300974	0.287835513
Guaranty Financial Corporation	-0.01202655	-0.21838042
First Coweta Bank	0.011101094	-1.579637604
Security Bank Corporation	-0.00346714	0.901717717
Metropacific Bank (CA)	0.015749293	0.206859516
Cooperative Bankshares, Inc.	-0.007603351	0.445492644
Southern Community Bancshares	0.027967509	-0.76719824
Beverly Hills Bancorp Inc.	0.012076683	0.557509305
Michigan Heritage Bancorp	0.025536642	0.434627958
Omni Financial Services, Inc.	0.003585004	-0.11155853
Silver Falls Bank	-0.02164348	-0.294491715
Pinnacle Bank of Oregon	-0.00979342	0.08765006
1st Centennial Bancorp	-0.004806261	0.47346174

- For this study, in order to get the normal expected returns, the risk-adjusted method (market model) was used. The expected return for each stock, for each day of the event period from day -30 to day +30, was calculated as:

$$E(R) = \alpha + \beta (R_m)$$
 where R_m is the return on the market i.e. the S&P 500 index.
- Then, the Excess return (ER) was calculated as:

$$ER = \text{the Actual Return } (R) - \text{Expected Return } E(R)$$
- Average Excess Returns (AER) were calculated (for each day from -30 to +30) by averaging the excess returns for all the firms for given day.

$$AER = \text{Sum of Excess Return for given day} / n$$
 where n = number of firms in sample i.e. 36 in this case
- Also, Cumulative AER (CAER) was calculated by adding the AERs for each day from -30 to +30.
- Graphs of AER and CAER were plotted for the event period i.e. day -30 to day +30. Chart 1 below depicts Average Excess Return (AER) plotted against time. Chart 2 below depicts Cumulative Average Excess Return ($CAER$) plotted against time.

QUANTITATIVE TESTS AND RESULTS

Did the market react to the FDIC bank failure announcements? Was the information in the event period significant? From the information provided in the literature review that suggests bank failures send out an extremely negative signal, one would expect a significant difference in the Actual Average Daily Returns of the event period (Day -30 to Day +30) and the Expected Average Daily Returns of the event period (Day -30 to Day +30) if the information surrounding the event impounds new, significant information that reflects on market price of the firms' stock (see Chart 1 below). If a significant risk adjusted difference is observed over the event period, then the hypothesis is supported, which states that this type of information did significantly either increase or decrease stock price. To statistically test for a difference in the Actual Daily Average Returns of the event period (Day -30 to Day +30) and the Expected Daily

Average Returns of the event period (Day -30 to Day +30), a paired sample t-test was conducted. Results of the t-test found a significant difference at the 5% level between actual average daily returns and the risk adjusted expected average daily returns. Results of the t-test and regression analysis support both alternate hypotheses, $H1_1$ and $H2_1$.

Is it possible to isolate and observe the sample’s daily response to a bank failure announcement from day -30 to day +30? In accordance with the efficient market theory, did the market respond to the information with weak efficiency, semi-strong efficiency, or strong efficiency? What are the implications for this type of market efficiency?

This analysis was also performed to test the efficiency of the market in reacting to FDIC bank failure announcements. Our goal in the analysis and tests is to determine if the Average Excess Return (AER) and Cumulative Average Excess Return (CAER) are significantly different from zero or that there is a visible graphical or statistical relationship between time and either AER or CAER. (See Chart 1 and Chart 2 below) The T-tests of AER and CAER both tested different from zero at the 5% level of significance. In conjunction, the observations of the graph of CAER from the event period (Chart 2) confirms the significant negative reaction of the risk adjusted returns of the sample of firms tested to the FDIC bank failure announcements.

Chart 1: AVERAGE EXCESS RETURN OVER EVENT PERIOD

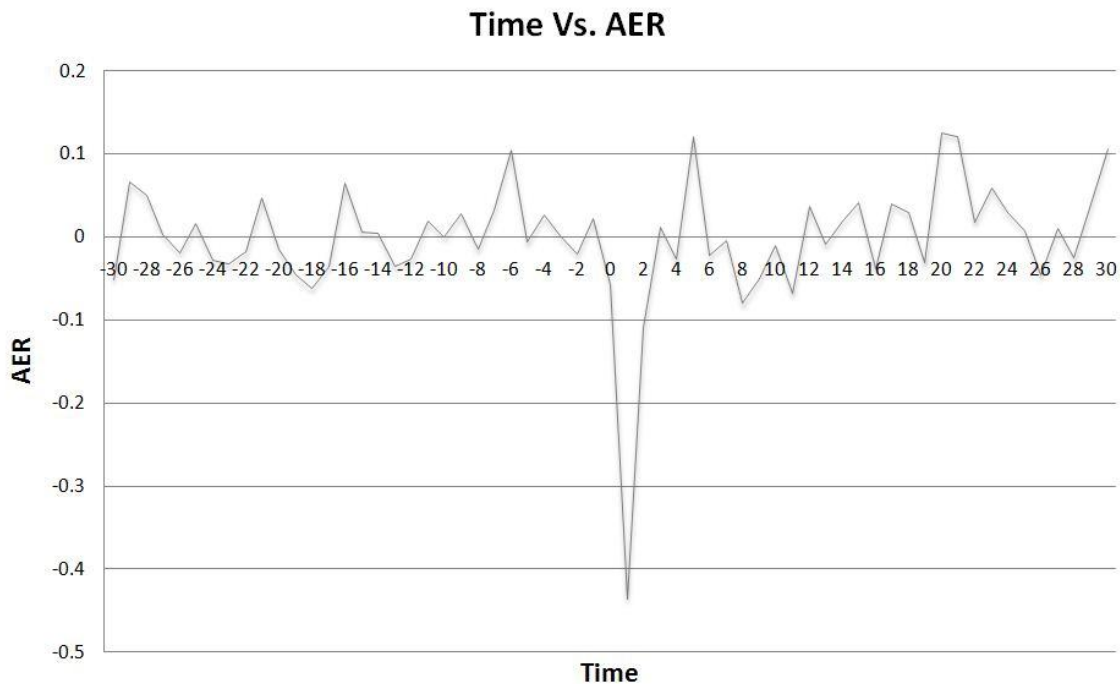
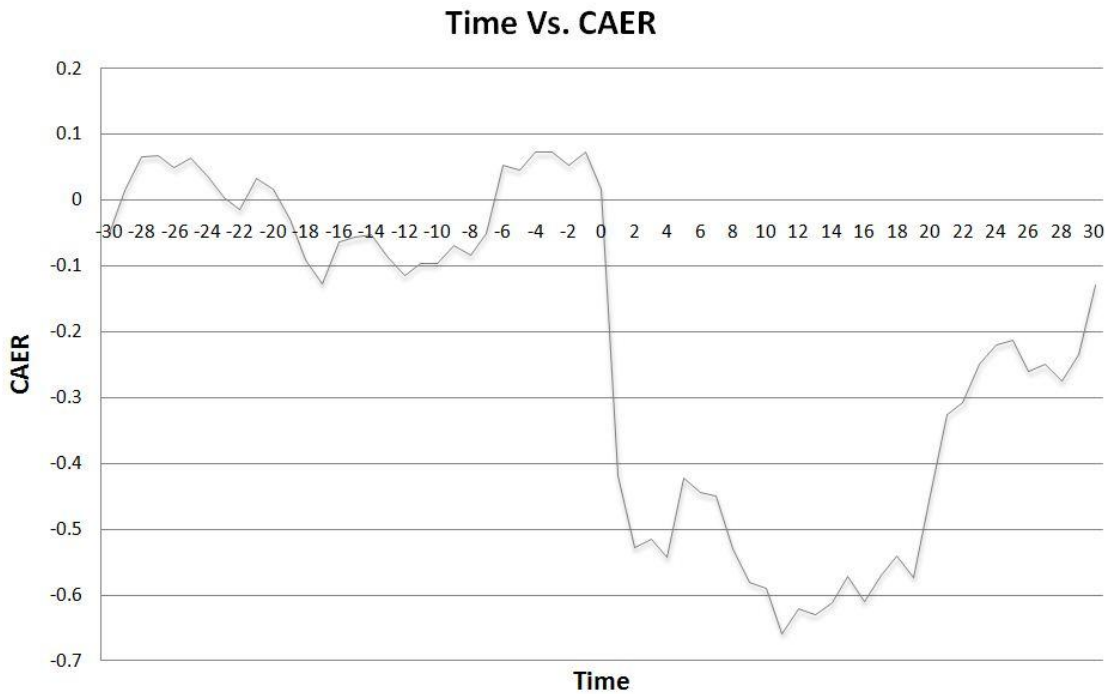


Chart 2: CUMULATIVE AVERAGE EXCESS RETURN OVER EVENT PERIOD



The CAER graph (Chart 2) substantiates the alternative hypothesis H1: The risk adjusted return of the stock price

of the sample of banks and holding companies that experienced an FDIC bank failure announcement is significantly negatively affected by this type of information on the announcement date. For the sample of bank failures analyzed, an investor is not able to earn an above normal risk adjusted return by acting on the public announcement of a bank failure on day 0 in support of the semi-strong form efficient market hypothesis. Likewise, the results support H2₁: The risk adjusted return of the stock price of the sample of banks and holding companies that experienced an FDIC bank failure announcement is significantly negatively affected around the announcement date as defined by the event period. The graph of the CAER over the event period suggests that the bank failure announcements had a significant negative impact on the firm’s share price immediately on day 0 and continues to day 18, then the sample’s return appears to rebound possibly after confidence in the stability of the surviving institutions is restored. This observation supports the well documented “over reaction” effect in the behavioral finance literature.

Pre-announcements results show significant positive returns during day -30 to day -18, negative returns from day -18 to day -7, and then significant positive returns from day -7 to day 0. These mixed results suggest the high level of uncertainty concerning the ultimate outcome of the troubled bank. Post-announcement returns are significantly negative on day 0 followed by an “over reaction” and a negative trend to day 18 after which returns appear to trend upward to equilibrium by day 30 possibly as a result of increased confidence in the surviving institutions.

CONCLUSION

This analysis tested the effect of FDIC bank failure announcements on the stock price’s risk adjusted rate of return for a sample of 36 publicly traded holding companies between February 13, 2009 and July 16, 2010. The sample was selected from a published list of FDIC bank failures traded on the NYSE, NASDAQ, or OTC. Using standard risk adjusted event study methodology with the market model, the study analyzed 15,192 recent observations on the thirty- six publicly traded firms and the S&P 500 market index. To determine significance, appropriate statistical tests were conducted. Results support the negative signal on and around the bank failure announcements. Likewise, the finding here support the

semi-strong form level of market efficiency as defined by Fama (1970). Evidence of pre-event day trading is mixed suggesting the high level of uncertainty concerning the predicted outcome of the troubled banks.

Overall, this study suggests that FDIC bank failure announcements are viewed as a negative signal for the future of the holding company. Investors appear to receive the bank failure announcements as an implicit signal from the FDIC that the firm's capital structure and loan portfolio look doubtful and will culminate into a continuous decline in stock price. The market's negative reaction to the announcement suggests that management and stockholders have fear of FDIC bank failure announcements.

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