

Are Financial Markets Overly Optimistic about the Prospects of Firms That Issue Equity? Evidence from Voluntary versus Involuntary Equity Issuances by Banks

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ABSTRACT

This paper examines firm performance around announcements of common stock issues. We study the banking industry in which some stock issues are made voluntarily by managers, and other issues are involuntary. We find that banks that voluntarily issue common stock experience a significant drop in the matched adjusted operating performance following the issue, a significant drop in benchmark firms' adjusted stock prices following the issue, and systematically negative market reactions to post-issue quarterly earnings announcements. Banks that issue common stock involuntarily experience values for these measures that are not significantly different from those of the benchmark firm(s).

NUMEROUS EMPIRICAL STUDIES HAVE DOCUMENTED significant negative abnormal stock returns in reaction to announcements of new security issuances.¹ Evidence on stock price behavior for longer periods around the issuance of common stock generally reports cumulative positive excess returns for periods preceding and negative excess returns for periods following the issue announcement.² Consistent with the weak announcement period and post-issue stock price performance, Loughran and Ritter (1997) and McLaughlin, Safieddine, and Vasudevan (1996) have documented poor post-issue operating performances of issuing firms.

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¹ See Dann and Mikkelson (1984), Asquith and Mullins (1986), Eckbo (1986), Masulis and Korwar (1986), Mikkelson and Partch (1986), Barclay and Litzenberger (1988), Hansen and Crutchley (1990), Bayless and Chaplinsky (1996), and Jung, Kim, and Stulz (1996).

² See Korajczyk, Lucas, and McDonald (1990), Lucas and McDonald (1990), Loughran and Ritter (1995), Spiess and Affleck-Graves (1995), and Jung et al. (1996).

An explanation offered for stock price reactions at and around a stock issue announcement is the behavioral timing model (a theory that evolved from the findings in Loughran and Ritter (1995) and Spiess and Affleck-Graves (1995) that firms issuing stock experience long-term underperformance). This model is consistent with the view that firms time their issues to coincide with periods when their equity is overvalued. The explanation for long-run underperformance offered by Loughran and Ritter (1995) is that the new equity is issued by companies whose stock is grossly overvalued. The market does not revalue the stock appropriately at the announcement, therefore the stock is still overvalued when the issue occurs. Loughran and Ritter (1997) empirically relate the drop in operating performance to post-issue stock returns: When the issuing firms experience a post-issue drop in operating performance, the market recognizes that the stock is still overvalued and reacts by adjusting stock prices downward; that is, the firm's stock underperforms. Spiess and Affleck-Graves (1995) conclude that long-run underperformance of firms following stock issues is consistent with managers being able to take advantage of firm-specific information to issue equity when the firm's stock is overvalued.³

The banking industry presents a unique opportunity to study seasoned equity issues. Previous studies on the issuance of common stock and the post-issue performance of the firm rely on the voluntary issuances of securities by nonfinancial firms. In the banking industry capital regulations may result in involuntary issuances of securities to satisfy capital standards; these involuntary issues would not be associated with any mispricing of the bank's stock or expected changes in future performance. Cornett and Tehranian (1994) specifically examine stock price reactions associated with security issuances by commercial banks, classifying the security issues as involuntary (needed to meet regulatory capital standards) or voluntary (at the discretion of the bank's managers). Consistent with the empirical findings for nonbank firms, stock price reactions associated with voluntary stock issuances of commercial banks are found to be negative. For banks that involuntarily issue stock, however, the stock price decline is significantly less than for the voluntary issuers.

Given the voluntary versus involuntary nature of stock issuances in the banking industry and the conflicting stock price reactions to announcements of voluntary versus involuntary equity issuances documented in Cornett and Tehranian (1994), we have an opportunity to examine whether firms with the discretion to do so issue equity when it is overvalued. Further, we can

³ Jung et al. (1996) analyze how well three models (the adverse selection or pecking order theory of Myers and Majluf (1984), the free cash flow theory of Jensen (1986), and the behavioral timing model of Loughran and Ritter (1997) examined in this paper) explain the security issue choice (i.e., debt versus equity). Specifically, they attempt to use these models to explain why firms choose to issue a particular security, how the market reacts to that choice, and the actions of the firm after the issue. They find that the agency model best explains a firm's choice between debt and equity issuance, the stock price reaction to the choice, and the firm's performance after the issue.

examine whether the market is overly optimistic about the prospects of firms that voluntarily issue equity. Specifically, it is expected that the post-issue performance of banks that voluntarily issue stock should be similar to that of nonbank stock issuers. Banks that issue stock involuntarily, on the other hand, are not necessarily doing so because expected future performance is poor; and it is expected that the stock price trends of these banks after the stock issue will not show performance changes similar to those of the voluntary stock issuers. This paper empirically tests these expectations. Of course, banks could alternatively sell assets or reduce liabilities to satisfy minimum capital requirements (thus altering the denominator rather than the numerator of the capital ratio). In this sense, the decision to issue stock rather than sell assets or reduce liabilities is a voluntary one.⁴ However, given that any of these actions is the result of a need to increase capital and would not otherwise be undertaken, we view the stock issue as involuntary.⁵ The results of the empirical tests confirm that bank performance after the stock issue varies depending on whether the stock issue is voluntary or involuntary. Specifically, the performance of banks that voluntarily issue common stock is similar to that found in other studies for nonbank issuers: The announcement period abnormal returns are negative and significant, the operating performance deteriorates post-issue, the post-issue stock returns are poor, and the post-issue quarterly earnings announcements are disappointing. For banks that issue stock involuntarily, however, the results differ: The announcement period abnormal returns are not significantly different from zero, operating performance improves or remains unchanged, post-issue stock returns are normal, and post-issue quarterly earning announcements are not disappointing. These results tend to confirm that firms with the discretion to issue equity (nonbank firms and banks that meet regulatory capital guidelines) do so when they are overvalued; the market is indeed overly optimistic about the prospects of firms that voluntarily issue equity.

Section I describes the sample construction. Section II introduces and explains the performance measures used in the study. Section III summarizes the results, and Section IV concludes the paper.

⁴ In fact, as pointed out by a referee, by allowing for different methods of increasing the capital ratio, a story could be told in which there is a more negative announcement effect associated with involuntary issues than for voluntary issues. This story argues that banks choosing to issue equity rather than sell assets have the most severe agency problems (the fact that their capital ratios are low might be analogous to a low Q ratio in Jung et al. (1996)), and the market is disappointed that these agency problems are not being constrained.

⁵ We talked to economists at the Federal Reserve Bank in Chicago, who stated that although banks could sell assets or decrease liabilities to increase capital, they rarely do. They noted that banks almost always issue equity to increase capital when they fall below the minimum standards, and that the sale of assets or reduction of liabilities to meet capital standards are generally actions of banks in serious trouble—an action of last resort.

Haubrich and Wachtel (1993) look at actions of banks in response to changes in capital adequacy rules. They find that banks shifted from loans to government securities since 1989 as a result of risk-based capital requirements, but they find no evidence that banks sold assets to increase capital ratios.

I. Sample Construction

This study examines announcements of all seasoned common stock offerings (initial public offerings are thus excluded) by publicly traded commercial banks in the United States during the period from June 1983, when the seventeen largest banks were first required to comply to the new capital standards, through December 1991. After June 1983, all banks operated with the same capital requirements. Though the legal capital requirements were increased in 1985, the zones of classification (that are used in this study to determine whether an issue is voluntary or involuntary and that are described below) remained the same over the entire sample period. The sample period ends in 1991 because three years of post-issue data are needed to measure performance.

The initial sample of bank security issuances is collected from the *Investment Dealer's Digest (IDD)*. We search the *Wall Street Journal (WSJ) Index* for announcements of security offerings and use the dates of these announcements as the initial announcement date. If no mention of the security offering is found in the *WSJ Index*, we use the date that the offering was registered with the Securities and Exchange Commission (SEC) as the initial announcement date. If the *WSJ Index* announcement occurs after the offering was registered with the SEC, we use the registration date as the initial announcement date. Registration dates are listed in the IDD. We clean the sample, removing any events that include multiple announcements (e.g., in addition to the stock issue, the bank announced another major event, such as dividends, earnings), which results in a loss of six events. We do not evaluate the stock price reaction of the subsequent security offerings from a particular shelf registration. The final sample includes 150 common stock offerings by 120 different banks.

As in Cornett and Tehranian (1994), to determine whether the issuance of the security is voluntary or involuntary, we use the Federal Reserve Board's definition of 'zones' for classifying banks with respect to supervisory action. As described in Cornett and Tehranian, throughout our sample period banks with total capital ratios in excess of 7 percent were deemed by regulators to have adequate capital, and their security issues are therefore classified as voluntary. Banks with total capital ratios below 7 percent are considered to be undercapitalized, and their security issues fall into our involuntary issue subsample.

We choose the 7 percent minimum zone as the cutoff for total capital ratio rather than the 6 percent minimum required total capital ratio to distinguish between voluntary and involuntary security issuances for three reasons. First, the 7 percent minimum zone ratio was in effect for the entire sample period (June 1983 to December 1991). In comparison, the *required* total capital ratio was 5.5 percent from June 1983 to December 1985, and the 6 percent legal minimum capital ratio was in effect from 1986 through 1991. Second, fewer than 10 percent of the capital issuances occur when the bank's total capital ratio is below 6 percent; using the zone classifications

Table I
Year of Announcement of 150 Common Stock Offerings
by Commercial Banks for the Period from June 1983
to December 1991

An issue is classified as voluntary if the bank's total capital ratio is above 7 percent prior to the issue and involuntary if the total capital ratio is below 7 percent prior to the issue. These groupings are based on the Fed's classifications for adequately and inadequately capitalized banks.

| Year of Announcement | Full Sample (<i>n</i> = 150) | Voluntary Issues (<i>n</i> = 70) | Involuntary Issues (<i>n</i> = 80) |
|----------------------|----------------------------------|--------------------------------------|--|
| 1983 | 15 | 1 | 14 |
| 1984 | 18 | 9 | 9 |
| 1985 | 23 | 13 | 10 |
| 1986 | 34 | 15 | 19 |
| 1987 | 14 | 9 | 5 |
| 1988 | 4 | 4 | 0 |
| 1989 | 9 | 8 | 1 |
| 1990 | 7 | 3 | 4 |
| 1991 | 26 | 8 | 18 |

thus ensures a sufficient sample size for involuntary capital injections. Finally, once a bank goes below the 7 percent level of capital (and thus becomes classified as less than acceptably capitalized), regulatory involvement or intervention becomes relatively pronounced for that bank, so that few banks actually operate near this level. To avoid regulatory scrutiny, capital injections generally occur when the bank's capital falls below the 7 percent level.

Financial statement information needed to calculate the capital ratios is obtained from the FDIC Report of Income and Report of Condition data tapes. The FDIC data tapes report information by bank. For the bank holding companies in the sample, data for the individual banks in the holding company are cumulated to obtain the overall holding company figures. Using a 7 percent total capital ratio as of the end of the year prior to the security issue as the cutoff level, the full sample of 150 stock offerings is divided into 70 voluntary issues of capital and 80 involuntary issues of capital.

Table I lists the distribution of the sample by the year the security offering is announced. Table I reports only one voluntary stock issue in the last seven months of 1983 compared to fourteen involuntary issues. The relatively high incidence of involuntary issues most likely results from the imposition of new capital standards. It was during the first years after the rule change that banks built up their ratios above the 7 percent level deemed by regulators to separate adequately and inadequately capitalized banks. More surprising is the fact that the large majority of capital issues by banks from 1987 through 1989 are voluntary. During this period there was a sharp increase in bank failures, particularly in the southwest part of the United

States. Yet our data sample implies that undercapitalized banks did not issue new stock in an attempt to salvage themselves, possibly because market participants were able to distinguish between adequately and inadequately capitalized banks and would not invest in new issues by the high-risk banks.⁶ The low number of involuntary issues would then be due not to lack of desire by undercapitalized banks to build up their capital position, but rather to the inability to raise capital at an acceptable price. Another interesting fact reported in Table I is that eighteen of the twenty-six stock issues in 1991 are classified as involuntary. Similar to the preponderance of involuntary issues in 1983, new risk-based capital standards were being implemented for 1992. The large number of involuntary stock issues is again likely due to the banks adjusting to the new standards.

Table II lists some summary statistics of the sample, including the book value of assets (in millions of dollars) of the issuing bank at year-end prior to the security issue, the relative size of the issue (the dollar value of the issue divided by the book value of assets of the issuing bank prior to the issue) and the issuing bank's primary and total capital ratio at year-end prior to the issue. All accounting data used to tabulate information in the table are obtained from the FDIC Report of Income and Report of Condition data tapes.

II. Performance Measures

The measures we use to test operating performance around stock issuances by commercial banks are similar to those in Cornett and Tehranian (1992) that look at merger-related operating performance changes in commercial banks. We collect cash flow data for the sample banks both before and after the stock issuance. A comparison of the post-issue values with the pre-issue benchmark allows us to measure the impact of the stock issue on the performance of the bank. Like Cornett and Tehranian, we use operating pretax cash flows (defined as earnings before taxes and extraordinary items plus interest on notes and debentures subordinate to deposits) divided by the year-end book value of assets⁷ to evaluate performance.

We obtain a pre-issue operating pretax cash flow performance benchmark for years -3 to -1 before the announcement of the stock issue. We divide the measure by the book value of assets to provide a return metric that is

⁶ In the 1980s, many banks raised equity capital through discount dividend reinvestment plans (see Scholes and Wolfson (1989)).

⁷ As pointed out by a referee, the operating performance measure could be artificially depressed by using end-of-period book value of assets every year. As stated by the referee, this artificial depression would arise if the proceeds from the issuance are not invested immediately in income-generating activities. Thus, the book value of total assets increases without a corresponding rise in net income. The reviewer also added that the effect is only transitory. Indeed, over the three-year post-issue period the effect should dissipate. Additionally, we start our post-issue period in the year following the stock issue announcement, which means there should be from one to twelve months to get the proceeds invested in income generating activities.

Table II
Summary Statistics of 150 Security Offerings by Commercial Banks for the Period
from June 1983 to December 1991

Information is taken from financial statements at the year-end prior to the stock issue announcement. An issue is classified as voluntary if the bank's total capital ratio is above 7 percent prior to the issue and involuntary if the total capital ratio is below 7 percent prior to the issue. These groupings are based on the Fed's 1983 classifications for adequately and inadequately capitalized banks. Primary capital consists of book values of common stock, perpetual preferred stock, surplus, undivided profits, capital reserves, mandatory convertible debt, loan and lease loss reserves, and minority interest in consolidated subsidiaries less intangible assets. Total capital consists of primary capital plus limited life preferred stock, subordinated notes and debentures (straight and convertible), and mandatory convertible debt instruments not eligible to be counted as primary capital.

| | Full Sample (n = 150) | | | | Voluntary Issues (n = 70) | | | | Involuntary Issues (n = 80) | | | |
|---|--------------------------|-------|----------|--------|------------------------------|-------|----------|--------|--------------------------------|-------|---------|--------|
| | Mean | Min. | Max. | Median | Mean | Min. | Max. | Median | Mean | Min. | Max. | Median |
| Book value of issuing bank's assets prior to stock offering (in millions of \$) | 12567.5 | 77.0 | 174690.3 | 3052.5 | 14474.1 | 124.7 | 174690.3 | 1884.1 | 10899.2 | 77.0 | 68568.6 | 3985.1 |
| Relative size of issue (offering size divided by book value of issuing bank's assets) | 1.62% | 0.02% | 52.74% | 0.82% | 1.47% | 0.02% | 8.42% | 0.93% | 1.75% | 0.04% | 52.74% | 0.72% |
| Issuing bank's primary capital to asset ratio prior to security offering | 6.84% | 4.40% | 11.31% | 6.72% | 7.78% | 6.08% | 11.31% | 7.47% | 6.01% | 4.40% | 6.95% | 6.02% |
| Issuing bank's total capital to asset ratio prior to security offering | 7.15% | 4.91% | 12.29% | 6.91% | 8.17% | 7.01% | 12.29% | 7.80% | 6.25% | 4.91% | 6.97% | 6.32% |

comparable across firms. The post-issue operating cash flows of the bank are computed for years 1 to 3 after the stock issue. Again, the cash flow measure is deflated by the book value of assets to yield a normalized measure of performance. We examine cash flow performance changes for subsamples of voluntary versus involuntary stock issuers (defined below).

Changes in the pre- and post-issue operating performance are examined on both unadjusted basis and matched adjusted basis. Following Barber and Lyon (1996), we define an industry comparison group for each bank in the year prior to the stock issue announcement. Specifically, our matched adjusted comparison group includes all nonissuing firms contained on the Center for Research in Security Prices (CRSP) data tapes with the same three-digit SIC code as the sample bank and similar in operating pretax cash flow return on assets. Once a sample bank is matched with other CRSP firms with the same three-digit SIC code, we use a filter for the matched firm's operating pretax cash flow return on assets of 90 percent to 110 percent.⁸ We are able to identify a match firm for each of our sample banks.

Consistent with Barber and Lyon (1996), we use the median performance of the industry comparison group as the matched adjusted performance measure. For all of our tests, we hold the industry comparison firms constant over time. Thus, the matched firms selected for the sample banks in the year prior to stock issue announcement remain the same from year three prior to the announcement to year three after the announcement. Also, to avoid any impact that earlier observations may have on our results, we use median performance results for both the unadjusted data and the performance matched adjusted data.

In addition to operating performance, we examine stock price performance around the stock issues of the commercial banks. Announcement period abnormal stock returns are calculated using standard event-study methodology. All return data are taken from the CRSP data tapes and we use the CRSP equally weighted index as the market portfolio. Because stock issuances frequently follow a period of superior market performance (see Asquith and Mullins (1986)), the estimation period for the market model comes from the period $t = +20$ through $t = +120$, where $t = 0$ is the initial announcement date of the stock issue.

We also examine stock returns for a longer period surrounding the stock issue by computing buy-and-hold returns for the issuing banks during the year before and the three years after the stock issue announcement. The buy-and-hold return is estimated in a manner used in Spiess and Affleck-Graves (1995), Daniel et al. (1997), and Safieddine and Titman (1997) and is similar to variations explored in Barber and Lyon (1997) and Kothari and Warner (1997). Specifically, for every bank in the sample the buy-and-hold

⁸ We use the 90 percent to 110 percent filter because Barber and Lyon (1996), who look at results of this methodology using alternative filters, find this range for ROA to yield test statistics that are well specified in these sampling situations.

return is calculated over the twelve calendar months prior to the month of the stock issue announcement and over the three years after the announcement (starting the month after the stock issue announcement and ending the month of the three-year anniversary).⁹ The percentage buy-and-hold return for bank i in the year prior to the issue is calculated as

$$R_{i,pre} = \left[\prod_{t=-12}^{-1} (1 + r_{it}) - 1 \right] \times 100\%, \quad (1)$$

where $t = -1$ is the month prior to the stock issue announcement, $t = -12$ is the month of the one-year anniversary prior to this announcement and r_{it} is the return for bank i in month t . The percentage buy-and-hold return for bank i in the three years after the issue announcement, $R_{i,post}$, is calculated as

$$R_{i,post} = \left[\prod_{t=1}^{36} (1 + r_{it}) - 1 \right] \times 100\%, \quad (2)$$

where $t = 1$ is the month after the stock issue announcement.

Barber and Lyon (1997) document that long-run buy-and-hold abnormal returns are positively skewed, which leads to negatively biased t -statistics. They show that calculating abnormal returns using buy-and-hold reference portfolios eliminates the skewness bias. Accordingly, in order to evaluate the long-run stock return performance, for each bank in the sample we compare the buy-and-hold return with that of a benchmark portfolio consisting of CRSP-listed stocks in the same size quintile, the same book-to-market quintile, and the same momentum quintile (stock return performance over the previous year). These are also the factors used in Safieddine and Titman (1997) to evaluate post-takeover performance and Daniel et al.'s (1997) three-factor model for evaluating mutual fund performance.¹⁰

We follow the procedure of Daniel et al. (1997) in constructing 125 reference portfolios based on size, book-to-market ratio, and momentum characteristics. Our reference portfolios include all firms listed on the NYSE, AMEX, and Nasdaq exchanges from 1983 to 1994 provided that the following three requirements are met: (1) COMPUSTAT data are available for the firm at least two years prior to the inclusion of the firm into the portfolio; (2) the firm has market value data available on the CRSP data tapes at the end of December and the end of June preceding the inclusion; and (3) in the twelve months prior to the inclusion, at least six monthly returns are available on the CRSP data tapes. The exact process works as follows. First, all NYSE

⁹ All banks in our sample continued trading for the three years after the stock issue.

¹⁰ We are grateful to Assem Safieddine and Sheridan Titman for assistance in obtaining the comparison benchmark portfolio for our sample banks.

firms in our sample are sorted into quintiles according to their market equity value, calculated for the last day of June from 1983 to 1994. AMEX and Nasdaq firms are then put into the quintiles according to their size. Within each quintile we further sort firms into five portfolios according to their book-to-market ratios. Finally, for each size and book-to-market sorted portfolio, we sort the firms into quintiles according to their preceding twelve-month return. This process gives us a total of 125 portfolios. Once we form the 125 benchmark portfolios, we match each of our sample bank stocks to a benchmark portfolio according to its size, book-to-market ratio, and momentum rank. We are able to identify a benchmark portfolio for each of our sample banks.

We calculate the buy-and-hold return of the reference portfolios by first compounding the returns on the securities and then summing across the securities as follows:

$$R_j = \sum_{i=1}^n \frac{\left[\prod_{t=s}^{s+\tau} (1 + R_{it}) \right] - 1}{n}, \quad (3)$$

where n is the number of securities in the reference portfolios in month s , the beginning period for the portfolio return calculation. (This method is also used in Barber, Lyon, and Tsai (1996).) We then calculate the abnormal returns of a particular bank stock by subtracting the return on the matched benchmark portfolio from the bank stock return. In the event of a firm delisting in the buy-and-hold reference benchmark portfolio, like Barber, Lyon, and Tsai (1997), we replace the missing return data with the corresponding return on the reference portfolio to which the delisted security belongs.

The composition of the benchmark portfolios is updated each year to reflect changes in the sample bank's characteristics. However, because we are simply rolling over the returns without adding or subtracting money from the benchmark, over time the values of the benchmark and the bank will diverge as their compound returns will diverge. The calculation of these benchmarks is equivalent to a strategy of investing in an equally weighted size, book-to-market, and momentum portfolio with annual rebalancing. We compare the buy-and-hold returns for the sample bank portfolio to those for the benchmark portfolio in the year prior to and the three years after the stock issue announcement.

Aware that the long-run buy-and-hold abnormal returns are often positively skewed, we use the bootstrapped skewness-adjusted t -statistic as discussed in Barber et al. (1997). The skewness-adjusted t statistic (t^*) is calculated as:

$$t^* = \sqrt{n} \left(t + \frac{1}{3} \hat{\gamma} t^2 + \frac{1}{6n} \hat{\gamma} \right), \quad (4)$$

where

$$t = \frac{\overline{AR}_\tau}{\sigma(AR_\tau)}, \quad (5)$$

$$\hat{\gamma} = \frac{\sum_{i=1}^n (AR_{i\tau} - \overline{AR}_\tau)^3}{n\sigma(AR_\tau)^3}, \quad (6)$$

\overline{AR}_τ is the mean buy-and-hold abnormal return, and $\sigma(AR_\tau)$ is the cross-sectional standard deviation of these returns.¹¹ Barber et al. (1997) show that the bootstrapped application of this skewness-adjusted t -statistic is well specified. The bootstrapping is conducted as follows. We randomly draw 1000 resamples of size 50 from the original sample. In each resample, we calculate the skewness-adjusted t -statistic. We then sort the obtained 1000 t -statistics and find the critical t -values corresponding to the 90 percent, 95 percent, and 99 percent confidence intervals. We base our inference on these bootstrapped critical t -values.

III. Empirical Results

A. Announcement Period Stock Returns

As in Cornett and Tehranian (1994), we find that voluntary issuers earn significantly negative two-day abnormal returns at the issue announcement (−1.62 percent, $t = -3.85$), while involuntary issuers do not (−0.39 percent, $t = -1.28$). The difference between the two groups (−1.23 percent) is also statistically significant ($t = -2.46$ percent). These results are consistent with voluntary issues containing a larger information content than involuntary issues.¹²

B. Cash Flow Returns

Table III presents the bank and performance match adjusted median annual operating pretax cash flow return on assets for the sample banks in the years surrounding the stock issue. It is difficult to draw conclusions from the median results because these data do not adjust for industry factors that may be affecting the cash flow returns of the issuing banks. Any trend would affect values for the bank medians, so a change may be due to factors other

¹¹ Note that $\hat{\gamma}$ is an estimate of the coefficient of skewness and $\sqrt{n}t$ is the conventional t -statistic.

¹² Because involuntary offers are anticipated to a greater degree we also examine abnormal returns for these two groups of banks for a period from sixty days before to two days before the issue announcement. The difference in these cumulative abnormal returns is not significant.

Table III
Bank and Performance Matched Adjusted Median Annual
Operating Pretax Cash Flow Return on Assets for Seventy Voluntary
and 80 Involuntary Stock Issues in Years Surrounding
the Issue for the Period from June 1983 to December 1991

Operating pretax cash flow return on assets is income before taxes and extraordinary items plus interest on notes and debentures subordinate to deposits as a percentage of the book value of assets as of the end of the year. Performance matched adjusted values are computed as the difference between the bank value and all firms in the same three-digit SIC code and between 90 and 110 percent of firm *i*'s cash flow return on assets the year prior to the announcement. *p*-values are based on a Mann-Whitney-Wilcoxon test. An issue is classified as voluntary if the bank's total capital ratio is above 7 percent and involuntary if the bank's total capital ratio is below 7 percent prior to the issue. This grouping is based on the Fed's classification for adequately capitalized banks.

| Year Relative to Issue | Bank Median (%) | Performance Matched Adjusted | |
|--|-----------------|------------------------------|----------------------|
| | | Median (%) | Percent Negative (%) |
| Panel A: 70 Voluntary Stock Issues | | | |
| -3 | 2.21 | -0.07 | 53 |
| -2 | 2.99 | 0.12 | 49 |
| -1 | 3.47 | 0.06 | 47 |
| Median annual performance for years -3 to -1 | 2.89 | 0.04 | 49 |
| 1 | 2.15 | -0.68 ^b | 67 ^d |
| 2 | 1.86 | -0.74 ^b | 73 ^d |
| 3 | 1.80 | -0.93 ^a | 77 ^d |
| Median annual performance for years 1 to 3 | 1.94 | -0.78 ^b | 73 ^d |
| Panel B: 80 Involuntary Stock Issues | | | |
| -3 | 1.87 | -0.08 | 53 |
| -2 | 2.10 | 0.06 | 46 |
| -1 | 2.16 | -0.05 | 55 |
| Median annual performance for years -3 to -1 | 2.04 | -0.02 | 53 |
| 1 | 2.18 | 0.12 | 40 ^e |
| 2 | 2.32 | 0.10 | 43 ^e |
| 3 | 2.25 | 0.17 | 39 ^e |
| Median annual performance for years 1 to 3 | 2.25 | 0.13 | 40 ^e |

Table III—Continued

| Year Relative to Issue | Difference in Bank Median (%) | p-value | Difference in Performance Matched Adjusted | |
|--|-------------------------------|---------|--|---------|
| | | | Median (%) | p-value |
| Panel C: Differences in Performance | | | | |
| -3 | 0.34 ^c | (0.065) | 0.01 | (0.901) |
| -2 | 0.89 ^b | (0.020) | 0.06 | (0.802) |
| -1 | 1.31 ^a | (0.000) | 0.11 | (0.774) |
| Median annual performance for years -3 to -1 | 0.85 ^b | (0.023) | 0.06 | (0.827) |
| 1 | -0.03 | (0.831) | -0.80 ^b | (0.031) |
| 2 | -0.46 ^b | (0.041) | -0.84 ^b | (0.025) |
| 3 | -0.45 ^b | (0.043) | -1.10 ^a | (0.000) |
| Median annual performance for years 1 to 3 | -0.31 ^b | (0.049) | -0.91 ^b | (0.014) |

^{a,b,c}Significantly different from zero at the 1, 5, and 10 percent levels, respectively.

^{d,e}Wilcoxon signed ranks test statistic is significant at the 1 and 5 percent levels, respectively.

than the stock issue. To account for the impacts of contemporaneous events, we also report matched adjusted median performance measures in Table III.

Since we match the sample banks using cash flow returns in the year prior to the stock issue announcement, it is not surprising that the median matched adjusted performance is not significantly different from zero for any examined year prior to the stock issue. After the stock issue, however, operating pretax cash flow returns deteriorate relative to the matched firms. It is also notable that the deterioration in performance is immediate—the voluntary issuer underperforms the matched firm the year immediately following issue. Further, the degree of inferior performance increases as time progresses. By the third year after issue the banks voluntarily issuing stock are operating at a rate of 0.93 percent below the matched firms (significant at the 1 percent level).

The results in Table III are consistent with those of McLaughlin et al. (1996) and Loughran and Ritter (1997), who find significant decreases in performance of firms that issue common stock. The results are also consistent with the timing model explanation in that the negative announcement period abnormal returns are followed by a deterioration in the bank’s operating performance.¹³

¹³ We calculate the proportion of the sample banks whose matched adjusted cash flow is less than zero and perform a Wilcoxon signed rank test to determine significance. These results are also reported in the last column of Table III. From these results, the voluntary stock issues appear to be associated with a general decrease in the level of operating pretax cash flow return on assets for the banks and is not a result of outliers.

Panel B of Table III presents bank and match adjusted operating pretax cash flow return on assets for the eighty involuntary issues of common stock by the sample banks. Contrary to the results reported in Panel A for voluntary issues of common stock by banks, this sample's cash flow returns remain equivalent to the industry cash flow returns throughout the three years before and after the stock issue. Unlike the situation with voluntary issues of stocks, these involuntary issues (needed to maintain minimum capital standards) are not associated with changes in performance. Managers in these banks are not issuing stock to take advantage of mispricing, but to avoid regulatory intervention.

Panel C of Table III lists the differences in median operating pretax cash flow return on assets for voluntary versus involuntary stock issues by commercial banks. For the years before the issue, banks that voluntarily issue stock consistently outperform banks that issue stock involuntarily. Notice that the differences are larger and more statistically significant the year prior to the stock issue. The cash flow returns for the voluntary stock issuers are the most superior to those of involuntary stock issuers just prior to the stock issue by the bank. The differences in matched adjusted median cash flow returns are, of course, insignificant as a result of the matching. To the contrary, after the stock issue banks that voluntarily issue stock are outperformed by those that issue stock involuntarily for both bank medians and matched adjusted medians. All differences in operating pretax cash flow return on assets are now negative and, except for the year immediately following the issue, significant. The deterioration in the performance of the voluntary relative to the involuntary stock issuers deepens as time passes.

The conclusion drawn from data reported in Table III is that the operating pretax cash flow return on assets drops significantly for banks that voluntarily issue stock relative to banks that involuntarily issue stock. The post-issue operating performance deteriorates following the stock issue. Those firms that do not issue stock voluntarily are not capitalizing on a mispricing situation. Rather, these banks are simply using the issue to maintain minimum capital requirements.

C. Long-Term Stock Returns

C.1. Holding Period Returns

Table IV presents data on stock returns for longer periods around the stock issues by the sample banks. This table provides evidence on the degree to which the market misevaluates the impact of the stock issue at the announcement date—that is, the degree to which the market is surprised by the post-issue operating performance. Panel A of Table IV provides data on holding period stock returns for the year prior to the stock issue announcement by the banks, Panel B presents the average buy-and-hold stock returns for three years after the stock issue announcement. For both periods we list the return on the sample banks, the return on the benchmark matched port-

Table IV
Holding Period Returns for 70 Voluntary and 80 Involuntary Common Stock Issues
by Banks and Their Benchmark Firms.

Holding period returns are calculated during the year prior to the stock issue announcement and during the three years after the issue announcement. Issues were announced during the period from June 1983 to December 1991. An issue is classified as voluntary if the bank's total capital ratio is above 7 percent prior to the issue and involuntary if the total capital ratio is below 7 percent prior to the issue. These groupings are based on the Fed's classification for adequately capitalized banks. Holding period returns are computed using the CRSP-listed closing price as the purchase price. The difference in holding period returns is calculated as $\Pi(1 + R_{it}) - \Pi(1 + R_{jt})$, where R_{it} is the buy-and-hold return starting twelve calendar months prior to until the month prior to the stock issue announcement or starting the month after until the month of the three-year anniversary of the stock issue announcement, R_{jt} is the holding period return on a matching benchmark portfolio with annual rebalancing. Each issuing firm is matched with a characteristic benchmark portfolio of the same size quintile, the same book-to-market quintile, and the same momentum quintile. We use the bootstrapped skewness-adjusted t -statistic to measure significance of the abnormal returns.

| | Voluntary Issues (%) | Involuntary Issues (%) | Differences Between Voluntary and Involuntary Issues (%) |
|--|-------------------------|---------------------------|---|
| Panel A: One-Year Mean Pre-Issue Buy-and-Hold Returns | | | |
| Issuing firms' return | 37.52 | 14.93 | 22.59 ^a |
| Benchmark firms' return | 36.62 | 15.71 | 21.52 ^a |
| Issuing-benchmark firms' return | 0.83 | -0.24 | 1.07 |
| Percentage of the matched adjusted returns that are negative | 46.00 | 58.00 | |
| Panel B: Three-Year Mean Post-Issue Buy-and-Hold Returns | | | |
| Issuing firms' return | 7.23 | 15.71 | -8.48 ^a |
| Benchmark firms' return | 21.67 | 16.02 | 5.65 ^b |
| Issuing-benchmark firms' return | -14.44 ^a | -0.31 | -14.13 ^a |
| Percentage of the matched adjusted returns that are negative | 84.00 ^c | 59.00 | |

^{a,b}Significantly different from zero at the 1 and 5 percent levels, respectively, using the bootstrapped skewness-adjusted t -statistic.

^cWilcoxon signed test statistic is significant at the 1 percent level.

folio, and the difference in these two returns (matched adjusted return). We also report the differences in the bank and benchmark portfolio returns. To ensure that results are not driven by outliers, we report the percent of the matched adjusted returns that are negative.

As reported in Table IV, during the year prior to the stock issue, the seventy banks that voluntarily issue common stock have holding period returns equal to the benchmark portfolio. This result is expected and, in fact, intentional because one of the matching variables is momentum—the company's stock performance during the prior year.¹⁴ During the three years after the stock issue, however, the banks that voluntarily issue stock experience an average matched adjusted return of -14.44 percent (significant at better than the 1 percent level using the bootstrapped skewness-adjusted t -statistic). For this period 84 percent of the sample has negative matched adjusted returns. Thus, outliers are not driving the results.

These data show that abnormal stock performance for banks that voluntarily issue common stock is negative after the issue announcement. This is consistent with Loughran and Ritter's (1995) findings for nonbank common stock issuers. As explained by Loughran and Ritter, the results are consistent with a market in which a firm whose stock is overvalued issues common stock. Because the firms generally experienced improvements in profitability before the offering, the market (expecting these improvements to be permanent) is overly optimistic about the prospects of issuing firms. As market participants see and evaluate the actual post-issue performance of the bank (as seen in Table III), they adjust the stock price, incorporating the exact deterioration in the bank's performance. Given the consistent negative operating performance by the banks after the stock issue and the market's negative reaction to it, it appears that at the time of the issue, investors consistently underestimate the extent of the bad news being released via the stock issue. As stated by Loughran and Ritter, the market appears to overweight the superior performance of the banks (that voluntarily issue stock) prior to the issue and underweight long-term, mean-reverting tendencies in operating performance measures.¹⁵

This phenomenon is unique to those firms that voluntarily issue common stock. Indeed, as shown in Table IV the eighty banks that involuntarily issue stock experience no significant stock returns when compared to their matched adjusted benchmark portfolio either before or after the stock issue. None of the returns is significantly different from zero and no period experiences a significant number of positive versus negative returns in the sample.

¹⁴ As a result of this matching, the insignificant pre-issue results are contrary to previous findings such as those of Korajczyk et al. (1990), Lucas and McDonald (1990), Asquith and Mullins (1986), Jung et al. (1996), and others.

¹⁵ The results and conclusions here are not inconsistent with those of Jung et al. (1996), who look at both equity and debt issuances. They attempt to explain the choice between these two funding sources using the pecking order model, the agency model, and the timing model. Jung et al. find that both types of issuers have significant negative long-run stock returns that are not statistically different from each other, refuting the timing model. Looking only at stock issuers, our negative long-run returns are consistent with Jung et al. and do not confirm or refute the timing model.

We next compare the matched adjusted returns for voluntary versus involuntary common stock issuers. In the year prior to the issue the two groups perform similarly (the difference in matched adjusted returns is 1.07 percent, which is insignificant). In the three years after the stock issues the relation is quite different. Based on the matched adjusted benchmark returns, the involuntary stock issuers outperform the voluntary stock issuers by 14.13 percent (significant at better than the 1 percent level using the bootstrapped skewness-adjusted t -statistic).

Unlike the banks that voluntarily issue common stock, involuntary stock issuers are not issuing additional stock because it is overvalued (and future performance is expected to deteriorate). Rather the stock issue is used to maintain minimum capital standards. Using the capital ratio, the market is able to distinguish between the reasons for the stock issue and does not react to the stock issue announcement for the involuntary stock issuers. The lack of a significant change in post-issue performance confirms the lack of mispricing in the stock and, subsequently, we also see no abnormal stock returns in the three-year post-issue period.

Loughran and Ritter (1995) and Brav and Gompers (1997) document clear patterns in the underperformance of IPOs. Specifically, they find that underperformance is the greatest when IPO activity is the greatest. To examine for the possibility of cross-sectional dependence, we calculate monthly calendar-time returns for each of the sample banks and their benchmark portfolios. In each month, we calculate an abnormal return (relative to the benchmark) for each sample bank that issued equity in the preceding thirty-six months. We then construct a value-weighted and equally weighted abnormal return for each calendar month. The statistical significance is subsequently calculated using the time-series mean monthly abnormal return and the time-series standard deviation of these monthly returns. The results indicate that abnormal returns for voluntary issues are consistently below those of the benchmark portfolio. Specifically, the value-weighted abnormal return for the voluntary issuers is -0.68 percent ($t = -5.72$), and the equally weighted abnormal return is -0.55 percent ($t = -4.89$). In contrast, involuntary stock issuers perform comparably with the benchmark every year during the period of study. The value weighted abnormal return is -0.084 percent ($t = -1.11$), the equally weighted abnormal return is -0.017 percent ($t = -0.87$).

C.2. Analysis of Market Reaction to Subsequent Quarterly Earnings Announcements

One additional test of long-run stock performance involves an examination of abnormal stock returns at earnings announcements subsequent to the stock issue announcement.¹⁶ If voluntary issuers are timing their stock issuances when markets overvalue their equity and the market reaction to the announcement is incomplete, then markets should be systematically

¹⁶ We are grateful to a referee for suggesting this examination.

Table V
Two-day (-1,0) Cumulative Abnormal Return around Quarterly Earnings Announcements for Seventy Voluntary and Eighty Involuntary Common Stock Issues by Banks in the Three-Year Post-Issue Period

Abnormal returns are calculated using standard event-study methodology. The estimation period for the market model comes from the period $t = -20$ through $t = -120$, where $t = 0$ is the k th ($k = 1-12$) earnings announcement following the announcement of the stock issue.

| Post Quarter Announcement | Voluntary Issues | | Involuntary Issues | | Difference between Voluntary and Involuntary Issues | |
|---------------------------|-------------------------|--------------------|-------------------------|-------------|---|--------------------|
| | CAR _{-1,0} (%) | Z-statistic | CAR _{-1,0} (%) | Z-statistic | CAR _{-1,0} (%) | Z-statistic |
| 1 | -0.25 | -1.06 | 0.04 | 0.48 | -0.29 | -1.17 |
| 2 | -0.79 | -2.85 ^a | -0.11 | -0.30 | -0.68 | -2.58 ^b |
| 3 | -0.32 | -0.85 | 0.18 | 0.76 | -0.50 | -1.41 |
| 4 | -0.76 | -3.22 ^a | 0.44 | 0.85 | -1.20 | -3.19 ^a |
| 5 | 0.23 | 0.42 | 0.06 | 0.36 | 0.17 | 0.53 |
| 6 | -0.94 | -2.98 ^a | 0.03 | 0.27 | -0.97 | -2.74 ^a |
| 7 | -0.74 | -2.22 ^b | -0.10 | -0.21 | -0.64 | -2.07 ^b |
| 8 | 0.31 | 0.72 | 0.09 | 0.29 | 0.22 | 0.56 |
| 9 | 0.23 | 0.84 | -0.15 | -0.82 | 0.38 | 0.80 |
| 10 | -0.85 | -2.67 ^a | 0.12 | 0.63 | -0.97 | -2.63 ^b |
| 11 | -0.39 | -1.11 | 0.29 | 0.77 | -0.68 | -1.94 ^c |
| 12 | -0.69 | -2.41 ^b | 0.35 | 0.86 | -1.04 | -2.87 ^a |

^{a,b,c}Significantly different from zero at the 1, 5, and 10 percent levels, respectively.

disappointed by the quarterly earnings announcements by voluntary issuers. Involuntary issuers are issuing stock for regulatory purposes only and, therefore, subsequent earnings announcements should result in no market reaction.

To see this we collect quarterly earnings announcement dates for the voluntary and involuntary issuers in the three years (twelve earnings announcements) following the issue announcement. Abnormal returns are then calculated using standard event-study methodology. The estimation period for the market model comes from the period $t = -120$ through $t = -20$ days, where $t = 0$ is the k th ($k = 1-12$) earnings announcement following the stock issue announcement.

Table V reports abnormal returns for the voluntary and involuntary issuers at each of the twelve quarterly earnings announcement dates following the stock issue announcement. Column 1 lists the earnings announcement (quarters 1 through 12), columns 2 and 3 report results (abnormal returns and Z-statistics) for the voluntary issuers, columns 4 and 5 report results for the involuntary issuers, and columns 6 and 7 list the differences in the abnormal returns for voluntary versus involuntary issuers.

For the voluntary stock issuers, the only announcement period returns that are significant are negative (i.e., earnings announcements 2, 4, 6, 7, 10, 12). For the involuntary issuers, none of the earnings announcements following the stock issue produce abnormal returns. The difference in abnormal returns between voluntary and involuntary stock issuers are significant for earnings announcements 2, 4, 6, 7, 10, 11, 12. In all cases abnormal returns for the involuntary issuers' earnings announcements are significantly less than those for involuntary stock issuers. Thus, the market appears to be systematically disappointed by earnings announcements in the three years following the stock issue announcement for voluntary, but not involuntary, stock issues. A simple comparison of the sum of these differences, -6.2 percent, with the post-issue buy-and-hold return difference reported in Table IV, -14.13 percent, shows that about one-third to one-half of the underperformance occurs around subsequent earnings announcements.

IV. Conclusion

An explanation offered for documented stock price drops at and around announcements of common stock issues is the timing model: Firms issuing stock experience long-term underperformance. That is, managers, based on their exclusive knowledge of prospects for the firm, believe the stock is currently overvalued and issue additional stock to take advantage of the overvaluation. Further, because many of the issuing firms experience performance improvements before the offering, the market is overly optimistic about the prospects of the firm at the issue announcement. In this paper we empirically test these theories by looking at the banking industry where some stock issues are undertaken voluntarily by managers and others are undertaken involuntarily (in order to maintain minimum required capital standards). We examine the differences in the announcement-period and post-issue performance of these two groups of bank common stock issues.

The results confirm that bank performance associated with a common stock issue varies depending on whether the stock issue is voluntary or involuntary. Specifically, the performance of banks that voluntarily issue common stock is similar to that found for nonbank issuers in that the announcement period abnormal returns are negative and significant, matched adjusted operating performance measures deteriorate during a three-year period following the stock issue, and benchmark firms adjusted stock returns over the three-year post-issue period are negative and significant. Further, these banks have systematically negative market reactions to post-issue quarterly earnings announcements. None of the measures is significantly different from the industry for banks that involuntarily issue stock. The conclusion from these results is that, like nonbank firms, banks with the discretion to issue equity do so when they are overvalued. Additionally, the market reacts overoptimistically about the prospects of firms that voluntarily issue equity.

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