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Stock price reaction to share repurchase announcements by banks in normal and crisis times

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ABSTRACT

This paper studies stock price reaction to share repurchases announced by U.S. banks between January 2002 and December 2008. Using the standard event study method, we find that the average abnormal return around share repurchase announcements is positive in both normal and crisis times. We also find that the average abnormal return is significantly higher in crisis times. Our results are consistent with the signaling hypothesis for share repurchases.

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1.0 Introduction

A large number of studies have documented a positive stock price reaction to share repurchase announcements (e.g., Dann, 1981; Vermaelen, 1981; Comment and Jarrell, 1991; Ikenberry, Lakonishok, and Vermaelen, 1995; Stephens and Weisbach, 1998; Grullon and Michaely, 2004; Louis and White, 2007; Peyer and Vermaelen, 2009). Several hypotheses have been suggested to explain this empirical fact, and the most commonly cited hypothesis is signaling (e.g., Vermaelen, 1981, 1984; Miller and Rock, 1985; Ofer and Thakor, 1987; Constantinides and Grundy, 1989). According to the signaling hypothesis, a firm's managers know more about the true value of the firm than outside investors do. When the firm is undervalued, managers can use share repurchases to signal undervaluation. Thus, stock price reacts positively to share repurchase announcements. And the reaction is more positive when there is greater information asymmetry between managers and outside investors (Billett and Yu, 2012).

In this paper, we study stock price reaction to share repurchase announcements by banks. Banks are regulated, and their motives for repurchases may differ from non-bank firms (Dittmar, 2000). In particular, share repurchases reduce bank capital ratios, yet regulators want banks to maintain adequate levels of capital ratios. For example, the Federal Reserve requires banks to receive supervisory approval before making large share repurchases, and prohibits banks from making share repurchases that would threaten their ability to maintain adequate levels of capital ratios (Hirtle, 1998). Thus, share repurchases can only occur when banks have sufficient amount of equity capital (Webb, 2008).

We examine a sample of 275 share repurchases announced by U.S. banks between January 2002 and December 2008. This period covers both normal and crisis times, and banks were at the center of the recent financial crisis. Before the crisis, many banks provided loans to risky borrowers, and sold the ownership of the loans to investors through complicated securities such as collateralized debt obligations (CDOs). When house prices did not rise as expected, many borrowers defaulted on their loans, and the prices of CDOs collapsed. Because investors were not able to determine the location and size of CDOs and other related securities, they were not able to assess bank risk (Gorton, 2009). As a result, information asymmetry between bank managers and outside investors sharply increased during the crisis (Flannery, Kwan, and Nimalendran, 2013). The signaling hypothesis would predict that investors should react more positively to share repurchases announced by banks in this crisis period.

Consistent with the signaling hypothesis, we find positive stock price reaction in both normal and crisis times. We also find that the average abnormal return is significantly higher in crisis times. This result holds even after controlling for other determinants of abnormal returns in regression analysis. Further, we find that banks announcing share repurchases experience significantly positive post-announcement returns in crisis times but not in normal times. This result is consistent with the view that investors are more likely to underreact to public information in case of greater information uncertainty (Zhang, 2006).

Our paper is related to the literature that studies stock price reaction to repurchase announcements by banks (Billingsley, Fraser, and Thomson, 1989; Akhigbe and Madura, 1999; Howe and Jain, 2006; Webb, 2008). While previous studies have already documented a positive stock price reaction, we add to this literature by showing that the magnitude of reaction is much larger in crisis times. Our paper also complements recent work by Abreu and Gulamhussen (2013). They study dividend payments by banks before and during the recent financial crisis, and find that the signaling hypothesis helps to explain why banks pay dividends during the crisis. We find that the signaling hypothesis helps to explain stock price reaction to share repurchase announcements by banks in both normal and crisis times.

The remainder of this paper is organized as follows. Section 2 presents hypotheses and related literature. Section 3 describes the sample. Section 4 presents the empirical specification and results. Section 5 concludes.

2.0 Hypotheses and related literature

2.01 Hypotheses

In recent years, share repurchases have become an increasingly common method for firms to distribute earnings to shareholders (e.g., Grullon and Michaely, 2002; Skinner, 2008). Several hypotheses have been suggested to explain why firms repurchase their own shares, and the two prevalent hypotheses are free cash flow and signaling.[1]

According to the free cash flow hypothesis, firms repurchase shares to distribute excess cash to shareholders (Jensen, 1986). Consistent with this hypothesis, Stephens and Weisbach (1998) find that repurchases are positively related to levels of cash flow. Grullon and Michaely (2004) find that the stock price reaction to share repurchase announcements is more positive among those firms that are more likely to overinvest. Skinner (2008) finds that repurchases are increasingly linked to earnings.

According to the signaling hypothesis, firms repurchase shares when their stock is undervalued. Consistent with this hypothesis, Stephens and Weisbach (1998) find that share repurchases are negatively related to prior stock price performance. D'Mello and Shroff (2000) find that 74 percent of the firms that repurchase shares via fixed-price tender offers are undervalued relative to their economic value. Louis and White (2007) find that managers intentionally use fixed-price repurchase tender offers to signal undervaluation.

Both the free cash flow and the signaling hypothesis suggest that share repurchase announcements are good news for shareholders. This leads to the following hypothesis:

Hypothesis 1: *Stock price reacts positively to share repurchase announcements.*

Billett and Yu (2012) develop a model in which there is information asymmetry between managers and outside investors. They show that, under fairly reasonable assumptions, the magnitude of the stock price increase at a share repurchase announcement increases with information asymmetry.

[1] Dittmar (2000) investigates why firms repurchase shares by examining a list of motives.

During the recent financial crisis, information asymmetry between bank managers and outside investors sharply increased (Flannery, Kwan, and Nimalendran, 2013), and there were bank runs right after government bailout announcements (Wang, 2013). Amid the highly uncertain environment, many banks continued to pay dividends even as their financial conditions deteriorated, because banks were concerned about negative signals from a dividend cut (Abreu and Gulamhussen, 2013; Hirtle, 2014). This leads to the following hypothesis:

Hypothesis 2: *Stock price reacts more positively to share repurchase announced by banks during the recent financial crisis.*

2.02 Share repurchases by banks

Share repurchases became popular in the banking industry in the 1990s (Hirtle, 1998, 2004). Hirtle (1998) finds that the sharp rise in share repurchases was primarily driven by the increases in bank earnings at that time. Although share repurchases reduce bank equity capital, Hirtle (1998) argues that this should not be a concern, because share repurchases are more flexible than dividend payments, and banks could reduce the amount of share repurchases if earnings are low in the future.

Hirtle (2004) examines the relationship between share repurchase and future operating performance for a large sample of banking firms. She finds that higher levels of share repurchases in one year are associated with higher profitability and a lower share of problem loans in the subsequent year. Hirtle (2014) finds that many large U.S. banks continued to pay dividends during the recent financial crisis, even when their financial conditions deteriorated. In contrast, share repurchases by these banks dropped sharply in the early part of the crisis.

Billingsley, Fraser, and Thomson (1989) examine a sample of 15 share repurchase announcements by banks between 1965 and 1983. They find that stock price does not react significantly to share repurchase announcements. However, their sample size is small, and this could reduce the statistical power of their tests.

Using a larger sample, Howe and Jain (2006) document positive abnormal returns around share repurchase announcements by banks. They then investigate the sources of the abnormal returns, and find that repurchasing banks have a positive industry-adjusted change in ROA in the two years following the announcements. This result is consistent with the signaling hypothesis. They also find that repurchasing banks experience a reduction in capital ratios subsequent to the announcements, suggesting that some banks use share repurchases to increase leverage.

Webb (2008) also documents positive abnormal returns around share repurchase announcements by banks. Further, she finds that several measures of corporate governance have little impact on market response to repurchase announcements, but board structure is positively related to the extent and size of the repurchase program.

Akhigbe and Madura (1999) find that bank share repurchase announcements result in positive and significant stock price reaction for both the repurchasing bank and other banks. One interpretation of their result is that the repurchasing bank sends a signal that contains positive information about both the bank itself and the banking industry in general. Hence investors of other banks respond positively as well.

Notably, previous studies have not examined whether the abnormal return around share repurchase announcements by banks is affected by financial market conditions, which is the focus of our study.

3.0 Sample

We start with a list of all the publicly-traded bank holding companies ("banks") in the U.S.[2] For every bank on the list, we search in LexisNexis for open market share repurchase announced by the bank between January 2002 and December 2008. We begin the sample in January 2002 to facilitate a comparison of our results with those in Webb (2008). We end the sample in December 2008 because share repurchases by banks dropped sharply in the early part of the crisis, and reached negligible levels by mid-2008 (Hirtle, 2014).

Following Webb (2008), we exclude repurchase announcements that are accompanied or surrounded by other news about the bank within a 7-day event window centered on the announcement day. The purpose of this exclusion is to avoid confounding effects.[3] In addition, we require that the announcing bank has return data

[2] The list is obtained from the Federal Reserve Bank of New York website.
[3] In the search process, we find that many repurchase announcements are accompanied or surrounded by other announcements (e.g., earnings announcements).

available on the Center for Research in Security Prices (CRSP) database. The final sample consists of 275 announcements.

Table 01 reports the distribution of the repurchase announcements in our sample by year. The largest number of observations in one year is 65 in 2002, followed by 57 in 2007. The smallest number of observations in one year is 18 in 2008.

Table 01: Sample distribution by year

Year	Observations
2002	65
2003	33
2004	32
2005	37
2006	33
2007	57
2008	18
Total	275

4.0 Results and discussion

We define normal times as the years 2002 to 2007, and crisis times as the calendar year 2008; the results are qualitatively similar when we include the fourth quarter of 2007 in crisis times. Thus our sample includes 257 observations in normal times, and 18 observations in crisis times. The number of observations in crisis times is small, because many banks incurred substantial losses during the crisis and were unable to repurchase shares (Hirtle, 2014).

We proceed in three steps. First, we use the standard event study method to examine stock price reaction to share repurchase announcements. Then, we compare the average cumulative abnormal returns in crisis and normal times. Finally, we use multivariate analysis to control for other determinants of cumulative abnormal returns.

1.01 Event study

We use the market model to calculate abnormal returns (e.g., Brown and Warner, 1985). The market model parameters are estimated over a 200-day period, ending 50 days before the announcement day. The CRSP equally-weighted index is used for measuring market returns.[4] The abnormal return is the difference between the actual return and the expected return generated by the market model.

Table 02 reports the event study results for the normal times. Panel A reports the mean abnormal return from 5 days before to 5 days after the announcement day. Day 0 is the announcement day. Consistent with prior studies, the mean abnormal return on day 0 is positive and significant. This suggests that investors respond positively to share repurchase announcements. The average abnormal return on day 1 is also positive and significant. This is because some share repurchase announcements are made after market close, and investors could only respond on the next trading day.

Panel B reports the mean cumulative abnormal return (CAR) over three event windows: (-30, -1), (0, +1), and (+2, +30). The mean CAR over (-30, -1) is negative and significant, suggesting that banks are more likely to announce share repurchases when their shares underperform the market. The mean CAR over (0, +1) is 0.99%, which is significantly different from zero at the 1 percent level. This number is comparable with the 1.09% reported by Webb (2008). The mean CAR over (+2, +30) is small and not significantly from zero, suggesting that the initial market reaction to repurchase announcements is complete.

Table 02: Event study results for the normal times

Panel A: Mean abnormal return

Day	Mean Abnormal Return (%)	Positive : Negative	Patell Z
-5	0.05	127 : 130	0.433
-4	0.01	126 : 131	-0.439
-3	0.03	124 : 133	0.428
-2	0.19	133 : 124	1.934*
-1	-0.21	110 : 147	-1.824*

[4] Using CRSP value-weighted index produces similar results.

0	0.63	145 : 112	5.764***
+1	0.36	146 : 111	3.394***
+2	0.07	134 : 123	0.586
+3	0.02	118 : 139	0.303
+4	0.00	130 : 127	-0.075
+5	-0.15	113 : 144	-1.831*
Panel B: Mean cumulative abnormal return			
Days	Mean Cumulative Abnormal Return (%)	Positive : Negative	Patell Z
(-30, -1)	-1.06	96 : 161	-2.550**
(0, +1)	0.99	165 : 92	6.475***
(+2, +30)	-0.14	120 : 137	-0.552
Notes: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, using a two-tailed test.			

Table 03 reports the event study results for the crisis times. Panel A reports the mean abnormal return from 5 days before to 5 days after the announcement day. The mean abnormal return on day 0 is positive and significantly different from zero at the 1 percent level. Moreover, 13 out of 18 abnormal returns on day 0 are positive, suggesting that the result is not driven by outliers. The mean abnormal return on day 1 is positive as well.

Panel B reports the mean CAR over three event windows: (-30, -1), (0, +1), and (+2, +30). The mean CAR over (-30, -1) is -8.65%, suggesting that announcing banks experience extremely negative market-adjusted returns prior to repurchase announcements. The mean CAR over (0, +1) is 4.24%, suggesting that investors respond strongly to share repurchase announcements in crisis times. Finally, the mean CAR over (+2, +30) is 7.16%, suggesting that the initial market reaction is incomplete and price continues to drift in the same direction. This result is consistent with the view that investors are more likely to underreact to public information in case of greater information uncertainty (Zhang, 2006).

Table 03: Event study results for the crisis times

Panel A: Abnormal return			
Day	Mean Abnormal Return (%)	Positive : Negative	Patell Z
-5	-0.98	6 : 12	-1.940*
-4	-0.32	9 : 9	0.011
-3	-2.61	6 : 12	-4.957***
-2	3.31	14 : 4	5.000***
-1	-3.11	5 : 13	-4.747***
0	3.36	13 : 5	5.067***
+1	0.88	9 : 9	1.692*
+2	0.85	12 : 6	1.373
+3	-0.91	9 : 9	-1.154
+4	1.29	7 : 11	0.942
+5	-0.78	10 : 8	-0.143
Panel B: Cumulative abnormal return			
Days	Mean Cumulative Abnormal Return (%)	Positive : Negative	Patell Z
(-30, -1)	-8.65	7 : 11	-3.321***
(0, +1)	4.24	15 : 3	4.780***
(+2, +30)	7.16	12 : 6	2.059**
Notes: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, using a two-tailed test.			

4.02 Univariate analysis

Table 04 compares the mean and median CAR in crisis and normal times over several event windows. The last column reports the differences in mean and median. The overarching message from the table is that the mean and median CARs are significantly higher in crisis than in normal times. For example, the mean CAR over (0, +1) is 4.24% in crisis times, while it is only 0.99% in normal times. The difference of 3.25% is both statistically and economically significant. The difference in median CAR over (0, +1) is also statistically different from zero, suggesting that the difference in mean CAR is not entirely driven by outliers. Comparisons over other event windows yield similar results as shown in the table. Overall, these results are consistent with the two hypotheses that we aim to test. That is, the abnormal return around share repurchase announcements is positive in both normal and crisis times, and it is significantly higher in crisis times.

Table 04: Univariate analysis

		Crisis times	Normal times	Difference
CAR (0, +1)	Mean	0.0424	0.0099	0.0325**
	Median	0.0238	0.0071	0.0167**
CAR (0, +2)	Mean	0.0509	0.0106	0.0403**
	Median	0.0330	0.0077	0.0253**
CAR (0, +3)	Mean	0.0418	0.0108	0.0310*
	Median	0.0372	0.0070	0.0302*
CAR (0, +4)	Mean	0.0547	0.0108	0.0439**
	Median	0.0412	0.0084	0.0328
CAR (0, +5)	Mean	0.0469	0.0093	0.0376**
	Median	0.0306	0.0103	0.0203**

Notes: This table compares the mean and median CAR in crisis and normal times over several event windows. Differences in means are assessed using a two-sample t-test with unequal variances. Differences in medians are assessed using a two-sample equality-of-medians test. ** and * indicate significance at the 5% and 10% levels, respectively.

4.03 Multivariate analysis

The difference in CAR in crisis and normal times could be driven by differences in other sample characteristics. Therefore, we use multivariate analysis to explain the cross-sectional variation in CAR. Specifically, we estimate the following equation:

$$CAR_i = \beta_0 + \beta_1 * CRISIS_i + \beta_2 * PERCENT_i + \beta_3 * SIZE_i + \beta_4 * RUNUP_i + \varepsilon_i$$

In separate regressions, CAR is the cumulative abnormal return over the event window (0, +1), (0, +2), and (0, +3), respectively.

CRISIS is an indicator variable equal to one if the share repurchase announcement is made in crisis times, and zero otherwise. We expect a positive coefficient on CRISIS.

PERCENT is the percentage of shares that the bank announced it wishes to repurchase.[5] According to the signaling hypothesis, a larger repurchase program sends a stronger signal to the market (e.g., Comment and Jarrell, 1991). Previous studies find that stock prices react more positively to larger repurchase programs (e.g., Kahle, 2002; Maxwell and Stephens, 2003; Webb, 2008). Therefore, we expect a positive coefficient on PERCENT.

SIZE is the natural logarithm of market value of equity at the calendar year end prior to the repurchase announcement. Previous studies find that larger firms experience smaller abnormal returns around repurchase announcements (e.g., Ikenberry, Lakonishok, and Vermaelen, 1995). A possible reason is that larger firms have less information asymmetry. Therefore, we expect a negative coefficient on SIZE.

RUNUP is the market-adjusted abnormal return from day -43 to day -4 relative to the announcement day. Previous studies find that repurchases are negatively related to prior stock price performance, suggesting that firms are more likely to repurchase shares when the perceived undervaluation is greater (e.g., Comment and Jarrell, 1991; Stephens and Weisbach, 1998; D'Mello and Shroff, 2000). A larger RUNUP implies less undervaluation, and thus a smaller announcement return. Therefore, we expect a negative coefficient on RUNUP.

Table 05 presents the descriptive statistics for the several variables that we have just defined. The mean and median of PERCENT are 4.6% and 5.0%, respectively. These numbers are very similar to those reported by Webb (2008). Both the mean and median of RUNUP are negative, suggesting that banks are more likely to announce share repurchases following periods of underperforming stock returns (e.g., Ikenberry, Lakonishok, and Vermaelen, 1995)

Table 05: Descriptive statistics

	Observations	Mean	Median	Std. Dev.
CRISIS	275	0.065	0.000	0.248
PERCENT	275	0.046	0.050	0.026
SIZE	275	12.392	12.031	1.605
RUNUP	275	-0.023	-0.030	0.104

[5] Most banks disclose in the announcements the percentage of shares they wish to repurchase. In case a bank discloses only the number of shares that it wishes to repurchase, we calculate the corresponding percentage using the number of shares outstanding at the time of announcement.

Table 06 reports the regression results. In column (1) through (3) the dependent variables are CAR over (0, +1), (0, +2), and (0, +3), respectively. The standard errors are calculated using White's (1980) heteroscedasticity-consistent method.

In all the regressions, the coefficients on CRISIS are positive and significant, suggesting that CAR is significantly higher in crisis times even after controlling for other determinants. This result supports the hypothesis that stock price reacts more positively to share repurchases announced by banks during the recent financial crisis.

The coefficients on PERCENT are positive and significant, suggesting that investors respond more positively to repurchase programs of larger size. This result is consistent with previous studies by Kahle (2002), Maxwell and Stephens (2003), and Webb (2008) and the idea that a larger repurchase program sends a stronger signal to the market. The coefficients on SIZE and RUNUP have the expected sign, although not statistically significant.

Table 06: Regression analysis

	(1)	(2)	(3)
CRISIS	0.0297**	0.0377**	0.0291*
	(0.0135)	(0.0170)	(0.0176)
PERCENT	0.120**	0.151**	0.160**
	(0.0595)	(0.0703)	(0.0756)
SIZE	-0.00116	-0.000932	-0.00133
	(0.00103)	(0.00115)	(0.00121)
RUNUP	-0.0212	-0.0215	-0.00996
	(0.0195)	(0.0217)	(0.0234)
Constant	0.0184	0.0148	0.0197
	(0.0138)	(0.0156)	(0.0166)
Observations	275	275	275
R-squared	0.086	0.091	0.056

Notes: ** and * indicate significance at the 5% and 10% levels, respectively.

5.0 Conclusion

We have examined stock price reaction to share repurchase announcements by banks. Because our sample period covers both normal and crisis times, we are able to analyze whether the abnormal return is affected by financial market conditions. We find that the average abnormal return is positive in both normal and crisis times. We also find that and it is significantly higher in crisis times. Our results are consistent with the signaling hypothesis.

During the recent financial crisis, information asymmetry between bank managers and outside investors sharply increased (Flannery, Kwan, and Nimalendran, 2013), and there was real concern that uninsured depositors and creditors might run on banks (Wang, 2013). Hence, a bank with good fundamentals had incentives to signal its strength in order to maintain investor confidence. One way to signal is to continue to pay dividends, as found by Abreu and Gulamhussen (2013). An alternative way is to repurchase shares, as we have found in this paper. However, either dividend payment or share repurchase reduces a bank's equity capital, and lower capital means higher risk. Thus bank managers have to balance the desire to send a signal against the desire to retain capital (Hirtle, 2014).

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