How Do Stock Repurchases Affect
Bank Holding Company Performance?

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ABSTRACT

Using data from bank holding company regulatory reports, we examine the relationship between stock repurchases and financial performance for a large sample of bank holding companies over the years 1987 to 1998. The primary result is that higher levels of repurchases in one year are associated with higher profitability and a lower share of problem loans in the subsequent year. This finding is robust to several different ways of measuring share repurchase activity. Our results appear to be driven primarily by bank holding companies with publicly traded stock, especially those companies whoe stock is traded on major exchanges.

The finding that higher repurchases are followed by better financial performance is consistent with at least two distinct behavioral hypotheses. First, bank holding company managers may opt to return excess funds to shareholders when they have limited outside investment opportunities. Alternatively, managers may choose to increase repurchases when they have private information suggesting that the future profitability of the bank is likely to be strong. We find evidence suggesting that the repurchase-performance link may be driven by different factors for different types of bank holding companies. In particular, the evidence is consistent with the first hypothesis for banks traded on major stock exchanges, but only weakly supports this explanation for smaller, closely held companies.

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I. Introduction

Bank holding companies have been making shareholder payouts at record rates during the past several years. As illustrated in Figure 1, dividend payout rates have risen gradually since the mid-1980s, while stock repurchases increased sharply following the banking industry's recovery from the financial stress of the early 1990s. The rise in stock repurchases is particularly striking, with aggregate repurchases rising from a negligible level at the beginning of the decade to an amount nearly equal to dividend payments in 1997. On a combined basis, dividends and repurchases equaled more than 70 percent of net income in that year and actually exceeded net income for the 25 largest bank holding companies (Hirtle 1998). Thus, bank holding companies have been returning a considerable portion of profits to shareholders in recent years, with stock repurchases playing a newly enhanced role.

The sharp increase in stock repurchases in recent years raises the question of what role these transactions play in the management and performance of bank holding companies. In particular, do these transactions have a real impact on the profitability and health of banking organizations or are they merely reflections of other underlying factors affecting the performance of these institutions?

This paper addresses these questions to help develop insights into the role that stock repurchases play in the banking sector. Using data from bank holding company regulatory reports, we examine the relationship between stock repurchases and financial performance for a large sample of bank holding companies over the years 1987 to 1998. In contrast to the data frequently used in studies of stock repurchases, these regulatory data provide aggregate information about the actual stock transactions conducted by bank holding companies in a given year, rather than announcements

of repurchase programs.[1] Thus, the data enable us to examine the impact of actual transactions undertaken by bank holding companies on their subsequent operating performance.

The paper's primary result is that higher levels of repurchases by a bank holding company in one year are associated with higher profitability and a lower share of problem loans in the subsequent year. These results are robust to several different ways of measuring share repurchase activity and to alternative specifications of the regression model. They are also evident when the sample is divided according to trading status of the banks' common equity. Both publicly traded firms – including those traded on the New York Stock Exchange (NYSE), the American Stock Exchange (AMEX) and the NASDAQ – and non-publicly traded bank holding companies exhibit a positive relationship between stock repurchases and subsequent operating performance, though the effect is significantly more pronounced for the publicly traded firms. While the estimated size of the impact of increases in stock repurchases is only moderate, it is nonetheless economically meaningful.

The finding that higher repurchases are followed by better financial performance could reflect at least two distinct behavioral channels. First, bank holding company managers may opt to make repurchases when the bank has cash flows that exceed outside investment opportunities, perhaps reflecting poor future economic prospects in the broader economy or simply comparatively strong performance by the bank. In this story, managers choose to return funds to shareholders rather than investing in risky – possibly negative net present value – balance sheet expansion. Alternatively, managers may choose to increase repurchases when they have private information suggesting that the future profitability of the bank is likely to be strong. In that event, managers may be willing to return profits to shareholders as a way of signaling to the market that the future prospects of the bank are good. The empirical link between stock repurchases and enhanced

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[1] Stephens and Weisbach (1998) document that firms frequently purchase less than the target amount of shares announced in open market stock repurchase programs.

financial performance then arises because repurchases are effectively serving as a proxy for managers' unobserved expectations.

In practice, these two stories are difficult to separate empirically. And in fact, we find evidence suggesting that different bank holding companies may be motivated by different concerns in making repurchases. At publicly traded bank holding companies, the results suggest that superior performance by these firms may be driven by the choice to return excess cash flow to shareholders rather than engage in balance sheet expansion. This finding is consistent with the idea that managers at these banks respond prudently – or at least, as shareholders concerned about the negative incentives of "free cash flow" would have them respond – to changes in their economic environment. In contrast, at closely held, non-publicly traded banks, there is at best a weak link between repurchases future operating performance, although there is some evidence suggesting that these institutions enter into repurchases after periods of better-than-average performance. Together, these findings suggest that repurchases by these institutions may serve primarily as a means to distribute unusually strong past profits to shareholders. These differences between publicly traded and non-publicly traded bank holding companies may reflect differences in the degree of principal-agent problems between managers and shareholders at these two types of institutions.

The remainder of this paper is organized as follows. The next section reviews the literature on the impact of share repurchases and the motivations driving those repurchases. Section III describes the unique data set used in this study and presents some facts about the repurchase behavior of bank holding companies over the sample period. Section IV contains the papers main empirical results linking repurchases to enhanced operating performance, while Section V assesses the competing hypotheses about the source of this relationship. Finally, Section VI contains summary and conclusions.

II. Previous work on share repurchases

The increased prominence of share repurchases in the banking sector mirrors the growth of share repurchases by non-financial firms, which has been documented by a number of studies (see, for instance, Jagannathan, Stephens, and Weisbach 1999). Several of these studies have examined the factors motivating share repurchases, as well as their consequences for stock prices and firm performance. In general, share repurchases have been linked to increased stock prices (Dann 1981, Vermaelen 1981, Lakonishok and Vermaelen 1990, Comment and Jarrell 1991, Ikenberry, Lakonishok and Vermaelen 1995, 2000, and Choi and Chen 1997), and a variety of explanations have been offered to explain this link.

These explanations can be grouped into two broad categories. Papers in the first category emphasize the role that stock repurchases can play in conveying information about firms' future prospects. Dann (1981) and Vermaelen (1981, 1984) argue that increases in stock prices following the announcement of repurchase programs reflect positive information signals from firm managers about the future prospects of the firm. Similarly, Stephens and Weisbach (1998) argue that share repurchase activity is related to the extent of perceived undervaluation of a firm's stock, suggesting that firms may be using repurchases to provide a signal of unobserved profitability. Further, Jagannathan, Stephens, and Weisbach (1999) find that firms with more volatile cash flows tend to prefer more flexible stock repurchases over dividends, suggesting that firms use repurchases to distribute "temporary" profits and increase dividends only when they believe earnings have risen permanently.

The second category of papers emphasize the role that stock repurchases can play in addressing the principal-agent problem between firm managers and owners. These papers draw on the insights raised in Jensen (1986), who pointed out the potentially negative incentives that excessive "free cash flow" can present to managers. Grullon (2000), for instance, finds evidence that repurchase announcement as signals of managers' commitments to reduce the agency costs of free

cash flow, especially in circumstances where investment opportunities have been reduced. Similarly, Lie (2000) argues that large incremental distributions of cash through special dividends and stock repurchases help mitigate the agency problems associated with excess cash flows. Nohel and Tarhan (1998) also find evidence in support of the free cash flow explanation.

These papers present a mixed picture of the dominant motivation behind share repurchases and, indeed, the competing explanations for the positive stock price reaction to repurchase announcements need not be mutually exclusive. The papers focus almost exclusively on share repurchases by firms in the non-financial sector, so one question that arises is whether analysis of share repurchases by financial firms – in particular, banks – would offer any further insights.

Only a few papers have examined the role of stock repurchases in the banking sector and, like those involving non-financial firms, the explanations concerning share repurchases are mixed. Laderman (1995) examined stock repurchases by large bank holding companies and found evidence consistent with three separate explanations of repurchase behavior in 1993-94: that banks were attempting to decrease their capital-to-assets ratios, that they faced limited investment opportunities, and that they were attempting to address the market's undervaluation of their stock. Hirtle (1998) reaches similar conclusions based on repurchase activity for a sample of large bank holding companies in 1997. Kane and Susmel (1995) find a positive stock price reaction to repurchase announcements by banks and conclude that a combination of excess capital and signaling may motivate these repurchases. In contrast, Billingsley, Fraser and Thompson (1989) find no significant stock market reaction to share repurchase announcements by bank holding companies from 1964-83, though an increase in firm-specific risk resulting from lower capital ratios.

The analysis in this paper complements this previous work on stock repurchases by bank holding companies by examining the relationship between repurchases and operating performance for a large sample of institutions observed over time. The advantage of this approach is that we can observe bank holding company behavior for a wider range of institutions and over a longer horizon

than Laderman (1995) and Hirtle (1998) and over a period when stock repurchases were more prominent than in the Kane and Susmel (1995) and Billingsley et. al. (1989) samples.

In addition, we focus on the operating performance of the bank holding companies rather than on the stock price reaction. In part, this focus reflects the nature of regulatory report data on stock repurchases, which reports aggregate repurchase activity over a calendar year rather than the date of specific repurchase program announcements. But more significantly, focusing on operating performance provides a different view of the impact of stock repurchases than examining stock price reactions. In particular, we can assess whether repurchases have an impact on the behavior of bank holding companies and make a direct assessment of that impact on operating performance.[2] This should allow us to draw a more comprehensive picture of the impact of stock repurchases on bank holding company behavior.

A final benefit of examining repurchase activity in the banking sector concerns the role of management compensation in determining repurchase behavior. Several authors have documented a relationship between the use of executive stock options and repurchases. For instance, Lambert, Lanen, and Larcker (1989), Jolls (1998), and Fenn and Liang (1999) present analysis suggesting that repurchase activity is associated with management compensation structure, in particular, the presence of executive stock options. These papers argue that managers holding options will prefer stock repurchases to dividends due to tax incentives and because repurchases, in contrast to dividends, do not dilute share value. These managerial incentives to prefer repurchases introduce another set of considerations that can make it difficult to distinguish between the signaling and free cash flow hypotheses.

In the banking sector, however, these managerial incentives are likely to play a much smaller role. As a rule, bank executives tend to receive a much smaller share of their compensation in stock

options than managers in non-financial firms (see Houston and James 1995). This means that the confounding effects of managerial incentives on the decision of whether or not to repurchase equity will be much less prominent in the banking sector. The smaller role of these incentives should provide a cleaner environment in which to examine the signaling and free cash flow hypotheses behind stock repurchases.

III. Bank holding company stock repurchase data

As illustrated in Figure 1, stock repurchases by bank holding companies have increased dramatically since the early 1990s. The data reported in this figure and used in the estimation reported below are derived from bank holding company regulatory reports (the FR Y-9C reports), which are available beginning in 1986 for all bank holding companies with assets exceeding $150 million. The estimation sample is constructed by first selecting observations contained in the reports between 1986 and 1998 for all top-tier bank holding companies. We drop all observations with missing data, negative reported equity capital, and observations in which the bank holding company was involved in a significant merger.[3] Since the estimation approach (described below) requires consecutive observations for a bank holding company over time, we also drop all observations for institutions where there is a "gap" between years (whether the gap was in the original sample or created by the screening described above). Finally, creating growth rates of key variables causes all

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[2] Evans and Gentry (1999) and Nohel and Tarhan (1998) assess the impact of stock repurchases on the operating performance of firms in the non-financial sector. The results of both studies tend to support the importance of free cash flow more so than signaling as a motivating factor behind repurchases.

[3] To determine whether a bank holding company has been involved in a significant merger, we draw on several sources. These include information on the Y-9C on whether the company has been involved in a pooling-of-interests merger and whether it acquired any equity capital from "business combinations". This information was supplemented by a merger data set constructed by the Federal Reserve Bank of Chicago (these data are available at http://www.chicagofed.org). If any of these sources indicated a bank holding company had been involved in a merger <u>and</u> the company's asset growth was 15 percentage points higher than the median asset growth for all BHCs in that year, then the observation was dropped from the sample. The 15 percent cut-off was intended to capture significant mergers that would impact overall measured performance for a year. The estimation results are not sensitive to the particular cut-off used (including eliminating all merger observations).

observations for 1986 to drop from the final estimation sample. The final sample consists of 8725

observations for 1718 bank holding companies over the years 1987 to 1998.[4]

Bank holding company regulatory reports contain information on the holding companies'

equity capital accounts, including information about dividend payments and treasury stock purchases

and sales. Unfortunately, the regulatory reports do not contain direct information about the extent of

actual share repurchases by bank holding companies.[5] Instead, we use gross treasury stock purchases

as our basic measure. As discussed below, we also consider several alternative definitions using

additional information from the Y-9C reports; the estimation results are not overly sensitive to the

way that repurchases are calculated.

Table 1 contains information on the average annual rate of repurchases and dividends for the

bank holding companies in the final estimation sample. The dividend series reflects cash dividends

declared on common and preferred stock (in practice, preferred stock dividends tend to be small

relative to common stock dividends) during the calendar year in question, while repurchases equal

gross treasury stock purchases.

The top panel of the table reports both series scaled by beginning-of-year equity capital.

Turning first to the repurchase series, both the simple and weighted averages increase sharply at the

end of the sample period (1996 to 1998), though the upswing is more clearly evident for the weighted

average. On a simple average basis, repurchases increased from less than half a percent of equity

capital in the early 1990s to more than one percent of equity capital in 1996 to 1998, as compared to

an increase to over seven percent of equity capital on a weighted average basis. This suggests that

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[4] These edits to the data set eliminate about 25 percent of the original 11665 observations for top-tier U.S. bank holding companies. About two-thirds of the dropped observations are dropped due to the merger screen. Another 25 percent are dropped due to gaps between observations for a given bank holding company. The screens for missing or miscoded data and negative equity capital account for the remaining dropped observations (about 10 percent of the total).

[5] There is no direct source of information about actual share repurchases – as opposed to announcements of repurchase programs – available for financial or non-financial firms. Other studies focusing on non-financial firms have used information from Compustat and CRSP to impute the volume of share repurchases using an approach similar to the one used in this paper for bank holding companies. See Stephens and Weisbach (1998).

much of the recent growth in repurchase activity can be attributed to larger banking organizations. In contrast, both the simple and weighted average dividend series grow much less sharply over the sample period, suggesting that dividend growth has been slower, but more widespread among banking institutions.

The bottom panel of Table 1 presents the repurchase and dividend data in aggregate dollar levels for the sample and on average for those bank holding companies that had positive levels of dividends or repurchases in a given year.[6] These figures are largely consistent with those in the top half of the table. The aggregate amount of repurchases made by the bank holding companies in the sample increased sharply over the sample period, reaching a high of $11 billion in 1997 and exceeding the aggregate amount of dividend payments by these firms in 1996 and 1997. Repurchases also increased markedly on a per-bank holding company basis, growing from about $3 million per year at the beginning of the sample period to over $40 million in 1997, and exceeding the average per-firm level of dividend payments from 1994 until the end of the sample period.[7] The sharp drop in both the aggregate and per-firm levels of repurchases and dividends in 1998 reflects both a general decline in the level of repurchases in that year – most likely because of the effects of the large number of pooling-of-interest mergers, which prevent firms from repurchasing their stock for six months following the merger – and because a few very large bank holding companies dropped out of the sample in 1998 because they were involved in mergers.

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[6] In general, the bank holding companies in the sample accounted for about half to two-thirds of the dividend and repurchase payments made by all top-tier bank holding companies reporting repurchase data on the Y-9C reports. The one significant exception is 1998, when several large bank holding companies dropped out of the sample due to mergers. In that year, bank holding companies in the sample accounted for about 25 percent of overall repurchases and 20 percent of dividends.

[7] The sharp drop in both the aggregate and per-bank holding company levels of repurchases and dividends in 1998 reflects two related factors. First, the general rate of stock repurchases dropped for the banking industry as a whole during 1998, most likely reflecting the impact of mergers. Firms may not repurchase equity for six months following a pooling-of-interests merger. Press reports and stock analysts cite the high degree of merger activity as restricting the amount of shares repurchased by bank holding companies during 1998 and further report the stock repurchase activity by bank holding companies accelerated sharply in 1999. See Keenan (1999). Second, a small number of very large bank holding companies dropped out of the sample in 1998 because they were involved in

Tables 2 and 3 provide further information about the dividend and repurchase behavior of the bank holding companies in the sample. Table 2 divides the observations in the sample into four groups reflecting payment or non-payment of dividends and repurchases. Clearly, dividend payments are much more common than repurchases: Overall, nearly 85 percent of the observations involved dividend payments, as opposed to less than 30 percent in which the bank holding company repurchased its stock. Further, the data in Table 2 suggest that bank holding companies that use stock repurchases are also active dividend payers. In almost all cases (2903 out of 3129), observations with non-zero repurchases also had positive dividend payments. In contrast, nearly two-thirds of the observations involving positive dividend payments had no repurchase activity.

Table 3 groups the bank holding companies in the sample into cohorts according to their pattern of dividend and repurchase behavior over the sample period. These data echo the points made in Table 2 in that bank holding companies clearly tend to pay dividends much more frequently than they make repurchases. More than 85 percent of bank holding companies make dividend payments at some point in the sample period, as opposed to less than 50 percent (837 of 1718) who repurchase their stock. Further, the table suggests that those bank holding companies that make dividend payments tend to do so much more consistently over time than banking companies that make repurchases. Nearly 70 percent of the bank holding companies paid dividends in every year they were in the sample, as compared to just 12 percent of banks that made repurchases in every year. In addition, of those bank holding companies that make any repurchases, only 25 percent do so in every year, as opposed to 80 percent of the bank holding companies that ever make dividend payments.

Taken together, the data in Tables 2 and 3 suggest that repurchases are used by bank holding companies in ways quite separate from the ways in which dividend payments are made. This finding

mergers during that year, which reduced both the aggregate and per-bank holding company averages for repurchases and dividend payments.

is consistent with work that has examined dividend and repurchase behavior by non-financial firms (see, for instance, Jagannathan, Stephens, and Weisbach 1999). The next section of the paper presents a more formal statistical analysis of the impact of repurchases on bank holding company operating performance to see if we can develop further insights into the role played by stock repurchases among banking organizations.

IV. The relationship between repurchases and BHC performance

To understand the role of stock repurchases in the performance of bank holding companies, we specify a simple, reduced-form equation that relates a series of performance variables to contemporaneous and lagged control variables and lagged dividend and repurchase behavior by the bank holding. The idea is to ask how stock repurchases are related to the future performance of the bank holding company.

We use a variety of measures to gauge bank holding company performance. These include return on equity (ROE), return on assets (ROA), real growth of earnings (defined as the year-over-year change in real net income divided by beginning-of-year equity capital), non-performing loan share (loans 90 or more days past due plus non-accrual loans divided by total loans), and net charge-offs (scaled by total loans). All real variables are created by deflating nominal amounts by the consumer price index for the year in question. The estimation equation regresses each of these variables in turn on a set of contemporaneous and lagged control variables. These control variables include lagged values of the log of real asset size, the equity capital ratio, and the loan-to-assets ratio, as well as a variable that measures contemporaneous personal income growth in the states in which the bank holding company operate banks.[8] Finally, the equation contains lagged values of the repurchase and dividend variables discussed above. Given the time series-cross section nature of the

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[8] State-level personal income growth is weighted by the share of the bank holding companies' banking assets in each state.

data set, the equation is estimated with bank holding company-specific fixed effects, as well as year dummies. Descriptive information on these variables is reported in Table 4.

The holding companies in our sample have total assets ranging between $150 million and $315 billion, with a median asset size of about $350 million. Clearly, the sample includes banks from across the size spectrum. For these companies, repurchases equal 0.7 percent of equity capital on average, though this share varies significantly across the years in the sample, as illustrated in Table 1.

The basic results of the estimation are reported in Table 5. The table reports results for the three performance variables that capture profitability (ROE, ROA, and earnings growth) and the two that capture asset quality (non-performing loans and charge-offs). Turning first to the results for the profitability variables, the regression results indicate that higher-than-average levels of repurchases by a bank holding company in one year are associated with higher-than average return on equity and return on assets in the following year. The coefficient on repurchases in both equations are positive and statistically significant at fairly high confidence levels. However, while the coefficients are statistically significant, their magnitude suggests that that the economic impact of repurchase activity on earnings is only moderate: a one standard deviation increase in repurchases would increase ROE by 38 basis points (ROE averaged 11.9 percent across the observations in the sample) and ROA would increase by just one basis point (as compared to an ROA of 0.90 percent). The coefficient on the earnings growth variable, in contrast, is negative and not statistically significant.

Turning now to the variables that capture asset quality, the regression results indicate that higher-than-average levels of repurchases are associated with lower-than-average levels of non-performing loans and charge-offs in the subsequent year. Somewhat more so than in the case of the profitability variables, the economic impact of increased repurchases appears to be modest, with, for instance, a one-standard deviation increase in repurchases leading to just a one basis point decrease in the charge-off rate (as compared to an average value for this rate of 50 basis points).

The results in Table 5 measure the impact of repurchases taking into account the size of the repurchase. That is, because the repurchase variable is specified in continuous form, the regression captures the impact of variation in the size of repurchases as well as the decision whether to repurchase at all. An alternative specification that focuses more on this latter distinction is to recast the repurchase variable in indicator form. Specifically, the repurchase variable can be redefined as a discrete variable equaling one if the gross treasury stock repurchases are positive and equaling zero otherwise. This specification focuses on differences in subsequent operating performance based on whether or not a bank holding company repurchased its stock in the previous year, regardless of the extent of the repurchase activity.

These results are reported in Table 6. For consistency, the dividend variable is also recast in indicator form, but all other variables are defined the same as in Table 5. The results of this specification are consistent with those with the continuous repurchase variable, but are significantly weaker. In particular, while the coefficients on repurchases in the ROE, ROA, and earnings growth equations are all positive and the coefficients in the non-performing loans and charge-off equations are both negative, but none of the coefficients are statistically significant at conventional confidence levels.[9] These results suggest that the extent of repurchase activity, more so than just the fact of repurchasing stock, is an important predictor of future operating performance.

Robustness: alternative model specifications and definitions of repurchases

Despite the modest size of the impact, the results presented in Tables 5 and 6 are consistent with the idea that higher levels of stock repurchases are associated with enhanced future financial performance, both in terms of earnings and asset quality. To test the robustness of this finding, we re-run the regression equations using alternative model specifications and definitions of the repurchase variable.

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[9] Though the coefficients in the ROA, non-performing loans, and charge-off equations are significant at the 16, 13, and 13 percent levels, respectively.

Tables 7 and 8 contain results for two alternative specifications of the empirical model. The first of these is a simplified specification in which the only explanatory variable, aside from year dummies and bank holding company-specific fixed effects, is lagged repurchases. The coefficient on repurchases in these regressions captures the simple correlation between repurchases and future performance, controlling for year and company-specific factors. In contrast, the second alternative specification extends the regression model used in Tables 5 and 6 to include a lagged dependent variable. This specification is a particularly stringent test of the impact of repurchases, given that the regression accounts for both firm-specific fixed effects and lagged behavior of the performance variables.[10]

Table 7 contains the results for these two models where the repurchase variable is defined in continuous form, while Table 8 reports the results for repurchases in indicator variable form. The results are generally consistent with reported in Tables 5 and 6. In particular, there is a positive and statistically significant relationship between lagged repurchases and profitability (as measured by ROE and ROA) and a negative and marginally statistically significant relationship between lagged repurchases and non-performing loans and charge-offs when repurchases are expressed in continuous form. Interestingly, the results suggest a positive and significant relationship between lagged repurchases and earnings growth when lagged earnings growth is included in the regression (see the middle column of Table 7). With that exception, however, the size of the coefficients on the lagged repurchases are markedly smaller in the specification including the lagged dependent variable, suggesting that the economic impact of repurchases may be quite modest once the past behavior of the performance variables are taken into account.

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[10] Because the regression specification includes both a lagged dependent variable and fixed effects, traditional fixed effect estimates will be biased. To address this problem, we estimate the equation using the dynamic panel data methods suggested in Arellano and Bond (1991) and Blundell and Bond (1998). This approach involves taking first differences of the regression equation (to remove the fixed effects) and then using a varying number of lags of the levels of the lagged dependent and independent variables as instruments in a generalized methods of moments

As in the regression results reported in Table 6, the findings are considerably weaker when repurchases are in indicator variable form. While the coefficients for the most part have the expected sign, they are seldom statistically significant. In contrast to the earlier results, however, the coefficient on lagged repurchases in the ROE and ROA equations are statistically significant and the coefficient on the earnings growth variable is marginally statistically significant in the lagged dependent variable specifications. Overall, then, the results support the earlier findings of a positive relationship between lagged repurchases and future profitability.

Aside from alternative model specifications, we also examined different ways of defining the variables used to measure the extent of bank holding companies' repurchase activity. As discussed above, our basic definition of repurchases is based on gross treasury stock purchases as reported in the bank holding companies' regulatory reports. However, it is possible that this figure could misstate a bank's true intentions in terms of the volume of stock it would like to repurchase. In particular, many of the banking organizations in our sample sold treasury stock to the market in years in which they also reported purchasing treasury stock. This means that treasury stock purchases would overstate the bank's net repurchase activity. To account for this possibility, we specify an alternative repurchase variable defined as net treasury stock purchases, that is, treasury stock purchases minus treasury stock sales.

However, both net and gross treasury stock purchases could understate total stock repurchases due to the way these items are reported in the regulatory reports. Specifically, the treasury stock purchases figures include only stock that is repurchased and retained as treasury stock. If stock is repurchased and then retired, it may not be included in this figure. Unfortunately, the Y-9C reports do not include a separate figure for retirements; instead, the retired stock is included in an

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setting. The results reported in the table are the first-stage consistent estimates with robust standard errors based on system estimator discussed in Blundell and Bond (1998).

aggregate variable, calculated as stock conversions (from options or convertible debt) minus retirements.[11]

Despite this limitation, we use these data to adjust our repurchase variables in two ways. First, we construct a variable equal to net treasury stock purchases plus net retirements (that is, the net conversions/retirement variable if it is positive, indicating that retirements exceed conversions). This variable should make a partial adjustment for retirements, though may continue to understate the extent of retirements in cases where there were offsetting stock conversions. We also construct a second variable equal to net treasury stock purchases plus net retirements minus net conversions (that is, we add the conversions/retirement variable whether it is positive or negative). Adding conversions may be an appropriate adjustment if a bank holding company chooses to offset the increase in stock outstanding as a result of the conversions by making stock repurchases. In that event, the basic repurchase variable – treasury stock purchased minus treasury stock sold – would overstate the bank's intended repurchase amount.[12]

The results of the estimation using these three alternative variables are reported in Tables 9 and 10. Table 9 reports results where the repurchase variables are incorporated in continuous form and Table 10 reports results where the repurchase variables are included in indicator form.[13] To present the results efficiently, the table simply reports the coefficients on repurchases and dividends and omits the other variables included in the equation. For comparison, the first columns repeat the results from Tables 5 and 6 using the basic repurchase variable. The five panels of the tables contain

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[11] Also, these data are available only beginning in 1990, so regressions using the retirements/conversions variable are performed on observations between 1990 and 1998.

[12] Other studies working with similar treasury stock purchase data for non-financial firms (available through COMPUSTAT) have made additional adjustments to the reported figures that we do not make here (see, for instance, Fenn and Liang 1999). These adjustments are intended to account for non-open-market repurchases such as self-tender offers and privately negotiated third-party transactions. These actions were often used to prevent take-overs; since the take-over market in the banking sector is quite limited, the failure to correct for these types of transactions most likely does not affect our results.

[13] These indicators equal one if the repurchase variable is positive and equal zero if the variable is zero or negative.

the results for the five performance variables: ROE, ROA, earnings growth, non-performing loans, and charge-offs.

Reading across the row in each panel, it is clear that the results are fairly robust to changes in the definition of the repurchase variable. When repurchases are expressed in continuous form, the coefficients on repurchases in the ROE and ROA equations are generally positive and statistically significant, the coefficients in the non-performing loans and charge-off equations are generally negative and statistically significant, while the coefficient in the earnings growth equation tends not to enter the equation significantly. When repurchases are expressed in indicator form, the coefficients tend to have the expected sign but are generally not significant. All-in-all, these findings suggest that the general results are not overly sensitive to the particular definition of repurchases used in the estimates.

Publicly traded versus non-publicly traded BHCs

The basic regression results reported in Tables 5 and 6 are for the entire sample of bank holding companies, regardless of whether the company's stock is traded on a public exchange. Smaller bank holding companies can have stock that is very closely held or traded on only a sporadic basis through regional market makers. The meaning and implications of stock repurchases for such companies could be quite different than those for publicly traded banks with a large and diverse shareholder base.

To explore this observation and to produce results that are more comparable with prior research on stock repurchases – most of which has dealt with firms traded on major exchanges – we divide the sample into various subsets according to the trading status of the BHCs' equity and re-estimate the equations in Tables 5 and 6. In particular, we first identified those bank holding companies in our sample that traded on the NYSE, AMEX, NASDAQ, or over-the-counter as of 1999 using information provided by SNL Securities. This process allows us to identify the firms in our sample that were publicly traded as of the end of the sample period. We supplemented this

matching with a manual name matching between the bank holding companies in our sample and firms listed on the CRSP daily stock price files at two points in time: year-end 1985 and year-end 1994. This supplemental matching allows us identify publicly traded bank holding companies that existed in the early or intermediate part of our sample period but that had exited by the end, either because of failure or merger. However, we can only identify those bank holding companies that traded on the NYSE, AMEX or NASDAQ, as these are the exchanges covered by the CRSP data (that is, we cannot identify banks traded over-the-counter for the early part of our sample).

Using these two matching procedures, we divided the sample into three subsets. The first division is between bank holding companies that had publicly traded stock at some point during the sample period ("publicly traded BHCs") and those that did not ("non-publicly traded BHCs"). That is, the publicly traded BHC sample contains all observations for bank holding companies that were identified as having traded on the NYSE, AMEX, NASDAQ, or over-the-counter at some point during the sample period. The non-publicly traded subset is the remainder of the sample. In addition to this division, we also created a sample consisting of all observations for bank holding companies that traded on the NYSE, AMEX or NASDAQ for those years in which they traded on these exchanges ("NYSE-, AMEX- and NASDAQ-traded BHCs"). This is a sub-sample of the publicly traded BHC sample in which banks that traded only over-the-counter are eliminated, as are observations for years in which a bank holding company was not listed on an exchange.

Table 11 reports some basic statistics about stock repurchases across these three sub-samples. Reading across the rows, both the frequency and size of stock repurchases increase as we move from the non-publicly traded to the publicly traded to the NYSE-, AMEX-, and NASDAQ traded sub-samples. For example, just over 27 percent of observations in the non-publicly traded sample involve a repurchase, as compared to 31 and 33 percent for the publicly traded and NYSE-, AMEX- and NASDAQ-traded samples. Similarly, when repurchases were made, they averaged 2.3 percent of equity capital for non-publicly traded bank holding companies, as compared to 2.6 and 3.1 percent

of equity capital for observations in the publicly traded and NYSE-, AMEX- and NASDAQ-traded samples. Nonetheless, while these statistics suggest a greater extent of repurchases among publicly traded firms than non-publicly traded ones, the differences are not overwhelming.

The results of the regression estimation on the non-publicly traded, publicly traded, and NYSE-, AMEX- and NASDAQ-traded sub-samples are reported in Tables 12 and 13. Table 12 contains the results when repurchases are specified in continuous form and Table 13 contains the results for repurchases in indicator form. For convenience, only the coefficients on the repurchase and dividend variables are reported, but as in Tables 5 and 6, the regressions contain lagged and contemporaneous control variables, as well as year dummies and fixed effects.

Turning first to the results when repurchases are defined in continuous form, the most striking aspect of the results is how they differ across sub-samples. The results are by far the strongest for the publicly traded and NYSE-, AMEX- and NASDAQ-traded sub-samples, suggesting that the overall results presented in Tables 5 and 6 are being driven by these bank holding companies. For these firms, there is a consistent positive relationship between repurchase activity and future profitability and asset quality. While these relationships are also evident for the non-publicly traded sample, the coefficients are generally smaller in size and not precisely estimated.

In fact, for most of the performance variables, the coefficient on repurchases increases sharply in magnitude moving from the non-publicly traded to the publicly traded to the NYSE-, AMEX-, and NASDAQ-trades sub-samples. For instance, in the ROE equation, the coefficient on repurchases more than doubles between the non-publicly traded and publicly traded sub-samples, and increases by another 35 percent when moving from the publicly traded to NYSE-, AMEX-, and NASDAQ traded sample. These increases have correspondingly important effects on the estimated economic impact of repurchase activity: a one-standard deviation increase in repurchases increases ROE by 33 basis points for the non-publicly traded sample, by 49 basis points for the publicly traded sample, and by 79 basis points for the NYSE-, AMEX-, and NASDAQ-traded samples (as compared

to average ROEs of 11.9 percent for the non-publicly traded and publicly trades sub-samples and

10.9 percent for the NYSE-, AMEX- and NASDAQ traded companies).

A second notable difference between the results for non-publicly traded bank holding

companies and the publicly traded and NYSE-, AMEX-, and NASDAQ-traded firms concerns the

results when repurchases are expressed in indicator form (Table 13). For non-publicly traded bank

holding companies, there appears to be little difference in future performance simply taking into

account whether or not a firm repurchased stock in the previous year. In contrast, publicly traded and

NYSE-, AMEX- and NASDAQ-traded bank holding companies exhibit consistently stronger

performance in the year following a stock repurchase. Further, as for the results when repurchases

are expressed in continuous form, the size of the coefficients tends to be notably larger for the

NYSE-, AMEX- and NASDAQ-traded observations than for the publicly traded sample. For

instance, the results suggest that publicly traded bank holding companies experienced a 96 basis

point rise in ROE as compared to non-repurchasing bank holding companies. For observations in the

NYSE-, AMEX- and NASDAQ-traded sub-sample, the comparable increase was 184 basis points.

Overall, the results in Tables 12 and 13 suggest that for the publicly traded and NYSE-,

AMEX-, and NASDAQ-traded sub-samples, both the fact of repurchasing shares and the extent of

these repurchases are significant determinants of future operating performance. In contrast, for the

non-publicly traded bank holding companies, repurchases appear to have at best a weak link to future

profitability and asset quality. These results suggest that repurchases by these different groups of

bank holding companies may be motivated by different factors or concerns of management and

shareholders. This implication is explored further in the next section of the paper.

V. What accounts for the relationship between repurchases and BHC performance?

Drawing on the broader literature on the role of stock repurchases in the non-financial sector,

we can identify two competing hypotheses to explain the relationship between higher stock

repurchases and enhanced financial performance by bank holding companies. First, repurchases may

serve as a proxy for the private information held by bank managers about the institution's future performance prospects. When managers have private information suggesting that this future performance is likely to be good, they may be willing to increase repurchases, either because they want to send a signal to the market about their future good prospects or because they are willing to return profits to shareholders now in the anticipation of future strong profitability. Alternatively, a positive link between stock repurchases and future bank performance could reflect managers' decision to return excess funds to shareholders in the face of limited outside investment opportunities. In this story, the decision to make stock repurchases – as opposed to using retained earnings to fund further balance sheet growth – actually causes future profitability to be higher as compared to a similar bank that chose to retain the funds. [14]

In practice, it is very difficult to separate these two hypotheses empirically. The key difficulty is finding variables to capture the private information held by bank managers about their firms' future prospects. In addition, the hypotheses need not be mutually exclusive, as managers could have private information indicating that the bank's own stock is a high net present value investment in an environment in which outside prospects are limited. Nonetheless, we can do some empirical tests that will provide insight into this question.

The general approach we use is to compare the characteristics of bank holding companies that repurchase shares with those that do not. Specifically, we examine a range of characteristics in the two years before a bank holding company makes a repurchase to those same characteristics for bank holding companies that do not repurchase shares to see whether there are observable differences between these two groups of banks. We might expect, for instance, that if repurchases are motivated

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[14] Both of these explanations assume that the manager's objective is to try to maximize shareholder utility, either by maximizing stock value or by returning cash profits directly to shareholders. This assumption, of course, abstracts from the principle-agent problem between managers and owners. Papers by Jolls (1998) and Fenn and Liang (1999) demonstrate that there is a link between repurchase activity and executive compensation structure that is consistent with the idea that repurchases are made in firms where the principle-agent problem has been addressed through such devices as stock options and management ownership of shares in the firm.

by managers' desire to signal improved prospects, that performance by these banks in the period prior to the repurchase might be worse than a comparable set of institutions. Conversely, if repurchases are motivated by the desire to return excess cash flow, then pre-repurchase performance might be better than non-repurchasing firms.

Given the panel data structure of our data – in which a single bank holding company appears multiple times – we perform this exercise using a simple regression specification in which we regress the lagged two-year average value of a range of bank holding company characteristics against a series of dummy variables for the year of the observation and for bank holding company asset size (less than $500 million, $500 million to $1 billion, $1 billion to $25 billion, more than $25 billion, all in 1998 dollars), as well as bank holding company-specific fixed effects. We then include a dummy variable for whether or not the bank holding company repurchased stock during the year in question.[15] In this structure, a positive (negative) coefficient means that the bank holding company experienced higher-than-average (lower-than-average) values of the variable in question in the two years prior to the repurchase.[16]

The results of this exercise are reported in Table 14. The table reports the coefficient on the repurchase dummy variable and the p-value associated with the estimate (in parentheses). Results are reported for the sample as a whole and for the non-publicly traded, publicly traded, and NYSE-, AMEX-, and NASDAQ-traded sub-samples. On the whole, the results suggest that bank holding companies that repurchased stock performed measurably better than average in the two years prior to the repurchase. Repurchasing bank holding companies had statistically significantly higher-than-average profitability (ROE and ROA), lower-than-average charge-offs and non-performing loans, and higher-than-average equity capital ratios during the pre-repurchase period.

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[15] A bank holding company is defined to have repurchased stock when gross treasury stock purchases are positive.
[16] Note that this regression essentially reverses the timing of the regressions reported in the rest of the paper. In these other regressions, current performance variables are regressed on lagged repurchases. In the regressions being described now, lagged values of the performance variables are being regressed on current repurchases.

These differences appear in the sample as a whole, and for the publicly traded and NYSE-, AMEX-, and NASDAQ-traded sub-samples. Interestingly, for these samples, income growth in the states in which repurchasing banks operated was no higher than average in the pre-repurchase period, which suggests that the superior performance of repurchasing banks is really a bank-specific phenomenon and not simply driven by better economic conditions in the banks' services areas. In contrast, for the non-publicly traded bank holding sample, repurchase observations are not associated with measurably stronger pre-repurchase performance, with the exception of higher-than-average equity capital ratios. For these observations, repurchases appear to be associated with lower-than-average income growth in their service areas.

For the publicly traded and NYSE-, AMEX-, and NASDAQ-traded bank holding companies, these results seem more consistent with the idea that repurchases were motivated by excess cash flow concerns rather than a desire to signal strong future performance, since the repurchasing banks were already performing observably better than their own long-run average performance in the years before the repurchases. For the non-publicly traded bank holding companies, in contrast, the results seem more consistent with signaling, since there is no noticeable performance difference in the pre-repurchase period and at least some evidence of better post-repurchase performance.

The results in Table 14 are complicated by the fact that bank holding companies appear multiple times in the sample and a number of them repurchase stock for several of these years. This means that in certain cases, the two-year "pre-repurchase" period itself contains a year in which the bank holding company repurchased stock.[17] To avoid this situation, we repeated the analysis in Table 14 just for observations in which the bank holding company did not make any repurchases during the two-year "pre-repurchase" window. These results are reported in Table 15.

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[17] Note that the direction of the bias is not completely clear because a bank holding company that did not repurchase in a particular year may have repurchased in a prior year, so the performance variables for a "non-repurchaser" could also be affected by prior year repurchases.

Limiting the sample to observations with no other repurchases during the pre-repurchase window does not significantly affect the results for publicly traded and NYSE-, AMEX- and NASDAQ-traded bank holding companies. The results continue to indicate that these firms had observably higher-than-average profits and capital ratios and lower-than-average troubled loans in the two years prior to the repurchase. Further, there was no significant difference in income growth in the banks' service areas during the pre-repurchase period, once again suggesting that this better-than-average performance was a bank-specific characteristic. Interestingly, however, the results for the non-publicly traded bank holding companies now also show better-than-average performance in the two years prior to the repurchase. This finding is consistent with the idea that the free cash flow hypothesis may be relevant for these bank holding companies as well.

Taken together, these results suggest that the relationship between repurchases and future operating performance is driven primarily by the choice to return profits to shareholders when cash flow is abundant and investment prospects are comparatively limited. This finding seems to apply most strongly to publicly traded bank holding companies, especially those that are traded on major exchanges. With respect to smaller, closely held banks, however, the evidence is more mixed. As discussed above, there is some evidence suggesting that these firms also repurchased stock following periods of observably better-than-average performance, a finding more consistent with the free cash flow hypothesis than with signaling. However, the basic link between repurchases and future operating performance is much weaker for these institutions, suggesting that the role that repurchases play in the actual future operation of these firms may differ from that for publicly traded banks.

This difference may be explained by differences in corporate governance issues between these two types of firms: at closely held firms, the principal-agent conflicts between managers and owners are likely to be less significant and the problems associated with excess cash flow commensurately less severe. For these firms, then, it may not be necessary to use repurchases to deal with excess funds. In that event, repurchases may have more to do with past rather than future

performance by serving simply as a means of taking past strong profits out of the bank. In contrast, the principal-agent problems between managers and owners of widely held, publicly traded bank holding companies are likely to be more significant, and repurchases therefore more likely to be used to mitigate the associated problems.

VI. Summary and Conclusions

This paper has examined the relationship between stock repurchases and the future financial performance of bank holding companies. The results indicate that higher repurchases by a bank holding company are associated with enhanced earnings and better asset quality in the year following the repurchases, especially for publicly traded firms. There are two potential explanations for this relationship: first, that bank holding company managers have private information about the bank's future prospects that leads them to return profits to shareholders in the form of repurchases, possibly as a way of signaling to market about improved future performance. In this story, repurchases are essentially a proxy for this private information. In the second explanation, managers choose to make repurchases when cash flow is abundant relative to outside investment opportunities.

The paper presents evidence suggesting that different bank holding companies may be motivated by different concerns in making repurchases. At publicly traded bank holding companies, the results suggest that superior performance by these firms may be driven by the choice to return excess cash flow to shareholders rather than engage in balance sheet expansion. In contrast, at closely held, non-publicly traded banks, the results are just weakly consistent with this hypothesis. Repurchases at these institutions may simply be serving as a means to transfer strong past profits to shareholders. These differences may reflect differences in the degree of principal-agent problems between managers and shareholders at these two types of institutions.

It would be interesting in future research to explore this last idea a bit more fully. One gap in the work in this paper is that we do not have information about the exact extent to which the shares of the bank holding companies are closely or widely held, beyond knowing that certain of them are

traded on major exchanges. If it were possible to get such information, it could be informative to use better proxies for the extent of corporate governance issues than the simple division into publicly traded and non-publicly traded companies. A related avenue to explore would be to see whether, even within the universe of publicly traded bank holding companies, measures of agency problems such as the extent of managers' stock options or lending to insiders can help us identify differences in the motivations for stock repurchases. A final avenue to explore would be the role of employee stock ownership plans (ESOPs) in banks' repurchasing behavior. At least one variable is available on the regulatory reports that might allow us to identify those bank holding companies with active ESOPs. If this variable proved reliable, it might be possible to construct another alternative repurchase variable that takes account of repurchases associated with ESOPs.

Whatever the approach, however, the real contribution of the bank holding company data used in this study is that it allows us to make these comparisons between publicly traded and more closely held firms. These comparison provide us insight not only into the role that share repurchases play in affecting bank holding company operating performance, but also into the corporate governance issues that drive the performance of these companies.

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Figure 1
BHC Dividends and Stock Repurchases as Share of Equity Capital
BHCs with Assets Greater Than $150 Million
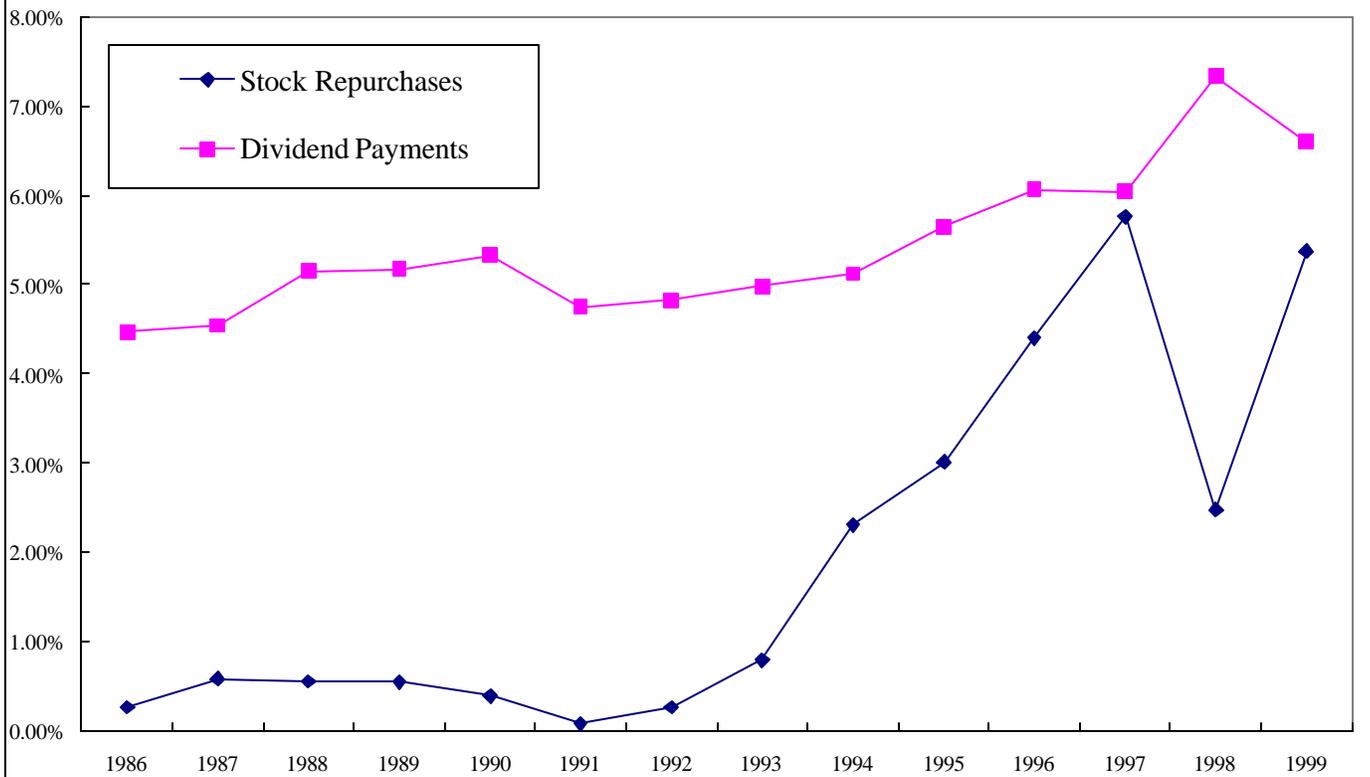
Table 1
Repurchases and Dividends Over the Sample Period

		As Percent of Equity Capital			
		Repurchases		Dividends	
Year	Obs.	Simple Average	Weighted Average	Simple Average	Weighted Average
1987	498	0.66	0.69	2.97	4.39
1988	508	0.63	0.56	2.95	5.23
1989	611	0.63	0.88	3.12	5.46
1990	687	0.64	0.62	3.08	5.71
1991	777	0.35	0.22	2.77	4.62
1992	795	0.44	0.53	2.83	4.49
1993	798	0.58	1.15	2.92	4.74
1994	786	0.63	2.86	2.95	4.90
1995	780	0.60	3.82	3.28	5.35
1996	798	1.02	7.19	3.36	5.36
1997	822	1.13	7.88	3.62	5.48
1998	865	1.04	4.34	4.30	5.69

		In Millions of Dollars			
		Repurchases		Dividends	
			Average per BHC		Average per BHC
Year	Obs.	Total	When > 0	Total	When > 0
1987	498	461.7	3.274	2929.4	7.093
1988	508	338.0	2.522	3143.3	7.431
1989	611	794.7	4.205	4909.1	9.513
1990	687	621.4	2.610	5730.9	10.001
1991	777	225.5	1.083	4815.6	7.668
1992	795	538.4	2.678	4550.7	7.235
1993	798	1250.1	6.724	5135.2	7.888
1994	786	3366.9	16.504	5773.0	8.827
1995	780	5207.5	23.778	7291.4	10.834
1996	798	9969.6	38.642	7426.2	10.594
1997	822	11263.9	41.873	7834.8	11.097
1998	865	3243.9	11.503	4346.7	5.747

Table 2
Distribution of Observations with Repurchases and Dividend Payments

Observations with:	Number	Percent
Both Repurchases and Dividend Payments	2903	26.4
Dividends Payments, but not Repurchases	5003	57.3
Repurchases, but not Dividend Payments	226	2.6
Neither Repurchases nor Dividend Payments	1193	13.7
TOTAL	8725	100.0

Note: An observation is counted as involving a repurchase if treasury stock purchases are positive.

Table 3
Distribution of BHCs by Dividend and Repurchasing Behavior

BHCs that:	Repurchases	Dividends
Always Pay	207 (12.1)	1200 (69.9)
Sometimes Pay	630 (36.7)	264 (15.4)
Never Pay	881 (51.3)	254 (14.8)
TOTAL	1718	1718

Note: Percentage of column total in parentheses. An observation is counted as involving a repurchase if treasury stock purchases are positive.

Table 4
Data Set Description

Variable	All Observations			
	Mean	Standard Deviation	Minimum	Maximum
Repurchases	0.007	0.026	0.000	0.731
Dividends	0.032	0.029	0.000	0.514
ROE	0.119	0.121	-1.950	1.263
ROA	0.009	0.009	-0.204	0.119
Earnings Growth	0.013	0.169	-1.242	7.408
Non-performing Loans	0.016	0.019	0.000	0.203
Charge-offs	0.005	0.009	-0.031	0.151
Asset Size in $ Billion (Median)	2.606 (0.349)	15.321	0.152	315.740
Equity Capital Ratio	0.083	0.027	0.0001	0.751
Loan-to-Asset Ratio	0.582	0.125	0.037	0.930
Number	8725	8725	8725	8725

Table 4 (continued)
Data Set Description

The data set consists of top-tier bank holding companies (BHCs) with assets greater than $150 million. After accounting for lags, the observations in the sample include all top-tier BHCs with data over the years 1987-98. All observations in which the BHC was involved in a significant merger are omitted. The final data set consists of 8725 observations from 1718 BHCs. The variables used in the estimation are defined as follows:

Repurchases	Treasury stock purchased minus Treasury stock sold divided by beginning of year equity capital.
Dividends	Cash dividends declared divided by beginning of year equity capital.
ROE	Net Income divided by beginning of year equity capital.
ROA	Net Income divided by end of year equity capital.
Earnings Growth	Annual change in real net income divided by beginning of year equity capital.
Non-performing Loans	Loans 90 or more days past due plus non-accrual loans divided by total loans. In the regressions, a logistic transformation is applied to this variable.
Charge-offs	Charge-offs minus recoveries divided by total loans.
Asset Size	Log of real total assets.
Equity Capital Ratio	End of year ratio of equity capital to total assets.
Loan-to-Assets Ratio	End of year ratio of total loans to total assets.

All real variables are deflated using the consumer price index. Equity and asset values are book values. All flow variables are for the calendar year.

Table 5
Impact of Repurchases on BHC Earnings and Asset Quality:
Repurchases in Continuous Form

The sample consists of 8725 observations from 1718 bank holding companies over the years 1987 to 1998. The variables are defined as in Table 4. REPURCHASES is defined as treasury stock purchases scaled by beginning-of-year equity capital (lagged one year) and DIVIDENDS is defined as dividends on common and preferred stock scaled by beginning-of-year equity capital (lagged one year). Each equation includes year dummies and BHC-specific fixed effects. The symbols ** and * indicate statistical significance at the 5 and 10 percent levels, respectively. Standard errors are in parentheses.

	Dependent Variable:				
	ROE	ROA	EARNINGS GROWTH	NON-PERFORMING LOANS	CHARGE-OFFS
Lagged Shareholder Payouts					
REPURCHASES	0.1472**	0.0075**	-0.1081	-0.7394**	-0.0070**
	(0.0420)	(0.0029)	(0.0746)	(0.3638)	(0.0031)
DIVIDENDS	0.3640**	0.0301**	-0.3257**	-2.2296**	-0.0188**
	(0.0644)	(0.0045)	(0.1145)	(0.5583)	(0.0047)
Lagged Control Variables					
ASSET SIZE	-0.0997**	-0.0051**	-0.2392**	0.4481**	0.0054**
	(0.0084)	(0.0006)	(0.0149)	(0.0730)	(0.0006)
EQUITY CAPITAL	-0.6920**	0.0308**	-4.5979**	-5.2307**	-0.0366**
	(0.1155)	(0.0080)	(0.2053)	(1.0013)	(0.0084)
LOANS-TO-ASSETS	-0.0789**	-0.0041**	0.0516	0.8474**	0.0157**
	(0.0207)	(0.0014)	(0.0367)	(0.1793)	(0.0015)
Contemporaneous Control Variable					
INCOME GROWTH	1.1600**	0.0787**	0.2839*	-10.3970**	-0.0852**
	(0.0833)	(0.0058)	(0.1481)	(0.7223)	(0.0061)
R^2 (WITHIN)	0.072	0.087	0.086	0.137	0.108

Table 6
Impact of Repurchases on BHC Earnings and Asset Quality:
Repurchases in Indicator Form

The sample consists of 8725 observations from 1718 bank holding companies over the years 1987 to 1998. The variables are defined as in Table 4. REPURCHASES equals 1.0 if treasury stock purchases are greater than zero, and is zero otherwise (lagged one year) and DIVIDENDS equals 1.0 if dividends on common and preferred stock are greater than zero, and is zero otherwise (lagged one year). Each equation includes year dummies and BHC-specific fixed effects. The symbols ** and * indicate statistical significance at the 5 and 10 percent levels, respectively. Standard errors are in parentheses.

			Dependent Variable:		
	ROE	ROA	EARNINGS GROWTH	NON-PERFORMING LOANS	CHARGE-OFFS
Lagged Shareholder Payouts					
REPURCHASES	0.0035	0.0003)	0.0018	-0.0400	-0.0003
	(0.0031)	(0.0002)	(0.0054)	(0.0264)	(0.0002)
DIVIDENDS	0.0085*	0.0004	-0.0247**	-0.3009**	-0.0012**
	(0.0049)	(0.0003)	(0.0088)	(0.0427)	(0.0004)
Lagged Control Variables					
ASSET SIZE	-0.0997**	-0.0050**	-0.2340**	0.5240**	0.0057**
	(0.0086)	(0.0006)	(0.0152)	(0.0739)	(0.0006)
EQUITY CAPITAL	-0.7042**	0.0318**	-4.5114**	-4.0685**	-0.0328**
	(0.1174)	(0.0082)	(0.2082)	(1.0130)	(0.0085)
LOANS-TO-ASSETS	-0.0769**	-0.0039**	0.0522	0.8798**	0.0158**
	(0.0207)	(0.0014)	(0.0368)	(0.1789)	(0.0015)
Contemporaneous Control Variable					
INCOME GROWTH	1.1415**	0.0773**	0.3093**	-10.2058**	-0.0841**
	(0.0835)	(0.0058)	(0.1481)	(0.7206)	(0.0061)
R^2 (WITHIN)	0.067	0.080	0.086	0.141	0.107

Table 7
Impact of Repurchases on BHC Earnings and Asset Quality:
Alternative Model Specifications
Repurchases in Continuous Form

The sample consists of 8725 observations from 1718 bank holding companies over the years 1987 to 1998. The variables are defined as in Table 4. REPURCHASES is defined as treasury stock purchases scaled by beginning-of-year equity capital (lagged one year) and DIVIDENDS is defined as dividends on common and preferred stock scaled by beginning-of-year equity capital (lagged one year). Each equation includes year dummies and BHC-specific fixed effects. Regressions using lagged dependent variables were estimated using the dynamic panel data techniques described in Arellano and Bond (1991) and Blundell and Bond (1998). The sample for these regressions consists of the 6744 observations for 1172 BHCs with at least 3 consecutive years of data. The symbols ** and * indicate statistical significance at the 5 and 10 percent levels, respectively. Standard errors are in parentheses.

	DEPENDENT VARIABLE:					
	ROE		ROA		EARNINGS GROWTH	
Lagged Shareholder Payouts						
REPURCHASES	0.1520**	0.0036	0.0060**	0.0003**	-0.0056	0.0047*
	(0.0431)	(0.0033)	(0.0030)	(0.0001)	(0.0776)	(0.0028)
DIVIDENDS		0.7197*		0.0400		0.6799
		(0.4197)		(0.0284)		(0.6567)
Lagged Dependent Variable		0.4867**		0.5399**		-0.1017
		(0.0890)		(0.0785)		(0.0783)
Lagged Control Variables						
ASSET SIZE		-0.0268*		-0.0016**		0.0196
		(0.0163)		(0.0008)		(0.0600)
EQUITY CAPITAL		0.0877		-0.0871		-4.8691**
		(0.9796)		(0.0774)		(1.5930)
LOAN-TO-ASSETS		-0.2326		-0.0113		0.1429
		(0.1467)		(0.0099)		(0.3079)
Contemporaneous Control Variable						
INCOME GROWTH		1.0230**		0.0539**		1.0908**
		(0.2129)		(0.0111)		(0.2981)
R² (WITHIN)	0.017	N/A	0.036	N/A	0.005	N/A

Table 7 (Continued)
Impact of Repurchases on BHC Earnings and Asset Quality:
Alternative Model Specifications
Repurchases in Continuous Form

The sample consists of 8725 observations from 1718 bank holding companies over the years 1987 to 1998. The variables are defined as in Table 4. REPURCHASES is defined as treasury stock purchases scaled by beginning-of-year equity capital (lagged one year) and DIVIDENDS is defined as dividends on common and preferred stock scaled by beginning-of-year equity capital (lagged one year). Each equation includes year dummies and BHC-specific fixed effects. Regressions using lagged dependent variables were estimated using the dynamic panel data techniques described in Arellano and Bond (1991) and Blundell and Bond (1998). The sample for these regressions consists of the 6744 observations for 1172 BHCs with at least 3 consecutive years of data. The symbols ** and * indicate statistical significance at the 5 and 10 percent levels, respectively. Standard errors are in parentheses.

	DEPENDENT VARIABLE:			
	NON-PERFORMING LOANS		CHARGE-OFFS	
Lagged Shareholder Payouts				
REPURCHASES	-0.5482	0.0182	-0.0056*	-0.00013
	(0.3722)	(0.0137)	(0.0032)	(0.00008)
DIVIDENDS		0.4058		-0.0279
		(1.8810)		(0.0198)
Lagged Dependent Variable		0.3642**		0.4123**
		(0.0522)		(0.0519)
Lagged Control Variables				
ASSET SIZE		0.2771**		0.0036**
		(0.0576)		(0.0008)
EQUITY CAPITAL		-18.691**		-0.1248**
		(5.181)		(0.0597)
LOAN-TO-ASSETS		-0.5191		0.0189
		(.9908)		(0.0124)
Contemporaneous Control Variable				
INCOME GROWTH		-4.2991**		-0.0343**
		(1.3285)		(0.0118)
R² (WITHIN)	0.092	N/A	0.044	N/A

Table 8
Impact of Repurchases on BHC Earnings and Asset Quality:
Alternative Model Specifications
Repurchases in Indicator Form

The sample consists of 8725 observations from 1718 bank holding companies over the years 1987 to 1998. The variables are defined as in Table 4. REPURCHASES equals 1.0 if treasury stock purchases are greater than zero, and is zero otherwise (lagged one year) and DIVIDENDS equals 1.0 if dividends on common and preferred stock are greater than zero, and is zero otherwise (lagged one year). Each equation includes year dummies and BHC-specific fixed effects. Regressions using lagged dependent variables were estimated using the dynamic panel data techniques described in Arellano and Bond (1991) and Blundell and Bond (1998). The sample for these regressions consists of the 6744 observations for 1172 BHCs with at least 3 consecutive years of data. The symbols ** and * indicate statistical significance at the 5 and 10 percent levels, respectively. Standard errors are in parentheses.

	DEPENDENT VARIABLE:					
	ROE		ROA		EARNINGS GROWTH	
Lagged Shareholder Payouts						
REPURCHASES	0.0024	0.0128**	0.00019	0.0007*	0.0025	0.0132
	(0.0031)	(0.0058)	(0.00022	(0.0004)	(0.0057)	(0.0092)
DIVIDENDS		0.0128		0.0010		0.0205
		(0.0184)		(0.0013)		(0.0594)
Lagged Dependent Variable		0.4918**		0.5502**		-0.0998
		(0.0912)		(0.0753)		(0.0887)
Lagged Control Variables						
ASSET SIZE		-0.0227		-0.0014**		0.0231
		(0.0159)		(0.0007)		(0.0600)
EQUITY CAPITAL		0.6350		-0.0833		-4.6771**
		(1.1262)		(0.0755)		(1.6362)
LOAN-TO-ASSETS		-0.2015		-0.0088		0.1903
		(0.1471)		(0.0100)		(0.3083)
Contemporaneous Control Variable						
INCOME GROWTH		1.1053**		0.0570**		1.1414**
		(0.2366)		(0.0115)		(0.3210)
R² (WITHIN)	0.015	N/A	0.036	N/A	0.005	N/A

Table 8 (Continued)
Impact of Repurchases on BHC Earnings and Asset Quality:
Alternative Model Specifications
Repurchases in Indicator Form

The sample consists of 8725 observations from 1718 bank holding companies over the years 1987 to 1998. The variables are defined as in Table 4. REPURCHASES equals 1.0 if treasury stock purchases are greater than zero, and is zero otherwise (lagged one year) and DIVIDENDS equals 1.0 if dividends on common and preferred stock are greater than zero, and is zero otherwise (lagged one year). Each equation includes year dummies and BHC-specific fixed effects. Regressions using lagged dependent variables were estimated using the dynamic panel data techniques described in Arellano and Bond (1991) and Blundell and Bond (1998). The sample for these regressions consists of the 6744 observations for 1172 BHCs with at least 3 consecutive years of data. The symbols ** and * indicate statistical significance at the 5 and 10 percent levels, respectively. Standard errors are in parentheses.

	DEPENDENT VARIABLE:			
	NON-PERFORMING LOANS		CHARGE-OFFS	
Lagged Shareholder Payouts				
REPURCHASES	-0.0278	0.0697	-0.0002	-0.00019
	(0.0272)	(0.0559)	(0.0002)	(0.00046)
DIVIDENDS		-0.1412		-0.0006
		(0.1069)		(0.0012)
Lagged Dependent Variable		0.3652**		0.4113**
		(0.0525)		(0.0516)
Lagged Control Variables				
ASSET SIZE		0.2771**		0.0036**
		(0.0576)		(0.0008)
EQUITY CAPITAL		-18.691**		-0.1248**
		(5.181)		(0.0597)
LOAN-TO-ASSETS		-0.5191		0.0189
		(.9908)		(0.0124)
Contemporaneous Control Variable				
INCOME GROWTH		-4.5344**		-0.0316**
		(1.3380)		(0.0118)
R^2 (WITHIN)	0.092	N/A	0.044	N/A

Table 9
Impact of Repurchases on BHC Earnings and Asset Quality
Alternative Definitions of Repurchases in Continuous Form

The variables in these regressions are defined as in Table 4, with the exception of REPURCHASES. The alternative definitions of REPURCHASES are indicated at the top of each column. Each repurchase variable is defined as the dollar level of repurchases scaled by beginning-of-year equity capital (lagged one year). In each regression, DIVIDENDS is defined as dividends on common and preferred stock scaled by beginning-of-year equity capital (lagged one year). Each equation includes year dummies and BHC-specific fixed effects. The sample consists of all top-tier BHCs between 1987 and 1998. The regressions using net retirements and net conversions are run on a sample consisting of all top-tier BHCs between 1990 and 1998. The symbols ** and * indicate statistical significance at the 5 and 10 percent levels, respectively. Standard errors are in parentheses.

	Gross Treasury Stock Purchases	Net Treasury Stock Purchases (Treasury Stock purchased minus Treasury Stock Sold)	Net Treasury Stock Purchases plus Net Retirements	Net Treasury Stock Purchases plus Net Retirements minus Net Conversions
	ROE			
Lagged Shareholder Payouts:				
REPURCHASES	0.1472**	0.1487**	0.0845**	0.0131
	(0.0420)	(0.0425)	(0.0272)	(0.0244)
DIVIDENDS	0.3640**	0.3652**	0.2336**	0.2241**
	(0.0644)	(0.0644)	(0.0661)	(0.0661)
	ROA			
Lagged Shareholder Payouts:				
REPURCHASES	0.0075**	0.0073**	0.0052**	0.0004
	(0.0029)	(0.0030)	(0.0020)	(0.0018)
DIVIDENDS	0.0301**	0.0302**	0.0312**	0.0306**
	(0.0045)	(0.0045)	(0.0049)	(0.0049)
	EARNINGS GROWTH			
Lagged Shareholder Payouts:				
REPURCHASES	-0.1081	-0.1071	-0.0552	-0.1468**
	(0.0745)	(0.0757)	(0.0415)	(0.0371)
DIVIDENDS	-0.3257**	-0.3265**	-0.2310**	-0.2419**
	(0.1145)	(0.1145)	(0.1009)	(0.1008)
	NON-PERFORMING LOANS			
Lagged Shareholder Payouts:				
REPURCHASES	-0.7394**	-0.7482**	-0.9850**	-0.7936**
	(0.3638)	(0.3688)	(0.2890)	(0.2588)
DIVIDENDS	-2.2296**	-2.2355**	-1.5373**	-1.5056**
	(0.5583)	(0.5584)	(0.7025)	(0.7024)
	CHARGE-OFFS			
Lagged Shareholder Payouts:				
REPURCHASES	-0.0070**	-0.0064**	-0.0036*	-0.0024
	(0.0031)	(0.0031)	(0.0021)	(0.0019)
DIVIDENDS	-0.0188**	-0.0188**	-0.0001	0.00003
	(0.0047)	(0.0047)	(0.0051)	(0.00507)
Number of BHCs	1718	1718	1537	1537
Number of Obs.	8725	8725	6421	6421

Table 10
Impact of Repurchases on BHC Earnings and Asset Quality
Alternative Definitions of Repurchases in Indicator Form

The variables in these regressions are defined as in Table 4, with the exception of REPURCHASES. The alternative definitions of REPURCHASES are indicated at the top of each column. Each repurchase variable equals 1.0 if repurchases are greater than zero, and is zero otherwise (lagged one year). In each regression, DIVIDENDS equals 1.0 if dividends on common and preferred stock are greater than zero, and is zero otherwise (lagged one year). Each equation includes year dummies and BHC-specific fixed effects. The sample consists of all top-tier BHCs between 1987 and 1998. The regressions using net retirements and net conversions are run on a sample consisting of all top-tier BHCs between 1990 and 1998. The symbols ** and * indicate statistical significance at the 5 and 10 recent levels, respectively. Standard errors are in parentheses.

	Gross Treasury Stock Purchases	Net Treasury Stock Purchases (Treasury Stock purchased minus Treasury Stock Sold)	Net Treasury Stock Purchases plus Net Retirements	Net Treasury Stock Purchases plus Net Retirements minus Net Conversions
		ROE		
Lagged Shareholder Payouts:				
REPURCHASES	0.0035	0.0023	0.0057**	0.0047*
	(0.0031)	(0.0030)	(0.0027)	(0.0027)
DIVIDENDS	0.0085*	0.0085*	-0.0059	-0.0058
	(0.0049)	(0.0049)	(0.0049)	(0.0049)
		ROA		
Lagged Shareholder Payouts:				
REPURCHASES	0.0003	0.0002	0.0004*	0.0003
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
DIVIDENDS	0.0004	0.0004	0.0001	0.0001
	(0.0003)	(0.0003)	(0.0004)	(0.0004)
		EARNINGS GROWTH		
Lagged Shareholder Payouts:				
REPURCHASES	0.0018	0.0005	0.0010	-0.0003
	(0.0054)	(0.0053)	(0.0040)	(0.0040)
DIVIDENDS	-0.0247**	-0.0247**	-0.0238**	-0.0237**
	(0.0088)	(0.0088)	(0.0075)	(0.0075)
		NON-PERFORMING LOANS		
Lagged Shareholder Payouts:				
REPURCHASES	-0.0400	-0.0210	-0.0446	-0.0312
	(0.0264)	(0.0259)	(0.0282)	(0.0281)
DIVIDENDS	-0.3009**	-0.3010**	-0.2499**	-0.2511**
	(0.0427)	(0.0427)	(0.0524)	(0.0524)
		CHARGE-OFFS		
Lagged Shareholder Payouts:				
REPURCHASES	-0.0003	-0.0002	-0.0003	-0.0001
	(0.0002)	(0.0002)	(0.0002)	(0.0002)
DIVIDENDS	-0.0012**	-0.0012**	-0.0003	-0.0002
	(0.0004)	(0.0004)	(0.0004)	(0.0004)
Number of BHCs	1718	1718	1537	1537
Number of Obs.	8725	8725	6421	6421

Table 11
Comparison of Repurchasing Behavior
Across Sub-Samples of the Data Set

The Non-publicly traded BHC sample consists of 4800 observations from 1062 bank holding companies that did not have publicly traded stock over the years 1987 to 1998. The publicly traded BHC sample consists of 3951 observations from 659 bank holding companies with stock traded on the NYSE, AMEX, NASDAQ or over-the-counter at some point during the years 1987 to 1998. The NYSE-, AMEX- and NASDAQ-traded sample consists of 2345 observations from 502 bank holding companies with stock traded on the NYSE, AMEX, or NASDAQ during the years 1987 to 1998. Repurchases are defined as gross treasury stock purchases scaled by beginning-of-year equity capital.

	Non-publicly Traded Bank Holding Companies	Publicly Traded Bank Holding Companies	NYSE-, AMEX-, and NASDAQ-traded Bank Holding Companies
Percent of Repurchase Observations	27.1	31.3	32.8
Percent of BHCs that Repurchase at least once	44.2	56.4	52.2
Average Repurchases as Share of Equity Capital	0.0062	0.0082	0.0102
Average Repurchases as Share of Equity Capital when Repurchases > 0	0.0229	0.0260	0.0311

Table 12
Impact of Repurchases on BHC Earnings and Asset Quality:
Repurchases in Continuous Form
Alternative Samples

The variables used in these regressions are the same as those in Table 5. Each equation includes year dummies and BHC-specific fixed effects. In particular, REPURCHASES is defined as treasury stock purchases scaled by beginning-of-year equity capital (lagged one year) and DIVIDENDS is defined as dividends on common and preferred stock scaled by beginning-of-year equity capital (lagged one year). The Non-publicly traded BHC sample consists of 4800 observations from 1062 bank holding companies that did not have publicly traded stock over the years 1987 to 1998. The publicly traded BHC sample consists of 3951 observations from 659 bank holding companies with stock traded on the NYSE, AMEX, NASDAQ or over-the-counter at some point during the years 1987 to 1998. The NYSE-, AMEX- and NASDAQ-traded sample consists of 2345 observations from 502 bank holding companies with stock traded on the NYSE, AMEX, or NASDAQ during the years 1987 to 1998. The symbols ** and * indicate statistical significance at the 5 and 10 percent levels, respectively. Standard errors are in parentheses.

			Dependent Variable:		
	ROE	ROA	EARNINGS GROWTH	NON-PERFORMING LOANS	CHARGE-OFFS
Non-publicly Traded Bank Holding Companies					
Lagged Shareholder Payouts:					
REPURCHASES	0.1094**	0.0049	-0.1474*	-0.7625	-0.0044
	(0.0488)	(0.0034)	(0.0878)	(0.4780)	(0.0037)
DIVIDENDS	0.4111**	0.0364**	-0.0497	-1.5094**	-0.0125**
	(0.0770)	(0.0053)	(0.1386)	(0.7544)	(0.0058)
R^2 (WITHIN)	0.053	0.069	0.080	0.097	0.081
Publicly Traded Bank Holding Companies					
Lagged Shareholder Payouts:					
REPURCHASES	0.2246**	0.0134**	0.0871	-0.6481**	-0.0122**
	(0.0825)	(0.0058)	(0.1452)	(0.5895)	(0.0057)
DIVIDENDS	0.2846**	0.0156*	-1.0871**	-4.1153**	-0.0285**
	(0.1237)	(0.0087)	(0.2175)	(0.8832)	(0.0085)
R^2 (WITHIN)	0.112	0.119	0.102	0.234	0.164
NYSE-, AMEX, and NASDAQ-Traded Bank Holding Companies					
Lagged Shareholder Payouts:					
REPURCHASES	0.3035**	0.0187**	0.2268	-0.8038	-0.0150*
	(0.1202)	(0.0085)	(0.2214)	(0.6615)	(0.0077)
DIVIDENDS	0.1230	0.0036	-1.3901**	-4.9615**	-0.0241**
	(0.1808)	(0.0128)	(0.3328)	(0.9946)	(0.0116)
R^2 (WITHIN)	0.114	0.114	0.129	0.287	0.178

Table 13
Impact of Repurchases on BHC Earnings and Asset Quality:
Repurchases in Indicator Form
Alternative Samples

The variables used in these regressions are the same as those in Table 6. Each equation includes year dummies and BHC-specific fixed effects. In particular, REPURCHASES equals 1.0 if treasury stock purchases are greater than zero, and is zero otherwise (lagged one year) and DIVIDENDS equals 1.0 if dividends on common and preferred stock are greater than zero, and is zero otherwise (lagged one year). The Non-publicly traded BHC sample consists of 4800 observations from 1062 bank holding companies that did not have publicly traded stock over the years 1987 to 1998. The publicly traded BHC sample consists of 3951 observations from 659 bank holding companies with stock traded on the NYSE, AMEX, NASDAQ or over-the-counter at some point during the years 1987 to 1998. The NYSE-, AMEX- and NASDAQ-traded sample consists of 2345 observations from 502 bank holding companies with stock traded on the NYSE, AMEX, or NASDAQ during the years 1987 to 1998. The symbols ** and * indicate statistical significance at the 5 and 10 percent levels, respectively. Standard errors are in parentheses.

			Dependent Variable:		
	ROE	ROA	EARNINGS GROWTH	NON-PERFORMING LOANS	CHARGE-OFFS
		Non-publicly Traded Bank Holding Companies			
Lagged Shareholder Payouts:					
REPURCHASES	-0.0031	-0.0002	-0.0081	-0.0087	-0.00002
	(0.0042)	(0.0003)	(0.0075)	(0.0408)	(0.00032)
DIVIDENDS	0.0071	0.0003	-0.0180	-0.3233**	-0.0008*
	(0.0061)	(0.0004)	(0.0110)	(0.0595)	(0.0005)
R^2 (WITHIN)	0.045	0.057	0.080	0.103	0.081
		Publicly Traded Bank Holding Companies			
Lagged Shareholder Payouts:					
REPURCHASES	0.0096**	0.0007**	0.0141*	-0.0774**	-0.0006**
	(0.0044)	(0.0003)	(0.0078)	(0.0316)	(0.0003)
DIVIDENDS	0.0134	0.0008	-0.0397**	-0.2503**	-0.00018**
	(0.0084)	(0.0006)	(0.0148)	(0.0601)	(0.0006)
R^2 (WITHIN)	0.110	0.119	0.098	0.234	0.163
		NYSE-, AMEX, and NASDAQ-Traded Bank Holding Companies			
Lagged Shareholder Payouts:					
REPURCHASES	0.0184**	0.0014**	0.0319**	-0.1027**	-0.0006
	(0.0073)	(0.0005)	(0.0136)	(0.0404)	(0.0005)
DIVIDENDS	0.0047	0.0003	-0.0500**	-0.3147**	-0.0013
	(0.0124)	(0.0008)	(0.0229)	(0.0682)	(0.0008)
R^2 (WITHIN)	0.114	0.115	0.125	0.288	0.176

Table 14
Relative Performance of Repurchasing BHCs
and Non-Repurchasing BHCs
Controlling for Year and Asset Size

	All BHCs	Non-publicly Traded BHCs	Publicly Traded BHCs	NYSE-, AMEX- and NASDAQ- Traded BHCs
ROE	0.0068** (0.016)	0.0033 (0.383)	0.0087** (0.036)	0.0202** (0.006)
ROA	0.0006** (0.001)	0.0004 (0.182)	0.0008** (0.001)	0.0016** (0.000)
Earnings Growth	-0.0013 (0.661)	-0.0043 (0.261)	0.0003 (0.952)	0.0063 (0.462)
Asset Growth	0.0034 (0.210)	-0.0007 (0.854)	0.0061 (0.136)	0.0103 (0.104)
Loan Growth	0.0067* (0.066)	0.0040 (0.428)	0.0084 (0.108)	0.0178** (0..027)
Charge-offs	-0.0007** (0.001)	-0.0004 (0.187)	-0.0010** (0.002)	-0.0016** (0.001)
Non-performing Loans	-0.0009** (0.050)	-0.0001 (0.875)	-0.0014** (0.020)	-0.0024** (0.012)
Equity Capital	0.0024** (0.000)	0.0023** (0.000)	0.0027** (0.000)	0.0036** (0.000)
Loan Share	-0.0021 (0.298)	0.0017 (0.558)	-0.0038 (0.167)	0.0016 (0.695)
Income Growth	-0.0005 (0.173)	-0.0013** (0.021)	-0.0003 (0.967)	0.0003 (0.770)
Number of Obs.	5597	2899	2717	1441
Number of Repurchase Obs.	1679	805	877	494
Number of BHCs	1181	670	514	338

The figures reported in this table are the difference in means of the two-year lagged average of the variables between observations in which the bank holding company repurchased equity and those in which the BHC did not repurchase equity. The figures are derived from a regression of the variable in question on dummy variables for year, for the asset size category of the BHC (less then $500 million, $500 million to $1 billion, $1 billion to $25 billion, greater than $25 billion), and for whether the BHC repurchased equity. The equation is estimated with BHC-specific fixed effects. A BHC is defined as having repurchased its equity when treasury stock purchases are positive. The p-values for the test of equivalence of the means are reported in parentheses. The symbols ** and * indicate statistical significance at the 5 and 10 percent levels, respectively.

Table 15
Relative Performance of Repurchasing BHCs
and Non-Repurchasing BHCs
Controlling for Year and Asset Size
BHCs with no Repurchases in Previous 2 Years

	All BHCs	Non-publicly Traded BHCs	Publicly Traded BHCs	NYSE-, AMEX- and NASDAQ- Traded BHCs
ROE	0.0142** (0.003)	0.0140** (.045)	0.0119* (0.075)	0.0184 (0.125)
ROA	0.0011** (0.000)	0.0013** (0.011)	0.0009** (0.032)	0.0014* (0.064)
Earnings Growth	-0.0023 (0.674)	-0.0029 (0.682)	-0.0021 (0.795)	-0.0095 (0.560)
Asset Growth	-0.0008 (0.859)	-0.0049 (0.419)	0.0004 (0.953)	-0.0092 (0.392)
Loan Growth	0.0002 (0.978)	-0.0076 (0.344)	0.0049 (0.556)	0.0112 (0.410)
Charge-offs	-0.0008** (0.024)	-0.0005 (0.348)	-0.0011** (0.049)	-0.0018* (0.056)
Non-performing Loans	-0.0023** (0.003)	-0.0023** (0.047)	-0.0020** (0.044)	-0.0034** (0.043)
Equity Capital	0.0030** (0.000)	0.0038** (.000)	0.0023** (0.002)	0.0033** (0.007)
Loan Share	0.0010 (0.772)	-0.0031 (0.481)	-0.0001 (0.982)	0.0046 (0.482)
Income Growth	-0.0004 (0.614)	-0.0008 (.435)	-0.0002 (0.816)	-0.0003 (0.871)
Number of Obs.	3492	1827	1675	871
Number of Repurchase Obs.	358	178	180	96
Number of BHCs	916	514	404	251

The figures reported in this table are the difference in means of the two-year lagged average of the variables between observations in which the bank holding company repurchased equity and those in which the BHC did not repurchase equity. All observations for which the BHC repurchased equity within the last two years are dropped. The figures are derived from a regression of the variable in question on dummy variables for year, for the asset size category of the BHC (less then $500 million, $500 million to $1 billion, $1 billion to $25 billion, greater than $25 billion), and for whether the BHC repurchased equity. The equation is estimated with BHC-specific fixed effects. A BHC is defined as having repurchased its equity when treasury stock purchases are positive. The p-values for the test of equivalence of the means are reported in parentheses. The symbols ** and * indicate statistical significance at the 5 and 10 percent levels, respectively.