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Measuring Commercial Bank Profitability: Proceed With Caution

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Abstract: The Federal tax code creates challenges for comparing the profit rates of different banks on a consistent basis. The earnings of banks that elect to operate under Subchapter S of the Federal tax code are not subject to the Federal corporate income tax, but S-bank shareholders are taxed on their pro rata share of the entire earnings of the bank. The number of banks electing Subchapter S tax treatment has increased rapidly, especially among small banks. Using estimates of the Federal corporate income tax that S-banks would pay if they were subject to the tax, this article shows that differences in the tax treatment of S-banks and other banks has a large impact on measures of U.S. banking system profitability. Further, the article shows that adjustment of S-bank earnings by estimates of Federal income taxes to make them comparable with the earnings of other banks can markedly affect conclusions of studies that use net income as a measure of performance. Finally, the article shows that S-banks tend to out-earn their peers even if S-bank earnings are reduced by estimated Federal taxes, and that S-banks also tend to have higher earnings rates than their peers in the year before they elect S-bank status.

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Measures of after-tax rate of return, such as return on average total assets (ROA) and return on total equity (ROE), are widely used to asses the performance of firms, including commercial banks. Bank regulators and analysts have used ROA and ROE to assess industry performance, to forecast trends in market structure, as inputs in statistical models to predict bank failures and mergers, and for a variety of other purposes where a measure of profitability is desired.

Recent growth in the number of banks that elect to operate under Subchapter S of the Federal tax code has complicated the use of after-tax profit measures to assess trends in industry profitability and to compare rates of return across banks and over time. Subchapter S was established to benefit small businesses by granting them relief from the double taxation of corporate dividends. The dividends paid by most corporations are taxed twice – once at the firm level under the corporate income tax and again at the shareholder level under the personal income tax. However, the earnings of banks and other firms that elect Subchapter S tax treatment are not subject to the federal corporate income tax, though shareholders of S-corporations are subject to personal income taxes on their pro rata share of the firm's entire earnings, including non-distributed retained earnings. Because the earnings of S-corporations are taxed differently than those of other corporations (hereafter, "C-corporations"), the profit rates of S- and C-banks are not directly comparable on the basis of standard measures of after-tax rates of return.[1]

[1] Corporations not electing Subchapter S status operate under Subchapter C of the Federal tax code.

This article examines the consequences of the proliferation of S-banks for assessing the profitability of the U.S. banking industry. The quarterly Uniform Bank Performance Report (UBPR) produced by the Federal Financial Institutions Examination Council (FFIEC) provides after-tax rate of return data for individual S-banks that are adjusted by an estimate of the federal corporate income tax that those banks would pay if they were subject to the tax.[2] The adjustment is quantitatively large for many banks, indicating that comparisons of S- and C-banks using standard after-tax profit measures can lead to erroneous conclusions. Because S-banks are more prevalent among smaller banks, comparison of average after-tax profit rates across groups of banks delineated by size is especially problematic unless differences in the tax treatment of S- and C-bank earnings are taken into account. This article shows quantitatively the impact of the differences in the tax treatment of S- and C-banks on measures of U.S. banking system profitability.

This article finds that the net profit rates of S-banks tend to exceed those of similarly-sized C-banks, even after S-bank earnings are adjusted by the UBPR estimate of federal income taxes that S-banks would pay if they were subject to the corporate income tax. The UBPR adjustment does not account for any differences in how S- and C-banks are taxed by states, however, nor does it capture differences in how S- and C-banks are managed in response to the incentives they face because of how their earnings are taxed. We find that S-banks consistently have higher pre-tax earnings rates and net interest margin than C-banks, and tend to be more cost efficient. Further, we find that the banks that became S-banks in a given year tended to have higher profit rates in the prior

[2] Regulators use the UBPR for offsite surveillance of banks. Private sector bank analysts also frequently use the report, which can be accessed at the website of the FFIEC, an interagency body comprising the federal regulators of bank and thrift institutions. See http://www.ffiec.gov

year than other C-banks, suggesting that S-bank status alone cannot fully account for the higher average adjusted profit rates of S-banks.

Because one cannot meaningfully compare the earnings of S- and C-banks on the basis of standard after-tax profit rates, some analysts use *pre-tax* profit measures to evaluate the performance of banks and in statistical models that include a profit measure. Presumably banks seek to maximize after-tax profits rather than pre-tax profits, however, and some strategies for maximizing after-tax profits can result in relatively low pre-tax earnings rates. For example, some banks hold large amounts of securities whose interest payments are exempt from taxation at either the federal, state or local levels. All else equal, a bank that holds a large amount of tax-advantaged securities may have a relatively low pre-tax rate of return but a relatively high after-tax rate of return. Hence, comparison of pre-tax profit rates can give a misleading view of bank performance. The UBPR includes an adjustment to pre-tax income for tax-exempt earnings. This article investigates how large an impact this adjustment has on pre-tax bank earnings rates.

In summary, the Federal tax code creates challenges for measuring the profit rates of banks on a consistent basis across banks and across time. The UBPR, however, provides two measures of bank profits designed to permit such comparisons: pre-tax income adjusted for earnings on tax-advantaged securities, and after-tax income adjusted for the federal corporate income tax that S-banks would pay if they were C-banks. While these measures can be useful, this article suggests that analysts should proceed with caution when using any measure of bank profitability.

The following section provides an illustration showing the implications of Subchapter S tax treatment for after-tax measures of bank earnings and for shareholder

income. Subsequently we examine the growth in the number of S-banks across different asset size groups and show how the proliferation of S-banks has affected measures of banking industry profitability. We then examine how conclusions about the viability of small, community banks can be substantially affected by whether or not one adjusts S-bank earnings for estimated federal taxes. Further, we examine differences in the financial characteristics of S- and C-banks, and explore the implications of using pre-tax earnings as an alternative to after-tax profit measures.

HOW THE TAXATION OF S-BANK PROFITS AFFECTS BANK RETURNS AND SHAREHOLDER INCOME

Subchapter S enables small firms to avoid double taxation on distributed earnings without sacrificing the advantages of limited liability. Whereas the earnings of ordinary (Subchapter C) corporations are subject to the federal corporate income tax, the earnings of Subchapter S corporations are exempt from the tax. However, shareholders of Subchapter S corporations are subject to personal income tax on their pro rata share of the entire earnings of the corporation, not just on dividends. The example below illustrates how the shareholders of S-banks benefit from the elimination of double taxation of dividends.

Consider the hypothetical C- and S-banks with financial data given in Table 1 below.

Table 1

Illustration of the Effects of Taxation as an S-bank
on Bank Profit Rates and Shareholder Returns

	C-Bank	S-Bank
Total assets	$50,000,000	$50,000,000
Pre-tax income	1,000,000	1,000,000
Federal corporate income tax	300,000	0
Net income after tax	700,000	1,000,000
Dividends to shareholders	210,000	300,000
Taxes paid by shareholders	63,000	300,000
Adjustment to the net income of the S-bank for taxes it would pay if taxed as a C-bank		300,000
UBPR Adjusted net income of bank	700,000	700,000
Returns to shareholders		
Retained earnings	490,000	700,000
Plus dividends	210,000	300,000
Minus taxes on dividends	63,000	300,000
Increase in the net worth of shareholders	637,000	700,000

In Table 1, each bank has total assets of $50 million and pre-tax income of $1 million. In addition, each bank pays 30 percent of its net after-tax income as dividends to its shareholders.[3] To simplify the illustration, we assume that the state corporate income tax is zero for these banks. Further, we assume that the shareholders of each bank have a marginal tax rate of 30 percent and that the federal income tax rate for corporations is also 30 percent.

The C-bank pays federal income tax of $300,000, whereas the S-bank pays no federal income tax. The C-bank reports net after-tax income of $700,000, and the S-bank reports net after-tax income of $1,000,000. Thus, the standard ROA of the C-bank is 1.4 percent, whereas the standard ROA of the S-bank is 2 percent. This difference in ROA is due entirely to the difference in how the earnings of the two banks are taxed, since their pre-tax earnings and their total assets are the same. The UBPR would report the *adjusted* net income of the S-bank as $700,000, the same as the net income of the C-bank, and the *adjusted* ROA of each bank would be 1.4 percent.[4]

The C-bank pays dividends of $210,000, whereas the S-bank pays dividends of $300,000. With a marginal tax rate of 30 percent, the shareholders of the C-bank pay income tax of $63,000 on their dividends, whereas the shareholders of the S-bank pay income tax of $300,000 since they are taxed on the full earnings of the bank, not just on the dividends they receive.

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[3] In practice, S-banks tend to have higher dividend payout rates than C-banks. We assume equal payout rates in our example for simplicity and to focus on the implications of the different federal corporate income tax rates for S- and C-banks.

[4] For an S-bank, UBPR adjusted net income is calculated by subtracting from pre-tax income the UBPR estimate of the federal corporate income tax that the S-bank would pay if it were taxed as a C-bank. For a C-bank, UBPR adjusted net income equals after-tax net income.

Positive profits in the current year increase the net worth of the shareholders of both the C-bank and S-bank. The increase in net worth is higher for the shareholders of the S-bank by $63,000, which is the amount of tax that the shareholders of the C-bank pay on their dividends. Of course, these magnitudes would differ under other possible assumptions.

THE PROLIFERATION OF S-BANKS

Congress created Subchapter S of the Federal tax code in 1958, but commercial banks have had been permitted to elect Subchapter S status only since January 1997. The number of commercial banks electing Subchapter S tax treatment has since risen rapidly. Figure 1 illustrates the growth in the number and percentage of banks electing S-status over time. The number of S-banks increased from 601 banks (representing 6.6 percent of the industry) at year-end 1997 to 2155 banks (representing 28.8 percent of the industry) at year-end 2005.

Subchapter S corporations are limited to a maximum of 100 shareholders, which precludes many larger banks from electing S-status.[5] Hence, S-banks are concentrated among smaller banks. Table 2 reports the relative number and asset holdings of S-banks for five size groups, as well as across all groups, as of December 31, 2005.[6] For example, S-banks accounted for fewer than 6 percent of banks with $1 billion or more of assets, and just 0.5 percent of the total assets of banks with more than $1 billion of assets.

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[5] See Landau (2005) and http://www.s-corp.org/asp/products/product_3_4.asp for information about the history of Subchapter S and current requirements for election of Sub-S status.

[6] The data reported in Table 2 are for all banks in Peer Groups 1-15 of the UBPR. These peer groups include all U.S. commercial banks except those chartered during the most recent five years. Including such banks would raise the total number of S-banks to 2155. Peer Groups 1-15 also exclude credit card specialty banks, bankers' banks, and thrifts. See *UBPR User's Guide*, March 2006, Section II: *Technical Information*.

By contrast, S-banks accounted for over 40 percent of banks and over 43 percent of the total assets of all banks with less than $50 million of assets.

EFFECTS OF THE TAX TREATMENT OF S-BANKS ON MEASURES OF BANK INCOME

This section examines how the proliferation of banks electing Sub-S status has affected aggregate measures of banking industry profitability.[7] Figures 2 and 3 plot annual data from 1996 to 2005 on median after-tax return on average assets (ROA) and equity (ROE) for large and small banks, where large banks are those with more than $1 billion of assets and small banks are those with less than $1 billion of assets. The median after-tax profit rates of large banks exceeded those of small banks throughout the period and increased relative to those of small banks after 2000.[8]

In addition to the standard ROA and ROE measures, the dashed lines in Figures 2 and 3 also show median earnings rates based on an alternative measure in which the earnings rates of S-banks are reduced by the UBPR estimates of the tax that they would have to pay if subject to the federal corporate income tax. The median values of ROA adj. and ROE adj. shown in the figures are calculated using the standard ROA and ROE measures for C-banks and the measures that are adjusted for estimated federal corporate income taxes for S-banks.[9] Because few large banks are S-banks, the S-bank adjustment for estimated taxes has only a small effect on the median profit rates of banks with assets

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[7] Hein, Koch and Scott (2005) present similar information through 2002.

[8] Figures 2 and 3 report median profit rates because extreme values distort mean profit rates. Comparisons like those in Figures 2 and 3 can be sensitive to how one distinguishes "large" and "small" banks. For example, Bassett and Brady (2001) find that between 1985 and 2000, small banks (defined as those outside the largest 1000 banks) consistently had higher average earnings rates than the largest 100 U.S. banks. Bassett and Brady do not use the UBPR data on net income adjusted for the tax treatment of S-banks.

[9] See *UBPR User's Guide*, Section II, "Technical Information," p. 4, for information about the adjusted measure of after-tax earnings of S-banks for estimated income taxes. This document is available at http://www.ffiec.gov/ubprguide.htm.

of at least $1 billion. However, for small banks, the impact of the adjustment is large and has been growing over time as the number of S-banks has risen. Moreover, the earnings gap between large and small banks based on the adjusted earnings measures has been getting wider over time.

Table 3 presents information on the median after-tax profit rates (ROA and ROE) of commercial banks of various size groups for 2005. The table also reports median ROA and ROE adjusted to include the UBPR imputation of estimated federal corporate income taxes for S-banks (ROA adj. and ROE adj.). As in Figures 2 and 3, median values of ROA adj. and ROE adj. shown for all banks are based on the standard ROA and ROE measures for C-banks and the adjusted measures for S-banks.

Only 24 banks with $1 billion or more of assets elected S-bank status in 2005, and accordingly for all banks with total assets greater than $1 billion, the differences between median ROA and ROA adj., and between median ROE and ROE adj., are small. Whereas the median ROA of commercial banks with at least $1 billion of assets is 1.30 percent and median ROE is 13.87 percent, median ROA adj. is 1.28 percent and median ROE adj. is 13.62 percent. The adjustment of S-bank earnings for estimated taxes has a larger impact on group median earnings rates for smaller banks. For the smallest banks – those with no more than $50 million of assets – median ROA drops from 0.99 to 0.89 percent and median ROE drops from 8.51 to 7.64 percent when S-bank profit rates are adjusted to include imputed taxes. Hence, the exemption of S-banks from the corporate income tax has an especially large impact on median after-tax earnings rates for groups consisting of small banks.

In addition to showing median profit rates across all banks in each size group, Table 3 reports data for C- and S-banks separately. For S-banks, we report median values of both unadjusted and adjusted ROA and ROE. The median values of ROA and ROE for S-banks are considerably larger than those for C-banks, with much of the differences accounted for by the different tax treatment of S- and C-banks. Adjusting ROA and ROE to include the UBPR estimate of federal income taxes has a large impact on median earnings rates for S-banks across all size ranges. For example, for the S-banks with less than $50 million of assets, the adjustment reduces median ROA from 1.37 to 0.97 percent, and median ROE from 12.41 to 8.88 percent. Clearly, the absence of federal corporate income taxes on S-bank earnings has a large impact on their measured after-tax rates of return, indicating that caution is warranted when comparing after-tax rates of return of S- and C-banks, or of groups of banks that include both S- and C-banks.[10]

IMPLICATIONS OF THE ADJUSTMENT OF S-BANK PROFITS FOR ECONOMIC RESEARCH: AN EXAMPLE INVOLVING CONCLUSIONS ABOUT THE VIABILITY OF SMALL BANKS

The total number of small banks and their share of industry assets have been falling in recent years. This trend has led many analysts to question whether small, "community" banks remain viable in today's banking environment. Advances in communications and information-processing technology have eroded the benefits of close proximity and local ties that traditionally enabled community banks to provide financial services profitably to small firms and other local borrowers. In addition, the removal of

[10] Hein, Koch and MacDonald (2005) and Keeton, Harvey and Willis (2003) also note that the growing number of banks electing Sub-S status distorts comparison of after-tax rates of return across banks, and especially comparisons between groups of large and small banks.

state and federal restrictions on branch banking has put further strain on many community banks by exposing them to increased competition.

Conclusions about the viability of community banks have often been based on comparisons of the profit rates of small and large banks. For example, DeYoung, Hunter and Udell (2004) compare after-tax rates of return (ROA and ROE) of community and rural banks with those of mid-size banks (defined as banks with assets between $1 billion and $10 billion of assets) and large banks (defined as banks with at least $10 billion of assets). Their bank profit data are not adjusted for the corporate income tax that S-banks would pay if they were taxed like C-banks.

DeYoung, Hunter and Udell (2004) show that in 2001, the average ROA of "best-practice" community banks exceeded the average ROA of mid-size and large banks, where "best-practice" banks are defined as those with an ROE exceeding the median for their asset size group. In addition, DeYoung, Hunter and Udell (2004) show that the average ROE of best-practice community banks with at least $100 million of assets also exceeded average ROE for mid-size and large banks. The authors conclude that these and other comparisons strongly suggest that the "community bank business model is economically viable," though they also note that many community banks are not operating profitably or at an efficient scale (p. 122).

Table 4 updates and extends the analysis of DeYoung, Hunter and Udell (2004) using data for 2005. The table reports mean values of ROA and ROE for three groups of community banks based on asset size and for all community banks headquartered in rural areas, i.e., outside of metropolitan statistical areas. As in DeYoung, Hunter and Udell (2004), we define large community banks as those with assets between $500 million and

$1 billion of assets, medium community banks as those with assets between $100 million and $500 million of assets, and small community banks as those with assets less than $100 million. We identify large banks as those with total assets in excess of $1 billion. For each group, we report separate means for banks with ROE exceeding the group median and for those with ROE below the group median. Further, we report means based on the standard after-tax ROA and ROE measures and for data that have been adjusted to include UBPR estimates of the federal corporate income tax that S-banks would pay if they were subject to that tax.[11]

As shown in Table 4, for each group of community banks the mean values of unadjusted ROA and ROE for the "best-practice" banks exceed those for large banks, where again "best-practice" banks are defined as those having ROE above the median for their group, and large banks are those with assets in excess of $1 billion. Among large community banks, for example, best-practice banks have a mean ROA of 1.55 percent, compared to a mean of 1.32 percent for large banks. Among rural community banks, best-practice banks have a mean ROA of 1.45 percent. However, the group means are substantially reduced if one adjusts S-bank earnings rates to include estimates of their hypothetical federal tax liability. For example, among large community banks, adjusted mean ROA of best-practice banks is 1.43 percent, whereas among rural community banks, adjusted mean ROA of best-practice banks is 1.19 percent. Further, among both small and rural community banks, the adjusted mean values of ROA and ROE for best-practice banks are lower than the overall means for large banks. Of course, these results do not necessarily imply that small community banks and rural banks are not viable. A

[11] Our data are from the UBPR and include all banks in peer groups 1-15. However, we omitted banks with extreme values of ROA (those in the upper-most or smallest 1 percent tails of the distribution) to eliminate outliers and some banks that appear to have been misclassified in the UBPR.

definitive answer to the viability question would require a full accounting of the costs and benefits of electing S-bank tax treatment, which include not only the corporate and personal income tax issues, but also the implications for growth associated with legal limits on the number of shareholders of S-corporations. However, the analysis here does show that conclusions about the profitability of banks of different sizes, and hence about the viability of small banks, can be markedly affected by whether or not one adjusts rate of return measures to include estimates of the federal corporate income taxes that S-banks would pay if subject to that tax.

A COMPARISION OF S- AND C-BANK CHARACTERISTICS

The UBPR adjustment of profit measures for estimates of the federal corporate income taxes that S-banks would pay if they were subject to the tax closes much of the gap between the after-tax profit rates of S- and C-banks of similar asset size. However, for most size groups it does not close the gap entirely. For all years from 1997 to 2005, we find that even with the imputation for federal corporate income taxes, S-banks tend to have higher adjusted rates of return than do C-banks. Table 5 presents information for 2005. For banks in the same asset size group, the means of adjusted ROA and adjusted ROE of S-banks are higher than the means of ROA and ROE of C-banks. The p-values shown below the differences in the mean profit rates of S-banks and C-banks in the bottom part of Table 5 indicate that these differences are statistically significant for banks with assets of less than $1 billion.[12] We made similar comparisons for other years and obtained results that are similar to those for 2005, except as noted below.[13]

[12] The information reported in Table 5 is based on data for all commercial banks assigned to Peer Groups 1-15 in the Uniform Bank Performance Report except those with values for ROA among the upper or lower 1 percent in a given year. By dropping banks with extreme values of ROA, we avoided including

There are several possible explanations for why the adjusted earnings rates of S-banks tend to exceed the earnings rates of C-banks. The UBPR adjustment to the net income of S-banks does not take into account any differences in the applicability of state corporate income or other taxes between S- and C-banks. In addition, the Report makes no attempt to adjust profit measures for differences in the incentives that S- and C-banks face in the management of their revenues and expenses because of the differences in how their income is taxed. The adequacy of the UBPR net income adjustment has implications for studies involving bank profit rates, such as those addressing the viability of community banks. For example, if the adjustment is too small, then the differences between the adjusted and unadjusted profit measures for small banks shown in Table 4 understate the true differences.

Comparison of Mean Values of Various Financial Ratios Across S- and C-Banks

Aside from the possibility that the UBPR adjustment of S-bank earnings for taxes is incomplete, S-banks might have higher average earnings rates than similar size C-banks because of superior operating efficiency. This section compares S- and C-banks on the basis of various financial characteristics in an effort to understand better why S-bank earnings rates tend to exceed those of C-banks.

We compare S- and C-bank performance on measures of pre-tax net operating income (as a percentage of average total assets), net interest income, net non-interest

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observations with implausible values, some of which were for banks that appeared to be misclassified in the UBPR.

[13] For banks with assets between $300 million and $1 billion, the difference is statically significant in some years between 1997 and 2004. For banks with less than $300 million, the difference is statically significant in every year.

income, and cost efficiency.[14] As shown in Table 5, we find that S-banks consistently have higher pre-tax profit rates than C-banks of similar size, and the differences are statistically significant for banks with less than $300 million of assets.[15] S-banks also tend to have higher net interest margin, i.e., net interest income divided by average earning assets, than C-banks, as reflected in higher mean values across all size groups.[16] For 2005, the differences in the means are statistically significant for banks in the three largest size groups. However, for banks with less than $100 million of assets, we cannot reject the hypothesis that mean values of net interest margin of S- and C-banks are equal. Although for other years we also find that S-banks tend to have higher mean net interest margin than C-banks, the differences in the means are often not statistically significant, especially for the smallest banks.

We also compare non-interest margin, i.e., net non-interest income divided by average total assets, across S- and C-banks. For banks with less than $100 million of assets, S-banks consistently have higher mean non-interest margin than C-banks. However, for larger banks, especially those with more than $300 million of assets, we find that S-banks tend to have lower mean non-interest margin than C-banks, and the difference is statistically significant in some years.[17]

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[14] See Harvey and Padget (2000) for additional discussion of the implications of Sub-S election for commercial banks and evidence on differences in the characteristics and performance of S- and C-banks during 1997-99.

[15] For banks with assets between $300 million and $1 billion, this difference is statistically significant in some years between 1997 and 2004. For banks with less than $300 million, the difference is statistically significant in every year.

[16] The UBPR makes a tax-equivalent adjustment to net interest income and, hence, net interest margin, to account for differences in the tax treatment of different assets that banks hold without regard to whether a bank is an S- or C-bank. The implications of this adjustment are examined in a later section.

[17] Because there were very few S-banks with more than $1 billion of assets, especially before 2001, differences in the mean values for S- and C-banks in this size range are not especially interesting.

Finally, we compare the cost efficiency of S- and C-banks using the efficiency ratio, i.e., total overhead expenses as a percentage of net interest income plus non-interest income. Except for banks with at least $1 billion of assets, we find that S-banks consistently have lower efficiency ratios than C-banks (implying that S-banks are more cost efficient). Mean values are significantly smaller for S-banks with less than $300 million of assets than for C-banks of similar size. We also find that S-banks tend to have smaller mean efficiency ratios than C-banks in other years, though the differences are consistently statistically significant only for banks with less than $100 million of assets. Hence, it appears that relatively low overhead expenses can account for at least part of the higher profit rates of smaller S-banks as compared to C-banks. For S-banks with between $100 million and $300 million of assets, we find that both lower overhead expenses and higher net interest margin may play some role, whereas for S-banks with between $300 million and $1 billion of assets, higher net interest margin is more important for explaining the higher profit rates of S-banks.[18]

Taxes may account for some of the tendency for S-banks to have lower overhead expenses than C-banks of similar size, and further suggest caution when comparing either pre-tax or adjusted after-tax profit rates across S- and C-banks. S-banks are closely held corporations, and their senior managers often own a high percentage of the outstanding stock of the banks they manage. Owner/managers generally prefer to receive income in the form of earnings distributions rather than salary because salary is subject to employment taxes but other distributions are not. S-banks are required to pay reasonable

[18] The UBPR does not include data on the efficiency ratio before 2000. In addition, for banks with between $300 million and $1 billion of assets, in some years, the differences between mean values for S- and C-banks of net interest margin, and of net pre-tax operating profit, are not statistically significant.

compensation to shareholder-employees,[19] but the differential tax treatment of salary income and other distributions of S-bank earnings might help explain the tendency for S-banks to have relatively lower overhead expenses, and hence higher pre-tax operating profit rates, than C-banks.

Unfortunately, data on the salaries of shareholder-employees of banks are not available to test for differences in the compensation of owner/managers of S- and C-banks. The UBPR does provide data on total personnel expenses, however. We test whether lower personnel expenses can explain the higher mean pre-tax operating profit rates of S-banks. Table 5 reports mean values of the sum of pre-tax net operating profit (as a percentage of average total assets) plus personnel expenses (also as a percentage of average total assets) for banks in the five size groups. If lower personnel expenses account for the higher pre-tax operating profit of S-banks, we would expect to fail to reject the hypotheses that the mean values of the sum of personnel expenses and pre-tax net operating profit are equal for S- and C-banks. However, we reject the hypothesis at standard significance levels for banks in all size groups, indicating that lower personnel expenses cannot account fully for the higher mean pre-tax operating profit rates of S-banks.[20]

Ex Ante Performance of S-Banks

Because we have been unable to identify definitively why S-banks tend to earn more than C-banks of similar size, we next investigate whether the banks that have become S-banks over time tended to have higher rates of return *before* they became S-banks than other C-banks. If so, it would suggest that at least some of the tendency for S-

[19] See "Reasonable Compensation and SE Taxes," *The Tax Advisor*, October 2005, pp. 608-610.

[20] For banks with $300 million or more of assets, we cannot reject the hypothesis in some years. However, we always reject the hypothesis for banks with less than $300 million of assets.

banks to have higher rates of return than C-banks might be due to inherent characteristics rather than their status as S-banks.

Table 6 presents summary data on several financial ratios for banks that converted to S-banks during 2005. The table reports mean values of various performance measures as of year-end 2004 for C-banks that converted to S-bank status during 2005, as well as for C-banks that remained C-banks in 2005. The table also reports the differences in the mean values for converting and non-converting banks and p-values for tests of the hypothesis that the means of converting and non-converting banks are equal. Only three banks with more than $1 billion of assets became S-banks in 2005. Among smaller banks we find a tendency for converting banks to have had higher rates of return during 2004 than non-converting banks. Converting banks with less than $100 million of assets had significantly higher ROA, ROE, and pre-tax operating profit rates during 2004 than did non-converting banks. Converting S-banks with between $300 million and $1 billion of assets had significantly higher net interest margin than similar-sized non-converting banks, and converting banks with between $50 million and $100 million of assets had significantly lower cost efficiency ratios, i.e., they were more cost efficient.

Table 7 reports data for other years; specifically the table shows the differences in the mean values of ROA and ROE between non-converting and converting banks in the indicated years. As in Table 6, the mean values used to prepare Table 7 are as of December 31 of the year prior to conversion, and the differences shown are the mean values for non-converting banks less the mean values for converting banks. As shown in the table, the banks that converted to S-bank status in a given year tended to have had higher ROA and ROE in the year before they converted to S-bank status than the banks

that did not convert; in several cases the differences in the means are statistically significant. Hence, it appears that characteristics other than S-bank status explain at least some of the tendency for S-banks to out-earn C-banks of similar size. Banks that choose to switch to S-bank status appear to be systematically different from those of similar size that do not elect S-status.

PRE-TAX EARNINGS AS AN ALTERNATIVE EARNINGS MEASURE

The pitfalls of comparing banks on the basis of after-tax measures of return caused by the proliferation of S-banks have led some analysts and regulators to use pre-tax profit measures. For example, the FDIC uses income before taxes and extraordinary charges (as a percentage of total assets) in its statistical model designed to identify banks whose financial condition has deteriorated significantly since its last on-site examination (Collier et al, 2004).[21] Presumably banks seek to maximize after-tax profit, however, and pre-tax profit is not necessarily a good measure of a bank's performance. Many banks invest substantial proportions of their assets in securities that yield tax-exempt income. By holding large amounts of tax advantaged securities, a bank could appear relatively unprofitable on a pre-tax basis but highly profitable on an after-tax basis.

The UBPR includes an adjustment to make pre-tax operating profits more comparable across banks with different mixes of taxable and tax-exempt securities.[22] Figure 4 shows the impact of this adjustment on median pre-tax net operating income divided by average total assets for large and small banks, where as before, large banks are

[21] The Federal Reserve uses a similar model (Board of Governors of the Federal Reserve System, 2006). See also Whalen (2005).

[22] Pre-tax net operating income (TE) equals net interest income (on a tax-equivalent basis) plus non-interest income and realized gains (or losses) on securities, less non-interest expenses, provisions for loan and lease-financing receivables losses and provisions for allocated transfer risk. See UBPR *Users Guide*, Section III, p. 4.

defined as those with $1 billion or more of assets and small banks are those with less than $1 billion of assets. The figure shows that over the 10-year period from 1996 to 2005, the median pre-tax net operating income rate of large banks consistently exceeded that of small banks. Further, the chart shows the impact of the adjustment of pre-tax operating income rates for tax exempt income. The dotted lines show median pre-tax net operating income rates with the adjustment for tax exempt income. Over the 10 year period, the adjustment contributed between 0.06 and 0.10 percentage points to the median rate for large banks, and between 0.10 and 0.13 percentage points to the median rate for small banks. Although the impact of the adjustment on pre-tax net operating income rates has typically been somewhat larger for small banks than for large banks, the adjustment added approximately 0.10 percentage points to the median pre-tax net operating income rates of both large and small banks in 2005.

CONCLUSION

The proliferation of banks that elect Subchapter S tax treatment has greatly complicated the meaningful comparison of banks on the basis of after-tax rate of return. Because S-bank earnings are not subject to the federal corporate income tax, S-banks generally have higher after-tax rates of return than other commercial banks (i.e., C-banks). However, S-bank shareholders face a personal income tax liability for their pro rata share of the bank's entire earnings – not just the portion distributed as dividends. S-banks have proliferated, however, because the dividends that they pay to shareholders are not taxed twice. S-banks are permitted to have no more than 100 shareholders, which generally restricts the election of S-status to small banks that do not anticipate rapid growth and whose shares do not trade publicly.

In an attempt to make after-tax earnings rates of S-banks comparable with those of C-banks, the Uniform Bank Performance Report produced by the Federal Financial Institutions Examination Council includes estimates of the federal corporate income taxes that S-banks would pay if subject to that tax. Using these estimates, this article shows that the different federal tax treatment of S- and C-banks has a quantitatively large impact on comparisons of mean after-tax profit rates across banks. Because most S-banks are smaller institutions, comparisons of mean after-tax rates of return across groups of different-size banks are especially problematic. If S-bank earnings are *not* adjusted to make them comparable with C-bank earnings, we find that mean earnings rates of groups of best-practice small banks compare favorably with mean earnings rates of large banks, similar to the results of DeYoung, Hunter and Udell (2004). However, we also find that mean earnings rates of best-practice small banks are considerably lower if S-bank earnings are adjusted by estimates of Federal income taxes, indicating that conclusions of studies that use net after-tax income as a measure of performance can be affected markedly by whether or not S-bank earnings rates are adjusted for taxes.

Our research also finds that S-banks tend to have higher rates of return than C-banks of similar size even when S-bank earnings rates are adjusted by the UBPR estimates of their hypothetical federal corporate income taxes. Smaller S-banks also tend to have higher pre-tax net operating income rates than similarly sized C-banks, mainly because of lower expenses and higher ratios of net non-interest income to assets, whereas larger S-banks tend to have higher net interest margin than C-banks of similar size. Owner/managers of S-banks generally prefer to receive income in the form of distributed earnings, rather than salary, to limit employment taxes. However, we find that lower

personnel expenses do not explain fully the tendency for S-banks to have higher pre-tax net operating income rates than C-banks. Finally, we find that C-banks that became S-banks in a given year tended to have higher after-tax rates of return in the year *before* they became an S-bank than other C-banks. This result suggests that characteristics other than election of Subchapter S tax status accounts for some of the tendency for S-banks to out-earn C-banks. The banks that choose S-bank tax status appear to be systematically different from other banks of similar asset size.

The growth in the number of banks electing Subchapter S tax treatment has seriously compromised the usefulness of standard after-tax return measures, such as ROA and ROE, for comparing profit rates across banks, and undoubtedly explains the increasing use of pre-tax earnings measures in studies of bank performance. Our study does not show that any particular measure of return is superior for comparing the profit rates of different banks as the ideal measure largely depends on the question at hand. The evidence reported here indicates that researchers and other analysts should exercise caution when using any profit measure to evaluate bank performance, however, particularly in light of the proliferation of S-banks.

References

Bassett, William F. and Thomas F. Brady, "The Economic Performance of Small Banks, 1985-2000," *Federal Reserve Bulletin*, November 2001, pp. 719-28.

Board of Governors of the Federal Reserve System. *Commercial Bank Examination Manual.* Washington, D.C., 2006. www.federalreserve.gov/boarddocs/SupManual.

Collier, Charles; Forbush, Sean; Nuxoll, Daniel A. and O'Keefe, John. "The SCOR System of Off-Site Monitoring: Its Objectives, Functioning, and Performance." *FDIC Banking Review*, 15 (3), pp. 17-32.

DeYoung, Robert; Hunter, William C. and Udell, Gregory F. "The Past, Present, and Probable Future for Community Banks." *Journal of Financial Services Research*, April/June 2004, 25 (2/3), pp. 85-134.

Harvey, James and Padget, Jane. "Subchapter S – A New Tool for Enhancing the Value of Community Banks." *Financial Industry Perspectives*, Federal Reserve Bank of Kansas City, 2000, pp. 17-31.

Hein, Scott E.; Koch, Timothy W. and MacDonald, S. Scott. "On the Uniqueness of Community Banks." *Economic Review*, Federal Reserve Bank of Atlanta, First Quarter 2005, pp. 15-36.

Keeton, William; Harvey, James and Willis, Paul. "The Role of Community Banks in the U.S. Economy." *Economic Review*, Federal Reserve Bank of Kansas City, Second Quarter 2003, pp. 15-43.

Landau, Zev. "Recent Reform and Simplifications for S Corporations." *The CPA Journal*, November 2005, pp. 46-50.

Whalen, Gary. "A Hazard Model of CAMELS Downgrades of Low-Risk Community Banks." Office of the Comptroller of the Currency, working paper 2005-1, May 2005.