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Profit efficiency in U.S. BHCs: Effects of increasing non-traditional revenue sources

Aigbe Akhigbe^a, Bradley A. Stevenson^{b,*}^a The University of Akron, Akron, OH, United States^b Bellarmine University, Louisville, KY, United States

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ABSTRACT

Using information multiple times across revenue streams, BHCs may increase efficiency due to economies of scope. Our main contribution is to be the first to examine noninterest income after passage of the Gramm-Leach-Bliley Act, when additional opportunities to increase noninterest income arise. We examine profit efficiency and its relationship to noninterest income for BHCs using stochastic frontier analysis and multivariate analysis on BHC data from 2003 to 2006. Contrary to our hypothesis, the results indicate multi-noninterest income types are associated with *decreased* profit efficiency. These results are robust using the Efficiency Ratio as our measure and are particularly strong for small BHCs.

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1. Introduction

There is a great deal of published theory explaining why banks exist. One common thread through most of the theoretical literature is the role of asymmetric information and the bank's ability to overcome asymmetric information. Pyle (1971) shows the importance of the interaction between assets and liabilities while Leland and Pyle (1977) develops a model where banks overcome asymmetric information to improve markets. A quintessential model of banking is developed in Diamond (1984) where he shows financial intermediaries minimize the cost of monitoring which proves useful for reducing incentive problems between borrowers and lenders. In addition, he shows diversification provided by intermediation is the key to reducing costs, even in a risk neutral economy. Using this notion, we propose that outside of the traditional banking model there is room for efficiency gains by diversifying across income types and reusing information that banks generate in their lending activities in the noninterest income arena including areas

more prominent after the Gramm-Leach-Bliley (GLB) Act such as underwriting, venture capital and insurance. Indeed, the main research contribution of this paper is that we are the first to focus on the post-GLB period when more sources of noninterest income are available. However, contrary to this hypothesis we find that less efficient bank holding companies (hereafter, BHCs) are more likely to have expanded into these non-traditional forms of revenue.

Many lines of research have looked at what makes banks special and why banks function as they do. Related to traditional banking activity, noting that CD rates paid by banks are equivalent to other comparable securities, Fama (1985) indicates that the reserve "tax" must be borne by the bank's borrowers.¹ Fama asserts that the borrowers bear this "tax" in the form of higher rates because of the monitoring service provided by banks. This monitoring service helps overcome the asymmetric information problem discussed by Leland and Pyle (1977). In James (1987), the CD finding of Fama (1985) is confirmed and excess, positive returns surrounding loan announcements also indicate there is something special about bank

* Corresponding author at: W. Fielding Rubel School of Business, Bellarmine University, 2001 Newburg Road, Louisville, KY 40205, United States.
Tel.: +1 502 452 8173.

E-mail address: b Stevenson@bellarmine.edu (B.A. Stevenson).

¹ Commercial banks holding reserves in their vault or at the Federal Reserve Bank do not earn income on those reserves. Thus this opportunity cost is often viewed as a "tax".

lending.² In a summary of this line of literature by James and Smith (2000), they note that banks add the most value in lending relationships with information sensitive borrowers. Indeed, the bank loan contract enhances the bank's monitoring ability due to the collateral, covenants and short maturity found in most bank loans.

While these more traditional theories, models, and empirical work focus mostly on lending behavior by banks, as chronicled in DeYoung and Rice (2004), more and more banks are relying on noninterest income that comes from activities other than lending. In their paper, they show that, for 2001, 29.89% of operating income for U.S. commercial banks larger than \$1 billion is composed on noninterest income. For commercial banks under \$1 billion in 2001, 16.38% of operating income is composed of noninterest income.

The question has been asked, "Does noninterest income benefit banks?" DeYoung and Rice (2004) suggest that while larger banks tend to rely more heavily on noninterest income, they also observe that better managed banks rely less on noninterest income. Their results indicate marginal increases in noninterest income are associated with higher and more variable profits and that increases in noninterest income decrease the risk return trade-off for commercial banks.

Also, Rogers (1998) shows that when measuring bank efficiency, not including noninterest income lowers the efficiency with higher degrees of noninterest income relative to other banks. This seems to imply that noninterest income is positively correlated with higher bank efficiency. DeYoung and Roland (2001) show an association between increases in fee based activity and an increase in volatility for earnings and revenue as well as higher leverage.

Recently, Stiroh and Rumble (2006) find that increasing the diversification of revenue streams for financial holding companies does not increase their performance as measured by profits. More specifically, they found lower risk adjusted profits with increases in noninterest income and that any diversification benefits were outweighed by the increased volatility of noninterest earnings. In addition, looking at small European credit institutions, Mercieca, Schaeck, and Wolfe (2007) find that increasing noninterest income does not improve performance. On the other hand, Baele, De Jonghe, and Vander Vennet (2007) find that higher levels of noninterest income increase the franchise value of European banks.

Of interest to us is the passage of the Gramm-Leach-Bliley Act. With the passage of the Gramm-Leach-Bliley of 1999 (GLBA), the players in the financial services industry were allowed to consolidate to a degree not seen since the passing of the Glass-Steagall Act of 1933.³ Since 1933, commercial and investment bank functions have been separated creating a specialized financial services industry in the United States. This degree of specialization in the financial services industry is different from the experience of most other countries (Benston, 1994). With the passage of the GLBA, the U.S. moved closer to its pre-1933 condition, and it fell more in line with other economies such as the European Union where many large U.S. banks now find their competitors. From the perspective of this paper, one consequence of the passage of the GLBA is that it makes additional types of noninterest revenue available to commercial banks. Since commercial banks may now engage in securities underwriting/brokerage, insurance, and other areas such as venture capital, it is important to understand the relationship

of these types of income to the efficiency of BHCs who use them compared to their peers.

As BHCs continue to engage in these previously restricted activities, given the conflicting evidence regarding increases in noninterest income cited in the above research, why have they chosen to do so? As Puri (1999) suggests in reference to underwriting, it is because banks can reuse information in underwriting that they already collect in lending. In her paper, Puri shows that banks may even better certifiers of quality than investment banks. Drucker and Puri (2005) show that combining lending and underwriting especially benefits security issuers who have a greater degree of asymmetric information. Not only that but it also encourages future relationships with the bank that ensure more business.

In addition to securities underwriting, Gramm-Leach-Bliley allows BHCs to further expand into other financial arenas such as insurance, investment management, and brokerage. Given the likelihood that BHCs will continue to expand their noninterest income, this paper addresses the following question: Does the increase in additional noninterest income types occur in instances of increased or decreased efficiency? In other words, does the use of additional noninterest income types put BHCs in a better position relative to their peers?

A contribution of this paper relative to previous efficiency studies on U.S. commercial banks is the use of data from the post-GLB period. With additional types of income at their disposal, we can reasonably expect increases in noninterest income from BHCs. Also, while previous work looks at noninterest income as a single item, here it is analyzed in its component parts. The first three income types are those allowed under the GLBA which include security underwriting/brokerage, venture capital revenue, and insurance (collectively these are referred to in this paper as non-traditional income). The fourth is "other" noninterest income that includes items such as check fees and fiduciary activities. Disaggregating the income this way allows us to examine the post-GLB data in a way that can show if one income type has a positive association and another type a negative association with efficiency. We may expect this because certain types of noninterest income may lend themselves more readily to the reuse of information than others.

The results of our analysis dispute the notion that increases in noninterest income will go hand in hand with increases in profit efficiency. Increases in underwriting/brokerage, venture capital and insurance, especially underwriting/brokerage income, have a significant negative relationship with profit efficiency. While we do find some evidence that increases in these income types may benefit large and medium BHCs' revenue efficiency, the overall results of our tests show that the benefits of economies of scope, on their own, are not great enough for BHCs to choose to increase their noninterest income. Our results suggest increases in these areas for any BHC should be undertaken for other, perhaps strategic, considerations besides efficiency.

The rest of the paper proceeds as follows. Section 2 presents motivation and hypotheses while Section 3 reviews the methodology. Section 4 discusses the data, Section 5 presents results, and Section 6 concludes.

2. Motivation and hypothesis

We gain additional insight into noninterest incomes relationship to efficiency by examining two previously unexplored pieces of evidence. First, we look the previously unexamined post-GLB period. Second, because we examine this period we can also examine noninterest income by type which includes new noninterest revenue streams available after GLB.

² Findings in subsequent empirical work such as Lummer and McConnell (1989), Slovin, Johnson and Glascock (1992), Best and Zhang (1993), Billett, Flannery, & Garfinkel (1995), Johnson (1997), and Hadlock and James (2002) confirm the findings on bank loan announcements and show that the effect is even more pronounced for informationally sensitive firms.

³ The Gramm-Leach-Bliley Act is also called the Financial Services Modernization Act of 1999.

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