

BANKING PROFITABILITY DETERMINANTS

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Abstract

Notwithstanding the enormously complex and dynamic nature of the environment in which they compete, there is a growing body of evidence that suggests it is possible to discern relevant indicators of profitability for the banking industry today. The purpose of this study was to develop an appropriate econometric model whereby the primary determinants of profitability of the top five bank holding companies in the United States could be examined and understood. To accomplish this purpose, an econometric model based on internal aspects of the banking organizations as they related to their return on assets and external aspects of the environment in which they compete as measured by growth in GDP was developed based on guidance provided by economists and industry experts to determine the impact of the external national economy of these five leading banks according to their size as measured by total assets. A critical review of the relevant peer-reviewed, scholarly and organizational literature is followed by an analysis of the statistical data for these bank holding companies using the econometric model. A summary of the research and salient conclusions are provided in the concluding chapter. **Key words:** Finance, Economics, Banking, Profits, Profitability Measurements.

The banking industry in general has experienced some profound changes in recent decades, as innovations in technology and the inexorable forces driving globalization continue to create both opportunities for growth and challenges for banking managers to remain profitable in this increasingly competitive environment. Most of the studies concerning bank profitability to date, including Short (1979), Bourke (1989), Molyneux and Thornton (1992), Demircuc-Kunt and Huizinga (2000) and Goddard, Molyneux, and Wilson (2004b), have employed different linear models to estimate the impact of various factors that could be significant in terms of explaining profits. According to Athanasoglou and his colleagues (2005), these studies were seminal in demonstrating the feasibility of conducting a meaningful analysis of the determinants of bank profitability, but some of the methods used by these studies failed to take into account the robust and dynamic nature of the economic environment in which they competed. Moreover, the studies to date have primarily considered determinants of profitability at the bank and/or industry level, with the choice of variables used lacking internal consistency in some instances; in addition, there

has been a dearth of research concerning the potential influence of the macroeconomic environment, due in part to the small time dimension of the panels used in the estimation (Athanasoglou et al., 2005).

Other factors that have constrained the research to date include the fact that the econometric methodology used in the study was not adequately described and/or failed to account for some features of bank profits which suggest that the estimates obtained by these studies may have been biased or inconsistent (Athanasoglou et al., 2005). Nevertheless, studies have amply demonstrated the ability of models to better understand what fuels profitability in financial services organizations, and this represents the purpose of the study which is described further below.

The general purpose of this study was to develop an appropriate econometric model whereby the primary determinants of profitability of the top five bank holding companies in the United States could be examined and understood. The specific purpose of this study was to determine the impact of the external environment in which the five leading bank holding companies in the United States (as of June 2007) as measured by real growth in GDP

compared to internal aspects of the respective organizations as measured by their return on assets as an indicator of profitability.

This study reviewed the peer-reviewed, scholarly and organizational literature as it applied to the banking industry in general and to the United States in particular to identify recent trends, determinants of profitability for financial services organizations, and to provide the requisite background to developing a straight-forward econometric model that could be used to analyze bank-level data for the nation's five leading bank holding companies as measured by total assets.

According to Goddard and his colleagues (2004a), in spite of the growing body of research into determinants of banking profitability, there remains a paucity of studies that have investigated the specific relationship between organizational size and its impact on profitability. These authors report that, "Previous studies of the dynamics of growth on the one hand, and profit on the other, have in the main developed separately, and followed contrasting empirical methodologies. Nevertheless, there are several theoretical arguments to suggest that these two performance indicators are closely related. [However], few researchers have tested for empirical relationships between growth and profit directly" (Goddard et al., 2004a p. 1069). Moreover, as Cover (1999) emphasizes, the need for identifying determinants of profitability in the banking industry has never been greater: "As banks move into the twenty-first century, they must focus more than ever before on creating new streams of revenue in order to shareholder value. Crucial to this effort is the need to assess and analyze the profitability of the bank's current customers, relationships, services, and products. It is only through such analyses that banks can determine which customers to fight for, which customer relationships to expand, and which prospective customers to pursue" (p. 78).

The rationale that guided this study was that the larger the bank holding company, the more impervious it would be to downturns in the external environment as measured by real growth in GDP. Larger financial services companies enjoy a wide range of advantage by virtue of economies of scale, accumulated tacit knowledge and expertise as well as the resources needed to continue their expansions into foreign markets where barriers to entry may be prohibitive for smaller players in the market. For example, according to Goddard, Molyneux and Wilson (2004), "Previous studies of the determinants of concentration have proposed various explanations as to why some firms grow and attain large size. These include economies of scale or scope, efficiency

gains attained through size, the adoption of entry-detering strategies, or the exercise of other forms of market power" (p. 1069). Likewise, as noted above, a number of studies have demonstrated the feasibility of using bank-level data to investigate profitability determinants. In addition, the research to date also suggests that banking firms are one of the best places to test for the effects of various profitability factors such as technological innovation. In this regard, Berger and Deyoung (2006) emphasize that, "Banks have embraced substantial advances in both physical and financial technologies during the past two decades, and the broader industry category of which banking is a part, Depository and Nondepository Financial Institutions, is the most information technology-intensive industry in the United States" (p. 1483).

This study used a five-chapter format to achieve the above-stated research goals. The first chapter introduced the topics under consideration and provided a statement of the importance of the study, its importance and scope, as well as its supporting rationale. The second chapter of the study consists of a critical review of the relevant peer-reviewed, scholarly and organizational literature. The third chapter more fully describes the econometric methodology used to analyze the profitability of the top five banks in the United States today, and chapter four presents the analysis of the data. Finally, chapter five provides a summary of the research, salient conclusions and recommendations.

Review of Related Literature

Background and Overview.

On the one hand, the banking industry today enjoys a number of advantages compared to past years that would appear to contribute to their ability to generate profits. According to Berger and Deyoung (2006), the banking industry in the United States has been in a constant process of geographic expansion in recent years, both within nations and across nations. These authors report that, "At one time, nearly all customers were served by locally based institutions. In contrast, it is now much more likely that the bank or branch providing services is owned by an organization headquartered a substantial distance away, perhaps in another state, region, or nation" (p. 1483).

As an example, these authors note that between 1985 and 1998 the distance between the largest bank and the other affiliate banks in U.S. multibank holding companies (MBHCs) increased by over 50 percent on average, from 123.35 to 188.91 miles, as a number of MBHCs acquired

banks in other states and regions (Berger & Deyoung, 2006). Moreover, the banking industry, like any other industry, will experience potential diseconomies to geographic expansion in the form of agency costs associated with monitoring junior managers in a distant locale; however, innovations in information processing and telecommunications may lessen these agency costs by improving the ability of senior managers located at the organization's headquarters to monitor and communicate with staff at distant subsidiaries (Berger & Deyoung, 2006).

In the modern banking industry, technologies such as ATM networks and transactional Internet websites allow banks to interact more efficiently with their customers regardless of geographic proximity; furthermore, recent innovations in financial technologies provide the capacity to provide these services using long-distance interfaces with customers. According to Berger and Deyoung, "Greater use of quantitative methods in applied finance, such as credit scoring, may allow banks to extend credit without geographic proximity to the borrower by 'hardening' their credit information" (p. 1483). Likewise, new product mixes of financial engineering, such as derivative contracts, may provide banks of all sizes to unbundle, repackage, or hedge risks at lower costs without regard to the geographic proximity to the other party (Berger and Deyoung, 2006). These financial innovations may also provide senior banking managers with the ability monitor the decisions made by loan officers and managers at distant affiliate banks more easily, and to evaluate and manage the contributions of individual affiliate banks to the organization's overall returns and risk more efficiently as well (Berger & Deyoung, 2006).

On the other hand, these same trends have introduced some additional constraints on the banking industry as they seek to maintain their existing market share and grow their companies along multinational lines. In this regard, Saunders and Walter (1998) report that, "Financial systems that are deemed inefficient or incomplete are characterized by a limited range of financial services and obsolescent financial processes. Both static and dynamic efficiency are of obvious importance from the standpoint of national and global resource allocation, not only within the financial services industry itself but also as it effects users of financial services" (p. 19). In other words, because financial services can be regarded as being "inputs" to the overall production process of a country, the level of national output and income -- as well as its rate of economic growth -- are directly affected by the efficiency characteristics of the financial services sector (Saunders and Walter, 1998).

A "retarded" financial services industry, in this sense, can represent a major impediment to a nation's overall real economic performance. Such retardation represents a burden on the final consumers of financial services and potentially reduces the level of private and social welfare. It also represents a burden on producers, by raising their cost structures and diminishing their competitive performance in domestic and global markets (Saunders and Walter, 1998). Therefore, any such retarded financial services industry skews the trends involved in the resource allocation in the national economy.

Financial system inefficiencies can be traced to a number of factors:

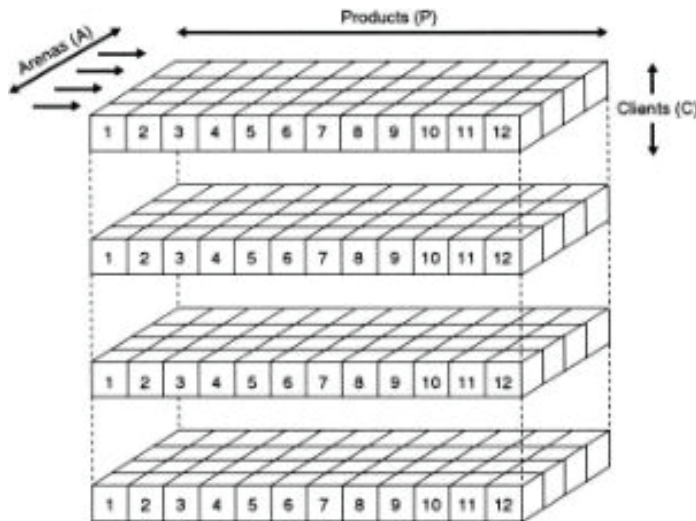
1. Regulations that prevent financial firms from complete access to alternative sources of funding or the full range of borrowers and issuers;
2. Taxation imposed at various stages of the financial intermediation process, including securities transfer taxes, transactions taxes, etc.;
3. Lack of competition that reduces incentives to cut intermediation costs and promote innovation;
4. Lack of market discipline imposed on owners and managers of financial intermediaries, leading to poor risk management, agency problems, and increased costs; and,
5. Existence of major information imperfections among contracting parties (Saunders and Walter, 1998).

National financial systems that are statically and/or dynamically inefficient tend to be disintermediated. Borrowers or issuers in a position to do so seek foreign markets or offshore markets that offer lower costs or a more suitable range of products. Investors likewise seek markets abroad that offer higher rates of return or improved opportunities to construct more efficient portfolios. These types of systems can be described as being either "uncompetitive" or "unattractive" as venues for financial intermediation in the context of global markets; nevertheless, individual financial services institutions may be able to cross-subsidize foreign activities from abnormal profits earned domestically for a period of time (Saunders and Walter, 1998).

The delivery of financial services can be conceptualized as a market structure that combines three principal dimensions in the delivery of financial services in terms of the clients served (C), the geographic arenas where business is done (A), and the products supplied (P) (Saunders and

Walter, 1998). In this regard, Figure 1 below illustrates these dimensions in the form of a matrix of C X A X P cells wherein individual cell characteristics can be analyzed in terms of conventional competitive structure criteria.

Figure __. The Client-Arena-Product (C-A-P) Matrix.



Source: Saunders and Walters, 1998 at p. 20.

The inherent attractiveness of each cell to the suppliers of financial services is inextricably related to the size of the prospective risk-adjusted returns that can be extracted from it; in addition, the durability of returns generated will depend on the ability of new players to enter the cell and the development of substitute products over time (Saunders and Walters, 1998). Based in large part on recent innovations in technology and financial deregulation, competitors in the financial services industry are confronted with expanded potential access to each dimension of the C-A-P opportunity set (Saunders and Walters, 1998)

To achieve maximum profitability, these authors recommend that financial services companies allocate their available resources to those C-A-P cells in Figure 1 that promise to provide them with the highest risk-adjusted returns. According to these authors, though, “In order to do this, they will also have to allocate capital, costs, returns, and risks appropriately across cells. Beyond this, however, the economics of supplying financial services internationally is jointly subject to economies of scale and economies of scope. The existence of both types of economies have strategic implications for players in the industry; indeed, economies of scale suggest an emphasis on deepening the activities of individual firms within a cell, or across cells in the product dimension” (emphasis added) (Saunders and Walter, 1998 p. 21).

Moreover, economies of scope indicate there has been an effort made to broaden financial services activities across cells; in other words, a bank can produce a given level of output in a given cell more inexpensively or market it more effectively than institutions that are less active across such multiple cells; however, this depends on the benefits and costs of linking cells together in a coherent fashion (Saunders and Walter, 1998).

In this regard, regulation of financial services can be viewed as having an important influence in terms of:

1. Accessibility of geographical arenas;
2. Accessibility of individual client groups by players originating in different sectors of the financial services business; and,
3. Substitutability among financial products in meeting personal, corporate, or government financial needs (Saunders and Walter, 1998).

Financial intermediaries are clearly sensitive to incremental competition in C-A-P cells as illustrated in Figure __ above, particularly where economic entry barriers are limited (Saunders and Walter, 1998). Furthermore, “Market penetration by competitors can erode indigenous players' returns and raises protectionist motivations. Given the economic interests involved, banks and other financial institutions are in an excellent position to convert them into political power in order to achieve protection against potential rivals. They are often exceedingly well connected politically, and their lobbying power motivated by protectionist drives can be awesome” (Saunders and Walter, 1998 p. 21).

Competitive distortions in the financial services industry take the form of entry barriers and operating restrictions. In terms of Figure 1 above, entry barriers tend to restrict the movement of financial services firms in the lateral "arenas" dimension of the matrix; a financial services organization that is locked out of a particular national market does not enjoy the same level of lateral opportunity set that excludes the relevant segment of "client" and "product" cells (Saunders and Walter, 1998).

Assuming that a financial services organization has successfully gained access to a particular arena, there are a number of operating restrictions that carry the potential to constrain either the depth of service it can supply to a particular cell (e.g., lending limits, staffing limits, restrictions on physical location) or in the feasible set of cells within the tranche (e.g., limits on services banks or securities firms are allowed to supply and the client groups

they are allowed to serve). Operating restrictions in turn can be subclassified in terms of whether they place limits on the kinds of financial services that may be sold locally (Type A) or the specific client-groups that may be served (Type B). According to these authors, “Operating limits may severely reduce profitability associated with the arena concerned, while creating significant excess returns for the protected industry; regulators may also tolerate a certain amount of anticompetitive, cartel-like behavior on the part of domestic financial institutions” (Saunders and Walter, 1998 p. 21).

Economies of scope and scale may be significantly constrained by entry and operating restrictions in a particular market, indicating the importance of the impact of competitive distortions on horizontal integration in the financial services industry. Under universal banking structures the entire C-A-P matrix is available to financial institutions in terms of their competitive positioning and execution, providing the potential -- absent anticompetitive behavior -- for maximum static and dynamic efficiency in the financial system. Restrictions on entry by "fit and proper" players, regardless of whether they are domestic or international, as well as limits on the business that may be done and the clients that may be served, represent a significant threat for eroding the domestic and international performance of financial institutions and of the national economy as a whole (Sanders and Walters, 1998 p. 22).

As noted above, consolidation by acquisition or otherwise in the banking industry in the United States from 1980 to 2000 is one of the most significant changes to affect the industry in recent years (Gup, 2003). In their recent study, “Competition from Large, Multimarket Firms and the Performance of Small, Single-Market Firms: Evidence from the Banking Industry,” Berger and his colleagues (2007) report that, “Over the last two decades, retail banking in the U.S. has changed dramatically. Large banks that branch across multiple local markets have significantly increased their share of local markets, and small banks that operate in a single market have experienced substantially reduced local market shares” (p. 331). In 1982, large, multimarket banks--banks with gross total assets (GTA) over \$1 billion (real 1994 dollars) with branch offices in more than one local market held 23 percent of local deposits in U.S. metropolitan markets; however, by 2000, this figures had almost tripled to 65 percent (Berger et al., 2007). During this same time period, shares in these markets of small, single-

market banks (GTA [less than or equal to] \$1 billion, offices in only one market) decreased by approximately two-thirds from 60 percent to 19 percent (Berger et al., 2007).

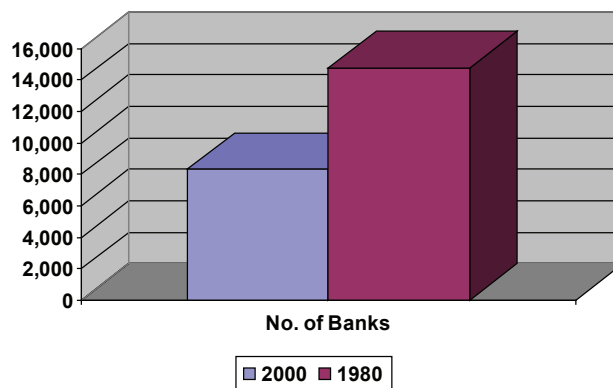
As shown in Table 1 below, the number of banks decreased by more than 6,000, while the percentage of total assets held by the largest banks doubled; as a result, 82 large banks representing less than 1 percent of the total number of banks now hold more than two-thirds of all bank assets:

Table 1. Banking Structure in the United States.

Year	No. of Banks	Total Assets (\$ Billion)	No. of Banks w/Assets>\$10 Billion	% of Assets Held by Large Banks
2000	8,315	\$6.2	82	70%
1980	14,769	\$1.9	18	34%

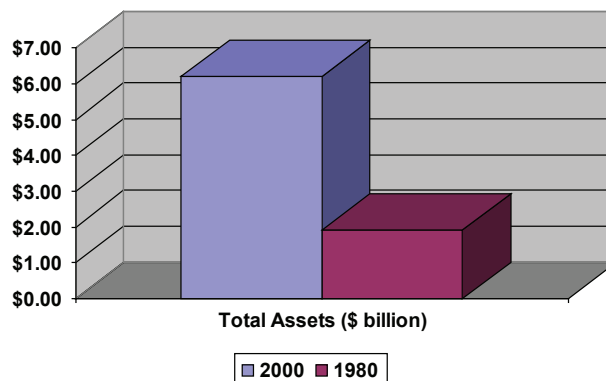
Source: FDIC cited in Gup, 2003 at p. 2.

Figure 2. No. of Banks in the United States: 2000 versus 1980



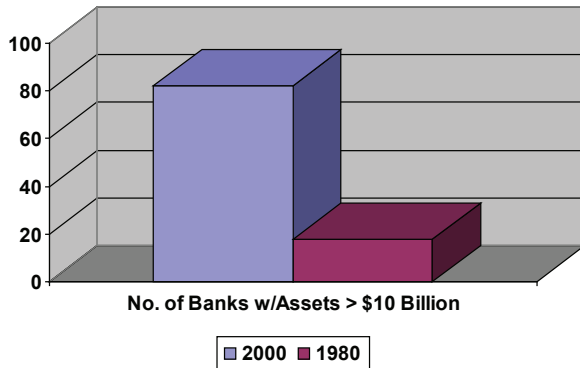
Source: Based on tabular data cited in Gup, 2003 at p. 2.

Figure 3. Total Assets of Banks in the United States (in \$ billion): 2000 versus 1980.



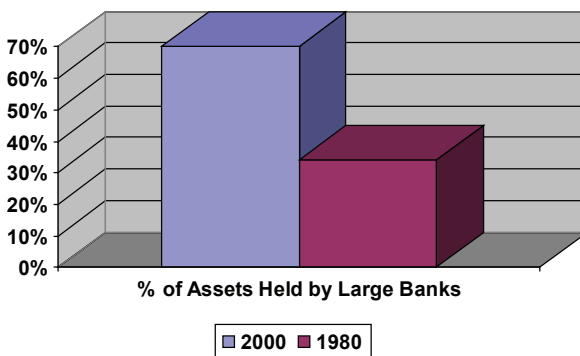
Source: Based on tabular data cited in Gup, 2003 at p. 2.

Figure 4. No. of Banks in the United States with Assets Greater than \$10 billion: 2000 versus 1980.



Source: Based on tabular data cited in Gup, 2003 at p. 2.

Figure 5. Percentage of Assets Held by Large Banks in the United States: 2000 versus 1980.



Source: Based on tabular data cited in Gup, 2003 at p. 2.

According to Toyne and Tripp (1998), reductions in regulatory restrictions on interstate bank mergers and increased profitability in the banking industry have resulted in higher levels of merger and acquisition activity in the United States in recent years. The trend towards consolidation in the banking industry, though, is certainly not unique to the United States. For example, a study by the central banks of the Group of Ten Nations (G-10) identified a high level of concentration in all of the 13 countries they investigated (Gup, 2003). These consolidations have been the result of the following:

1. Deregulation of geographic markets;
2. Shifts in financial technology (e.g., securitization and derivatives);

3. Innovations in communications technology;
4. Changes in information technology;
5. The desire to achieve economies of scale;
6. High stock prices used as currency in mergers, and,
7. Other factors (Gup, 2003).

In general, the consolidation involves large banks within one country, cross-border bank consolidations, and consolidations between banks and other types of financial institutions (Gup, 2003). Some of the “other factors” identified by Gup (2003) above include the need to respond to new competition from smaller bank that are able to market higher profit products more efficiently than their larger counterparts. These and others determinants of bank performance are discussed further below.

Determinants of Bank Performance.

While virtually all of the studies reviewed herein emphasize the need for yet more studies, there has been a growing body of evidence concerning the ability of researchers to identify accurate determinants of bank performance in recent years. Most of the studies on the determinants of bank’s interest margin and profitability have focused whether on a particular country (Berger, 1995; Guru et al., 2002; Barajas et al., 2001; Ben Naceur and Goaid, 2001) or on a panel of countries (Abreu and Mendes, 2002; Demergu -Kunt and Huizingha, 1999). The empirical evidence for the United States has largely been compiled by Berger (1995), Neeley and Wheelock (1997) and Angbazo (1997) (all cited in Ben Naceur, 2003).

One study by Berger (1995) investigated the relationship between the return on equity and the capital asset ratio for a sample of banks in the United States for the period 1983-1992; using the Granger causality model, this researcher determined that the return of equity and capital to asset ratio tend to be positively related. Similarly, Neeley and Wheelock (1997) studied the profitability of a sample of insured commercial banks in the US for the 1980-1995 period. These researchers determined that bank performance is positively related to the annual percentage changes in the state’s per capita income. Likewise, Anghazo (1997) studied the determinants of bank net interest margins for a representative sample of banks in the United States for the period 1989-2003; the findings of that study showed that default risk, the opportunity cost of non-interest bearing reserves, leverage and management efficiency are also

all positively associated with bank interest spread (Ben Naceur, 2003).

Table 2 below provides a recapitulation of comparable studies of profitability indicators in the banking industry in general, and in the United States in particular.

Table 2. Recapitulation of Profitability Determinants in the Banking Industry.

Author/Date/Title/Publication	Key Findings	Comments
Spindler, J. Andrew, Jonathan T. B. Howe, and David F. Dedyo. (1990, May). "The Performance of Internationally Active Banks and Securities Firms Based on Conventional Competitiveness Measures". Federal Reserve Bank of New York, Mimeo.	In terms of size, U.S. banks fell consistently throughout the period, especially against their Japanese competitors. The same approximate pattern emerged with respect to revenue growth. (The authors note that while a significant component of this "size effect" is attributable to the decline in the value of the dollar against the yen and other major currencies over the period.) They performed slightly below the sample mean on ROA, well below their Swiss, British, and Japanese counterparts. The same was true of ROE in comparison with Japanese and French banks. In terms of productivity, U.S. banks fell into the middle of the range. On capitalization, U.S. banks were high in the rankings on the first measure cited above, but well behind Japanese, German, and Swiss banks on the second.	The authors report the results of a study by the Federal Reserve Bank of New York attempted to assess the performance of 51 banks and securities firms based in various countries (the United States, Canada, France, Germany, Japan, Switzerland, and the United Kingdom) that were internationally active during the second half of the 1980s. The performance measures used include firm size (total assets and total revenue, in real terms); profitability (return on assets [ROA] and return on equity [ROE]); productivity (ratio of total revenue to total non-interest expense); and capitalization (as measured by the ratio of shareholder equity to total assets, and the ratio of market capitalization to reported earnings).
Goddard, John, Phil Molyneux and John O.S. Wilson. (2004). "Dynamics of Growth and Profitability in Banking." <i>Journal of Money, Credit & Banking</i> , 36(6), 1069.	Empirical research concerning the dynamics of company profitability is based on an account of the determinants of profit that is an alternative to the essentially static Structure-Conduct-Performance (SCP) paradigm; however, although the relevant microtheory identifies SCP relationships applicable when markets are in equilibrium, there is no certainty that a profit figure observed at any point in time represents an equilibrium value.	The hypotheses tested in the persistence of profit (POP) literature are that entry and exit are sufficiently free to eliminate any abnormal profit quickly, and that all firms' profit rates tend to converge to the same long-run average value. The alternative is that some firms possess special knowledge or other advantages enabling them to prevent imitation or block entry. If so abnormal profit may tend to persist from year to year, and differences in average profit rates may be sustained indefinitely. Empirical tests of the POP hypothesis in banking are few in number; however, recent studies have presented extensive evidence of POP in U.S. banking.
Stiroh, Kevin J. (2004). "Diversification in Banking: Is Noninterest Income the Answer?" <i>Journal of Money, Credit & Banking</i> , 36(5), 853.	These researchers conclude that the banking industry is the U.S. is steadily shifting away from traditional sources of revenue such as loan making and toward activities that generate fee income, service charges, trading revenue, and other types of noninterest income; while noninterest income has always played an important role in banking revenue, there is a clear trend that it is gaining importance. By 2001, noninterest income represented 43% of net operating revenue (net interest income plus noninterest income), an increase from just 25% in 1984. Also note that, "banks with higher noninterest income shares have lower profitability per unit of risk" (p. 853).	The shift toward noninterest income has contributed to higher levels of bank revenue in recent years; there is also an indication that it will lower the volatility of bank profit and revenue and reduce risk.
Kaushik, Surendra K. and Raymond H. Lopez. (1996) "Profitability of Credit Unions, Commercial Banks and Savings Banks: A Comparative Analysis." <i>American Economist</i> , 40(1), 66.	Commercial banks and credit unions experienced growth in assets faster than growth in loans during the 1990s; as a result, their investment portfolios have been increasing in absolute and relative size. "This tends to hold down profitability since margins on loans are greater than those on investments" (p. 67).	Authors also determined that credit union loan portfolios have grown more rapidly than either commercial banks' or savings institutions' in recent years, and their net interest margins have consistently been above banks.
Prendergast, C. (1993, March). "The Provision of Incentives in Firms." <i>Journal of Economic Literature</i> , 7, 63.	Studies have shown that some incentive structures may result in dysfunctional behavior; this may occur more frequently when incentives within regulated financial services companies relate to volume and create a clear bias towards writing business.	Bank managers may be rewarded by the volume of loans rather than their risk-adjusted profitability; numerous instances of bank distress have been related to inappropriate incentive structures that created a bias in favor of the bank's balance sheet growth.
Grigorian, David A. and Vlad Manole. (2006). "Determinants of Commercial Bank Performance in Transition: An Application of Data Envelopment Analysis." <i>Comparative Economic Studies</i> , 48(3), 497.	One of the methods used in the literature to evaluate productivity and performance of banks is the data envelopment analysis (DEA), a non-parametric method that provides a framework in which it is possible to account for a wide range of functions performed by the banks.	This method compares relative performance of decision-making units (DMU) (i.e., banks) by constructing a frontier comprised of the most efficient DMUs and focusing on how close other DMUs are to this frontier.
Hasan, Iftekhar and William C. Hunter. (1996). "Management Efficiency in Minority- and Women-Owned Banks." <i>Economic Perspectives</i> , 20(2), 20.	Studies comparing the economic performance of smaller minority- and nonminority-owned banks have generally shown that the minority-owned banks have tended to be smaller, somewhat less profitable, and more expenditure prone than comparable groups of nonminority banks.	Previous studies reported that smaller minority-owned banks tended to operate with lower ratios of equity capital to assets, to employ more conservative asset portfolio management policies, and to post higher loan losses than their nonminority peers.
Li, Shaomin, Yigang Pan and David K. Tse. (1999). "The Impact of Order and Mode of Market Entry on Profitability and Market Share." <i>Journal of International Business Studies</i> , 30(1), 81.	Large firms have more resources to invest in innovation, pursue more aggressive expansion strategies, and perform better; in addition, large firms benefit from economies of scale, scope, and learning. "In short, large firms tend to perform better holding other factors constant" (p. 81).	Financial services' profitability and market share performance are determined by a number of different factors and the size of firms has long been of interest to business researchers.

Author/Date/Title/ Publication	Key Findings	Comments
Cover, Jerry. (1999). "Profitability Analysis - A Necessary Tool for Success in the 21st Century." ABA Banking Journal, 91(2), 78.	"Pareto's Curve," or the so-called 80/20 rule, holds that 80 percent of all business activity results from 20 percent of current customers; however several recent studies reveal that in the banking business, the ratio is even more extreme. One study found that 15 percent of a bank's customer base is responsible for 85 percent of its profitability. In the small business banking industry, the ratio is even more pronounced with fewer than 10 percent of a bank's relationships produce 90 percent of its profits. In a typical retail portfolio, 20 percent of accounts contribute profits equaling 200 percent of the overall return, while up to half of the accounts generate losses.	"The real winners will be those banks who take advantage of this window of opportunity. Clearly, it is a window, because other banks and non-bank competitors are focusing on those same customers" (p. 78).
Frieder, Larry A. (1991). "Determinants of Bank Acquisition Premiums: Issues and Evidence." Contemporary Policy Issues, 9(2), 14.	This study found that both the internal factors of returns on equity (ROE) of the target organization and the external factor of the market growth rate of the target's state (as measured by deposit growth and projected population growth) were significant positive determinants of a bank's capacity for expansion and growth.	It is also possible to measure a financial services company's profitability by using either return on assets (ROA), ROE, the ratio of operating earnings to assets, or the net interest spread to assets.
Berger, Allen N., Astrid A. Dick, Lawrence G. Goldberg and Lawrence J. White. (2007). "Competition from Large, Multimarket Firms and the Performance of Small, Single-Market Firms: Evidence from the Banking Industry." Journal of Money, Credit & Banking, 39(2-3), 331.	Under the efficiency hypothesis, technological progress in the 1990s significantly improved the performance of large, multimarket banks relative to small, single-market banks; therefore, a greater presence of large, multimarket banks exerted more competitive pressure and had more deleterious effects on the performance of small, single-market banks in their markets in the second period, 1991-2000, than in the first period, 1982-90. The more intense competition from large, multimarket banks in the second time period may be manifested in decreased revenues for small, single-market banks (e.g., lower fees or rates on loans, lower fees on deposits) and/or increased expenses (e.g., higher rates on deposits, additional expenses on advertising or quality to retain customers).	Authors note that the relevant research on bank size and performance in the U.S. includes studies of cost and revenue performance, as well as the abilities of banks of different sizes to provide retail services in which both large and small banks compete, such as loans to small businesses and deposits.

Having established some of the important determinants of profitability for the banking industry today, a review of the leading bank holding companies in the U.S. today is in order, and this review is provided below.

Review of Top Five Bank Holding Companies in the United States Today.

The top five banking holding companies in the United States today by consolidated assets are, respectively, Citigroup Inc., Bank of America Corporation, JPMorgan Chase & Co., Wachovia Corporation and Wells Fargo & Company. These companies' respective rank in the banking industry, city and state of their headquarters, and total, are shown in Table 3 and Figure 6 below.

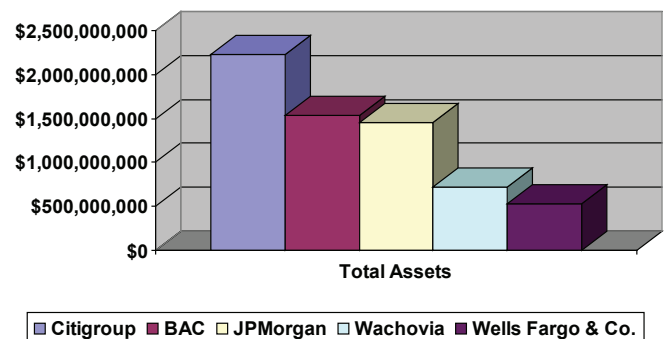
Table 3. United States' Largest Bank Holding Companies (as of June 30, 2007).

Rank	Institution Name	Location	Total Assets
1	Citigroup Inc.	New York, NY	\$2,220,866,000
2	Bank of America Corporation	Charlotte, NC	\$1,535,684,280
3	JPMorgan Chase & Co.	New York, NY	\$1,458,042,000
4	Wachovia Corporation	Charlotte, NC	\$719,922,000
5	Wells Fargo & Company*	San Francisco, CA	\$539,865,000

Note: As of June 30, 2007, Taurus Corporation was listed as the 5th largest bank holding company by the Federal Reserve; however, in 2003, Taurus changed its organization from a Bank Holding Company to a Financial Holding Company – Domestic (see http://www.ffiec.gov/nicpubweb/nicweb/InstitutionHistory.aspx?parID_RSSD=2816906&parDT_END=99991231), and was therefore replaced with the next top BHC, Wells Fargo & Company, for the purposes of this analysis; a list of the top fifty bank holding companies in the U.S. as of June 2007 is provided at Appendix A.

Source: Federal Reserve National Information Center; 2007.

Figure 6. United States' Largest Bank Holding Companies (as of June 30, 2007).



Source: Based on tabular data from Federal Reserve National Information Center; 2007.

Overview of Top Five Bank Holding Companies in the United States (as of June 2007).

An overview and brief description of the top five bank holding companies in the United States as of June 2007 is provided below, followed by a recapitulation of management summaries from each bank holding company’s most recent Form 10-Q filing with the Securities and Exchange Commission (SEC).

Citigroup Inc.

Citigroup, Inc. (hereinafter “Citigroup” or alternatively, “the bank”) was established in 1812 and is headquartered New York City (Citigroup, 2007). Citigroup provides a wide range of financial services to its domestic and international customers through the following business segments.

Business Segment	Description
Global Consumer segment	This segment features banking, lending, insurance, and investment services; as of March 31, 2007, this business unit boasted a network of 8,140 branches, about 19,100 automated teller machines, 708 automated lending machines, and the Internet.
Markets and Banking	This segment is responsible for the provision of various investment and commercial banking services and products; these services consist of investment banking and advisory services, debt and equity trading, institutional brokerage, foreign exchange, structured products, derivatives, and lending (Citigroup, 2007). The bank also provides cash management and trade finance for corporations and financial institutions; custody and fund services to insurance companies and pension funds; clearing services to intermediaries; and depository and agency/trust services to multinational corporations and governments (Citigroup, 2007).
Global Wealth Management	This segment of the bank offers investment advice, financial planning, and brokerage services to affluent individuals, companies, and non-profit organizations (Citigroup, 2007). This segment also provides wealth management services for its high net worth clients, including investment management, such as investment funds management, capital markets solutions, trust, fiduciary, and custody services; investment finance that comprises credit services, such as real estate financing, commitments, and letters of credit; and banking services, which consist of deposit, checking, and savings accounts, as well as cash management and other banking services (Citigroup, 2007).
Alternative Investments	The bank’s Alternative Investments segment manages products across five asset classes, such as private equity, hedge funds, real estate, structured products, and managed futures (Citigroup, 2007).

Bank of America Corp.

Bank of America Corporation was established in 1874 and is currently headquartered in Charlotte, North Carolina (Bank of America, 2007). Bank of America Corporation competes today through its banking and non-banking subsidiaries as a provider of financial services and products throughout the United States and in selected international markets (hereinafter “the bank” or alternatively, “the bank” or “Bank of America”). Through its banking and nonbanking subsidiaries, the bank and its subsidiaries provide a diverse range of financial services and products throughout the U.S. and in selected international markets (Bank of America, 2007). As of June 30, 2007, the Bank of America operated its banking activities under two primary charters: (a) Bank of America, National Association (Bank of America, N.A.) and (b) FIA Card Services, N.A. (Form 10-Q, 2007).

The bank competes through three business segments as shown in Table 5 below.

Table 5. Bank of American Business Segments.

Business Segment	Description
Global Corporate and Investment Banking	This segment provides commercial and corporate bank loans, indirect consumer loans, commitment facilities, real estate lending products, and leasing and asset-based lending products for banking clients, middle market commercial clients, multinational corporate clients, public and private developers, homebuilders, and commercial real estate firms; advisory services, financing, and related products for institutional investor clients in support of their investing and trading activities; debt and equity underwriting, merger-related advisory services, and risk management solutions; and treasury management, trade finance, foreign exchange, short-term credit facilities, and short-term investing options for correspondent banks, commercial real estate firms, and governments.
Global Consumer and Small Business Banking	This segment provides savings accounts, money market savings accounts, certificate of deposits, individual retirement accounts, and regular and interest-checking accounts; consumer cards, business cards, debit cards, international cards, and merchant services; mortgage products for home purchase and refinancing needs; insurance services; and lines of credit and home equity loans.
Global Wealth and Investment Management.	This segment features wealth management and retail brokerage services, as well as asset management services, including mutual funds, liquidity strategies, and separate accounts.

As of July 30, 2007, the company operated approximately 5,700 retail banking offices and 17,000 automated teller machines (Bank of America, 2007).

J. P. Morgan Chase & Company.

The company was established in 1823 and is currently headquartered in New York, New York (JPMorgan, 2007). According to its company profile, JPMorgan Chase & Co. (hereinafter “the company” or alternatively, “the bank”), through its subsidiaries, provides a range of financial services worldwide (JP Morgan, 2007). The bank currently operates through six segments as shown in Table 6 below.

Table 6. JP Morgan Business Segments.

Business Segment	Description
Investment Bank	This segment offers investment banking products and services, such as advising on corporate strategy and structure, capital raising in equity and debt markets, risk management, market-making in cash securities and derivative instruments, and research. It serves corporations, financial institutions, governments, and institutional investors.
Retail Financial Services	This segment provides regional banking services, including consumer and business banking, home equity lending, and education lending, as well as offers mortgage banking and auto finance services.
Card Services	This segment issues credit cards, and general-purpose cards to individual consumers, small businesses, and partner organizations, including cards issued with AARP, Amazon, Continental Airlines, Marriott, Southwest Airlines, Sony, United Airlines, and Walt Disney Company brands.
Commercial Banking	This segment provides lending, treasury services, investment banking, and asset management services to corporations, municipalities, financial institutions, and not-for-profit entities.
Treasury and Securities Services	This segment provides transaction, investment, and information services to institutional clients. It also offers custodian services and cash management solutions, including trade finance and logistics solutions, wholesale card products, and liquidity management services.
Asset Management	This segment provides investment and wealth management services to institutions, retail investors, and high-net-worth individuals. It offers global investment management services; trust, estate, and banking services; and retirement services (JPMorgan, 2007).

Wachovia Corp.

The parent company, Wachovia Corporation, engages in capital management, the general bank, wealth management, and the corporate and investment bank businesses. Wachovia (hereinafter “the company” or alternatively, “the

bank”), provides a range of commercial and retail banking, as well as a range of trust services through its full-service banking offices in the U.S. (Wachovia, 2007).

The bank provides its customers with a full range of checking, savings, check card, foreign currency, annuities, life insurance, brokerage account transfers, CAP accounts, individual retirement accounts, credit cards, home equity, mortgage, hazard and flood insurance, escrow, taxes, private mortgage insurance, education loans, online services, online banking, online bill pay, and online brokerage services (Wachovia, 2007). Wachovia was established in 1879 and is currently headquartered in Charlotte, North Carolina (Wachovia, 2007).

The company also provides various other financial services, including mortgage banking, investment banking, estate planning, investment advisory, asset management, credit and debit card products, trust services, charitable services, mortgage banking, asset-based lending, leasing, insurance, and international and securities brokerage services. In addition, it engages in equity and debt underwriting activities, private equity investment activities, derivative securities activities, investment and wealth management advisory businesses, and brokerage activities. As of June 1, 2006, Wachovia operated 3,159 offices in 16 states, as well as operated 40 offices internationally. The company reports assets of approximately \$541.8 billion, as of June 1, 2006 (Wachovia, 2007).

On a final note, according to the company’s most recent Form 10-Q filing:

In the second quarter of 2007, we announced a realignment of some of our businesses and other corporate functions. This included the combination of the General Bank’s private advisory group into the Wealth Management businesses and the General Bank’s commercial real estate business into the Corporate and Investment Bank’s investment banking line of business, which is expected to occur by the end of the year. We are still evaluating how these realignments may affect our segment reporting for future periods; however, we expect Wealth Management will remain a separate reporting segment. (Form 10-Q, p. 4)

Wells Fargo & Company.

Wells Fargo & Company was established in 1929 and is currently headquartered in San Francisco, California (Wells Fargo, 2007). According to its company profile, Wells Fargo & Company (hereinafter “the company” or alternatively, “the bank”), through its subsidiaries, provides banking and financial products and services in the United States. The bank operates in three segments as shown in Table 7 below.

Table 7. Wells Fargo & Company Business Segments.

Business Segment	Description
Community Banking	This segment provides a comprehensive group of deposit products, including checking accounts, savings deposits, market rate accounts, individual retirement accounts, time deposits, and debit cards; this segment's loan portfolio includes: lines of credit; equity lines and loans; equipment and transportation loans, including recreational vehicle and marine; education loans; origination and purchase of residential mortgage loans; servicing of mortgage loans; and credit cards (Wells Fargo, 2007). This segment also provides receivables and inventory financing, equipment leases, real estate financing, small business administration financing, venture capital financing, cash management, payroll services, retirement plans, health savings accounts, and credit and debit card processing services.
Wholesale Banking	This segment provides commercial, corporate, and real estate banking products and services in the United States. This segment's products include traditional commercial loans and lines of credit, letters of credit, asset-based lending, equipment leasing, mezzanine financing, high-yield debt, international trade facilities, foreign exchange services, treasury management, investment management, institutional fixed income and equity sales, interest rate, commodity and equity risk management, online/electronic products, insurance, and investment banking services (Wells Fargo, 2007).
Wells Fargo Financial	This segment consists of consumer finance and auto finance operations. It also provides credit cards and lease, and other commercial financing services; as of March 24, 2007, this segment provided its services through approximately 6000 branches (Wells Fargo, 2007).

The company reports that the competitive environment varies for its far-flung operations. For example, the bank's most recent Form 10-Q filing reports that, "The financial services industry is highly competitive. Our subsidiaries compete with financial services providers, such as banks, savings and loan associations, credit unions, finance companies, mortgage banking companies, insurance companies, and money market and mutual fund companies" (March 1, 2007 p. 3). Beyond this broad range of competitors, the bank's subsidiaries were also confronted with a number of challenges on some new fronts as well: "They also face increased competition from nonbank institutions such as brokerage houses and insurance companies, as well as from financial services subsidiaries of commercial and manufacturing companies. Many of these competitors enjoy fewer regulatory constraints and some may have lower cost structures" (Form 10-Q, March 1, 2007 p. 3).

Recapitulation of Management Summaries from Most Recent Form 10-Qs.

A recapitulation of the respective five leading bank holding companies' management summaries from their most recent Form 10-Q filings with the SEC and comments are provided in Table 8 below.

Table 8. Recapitulation of Citigroup's Management Summary from Most Recent Form 10-Qs.

Date of Filing	Organization	Key Performance Metric Highlights	Comments
August 3, 2007	Citigroup	Income from continuing operations rose 18% to \$6.226 billion and was the highest ever recorded by the bank. Diluted EPS from continuing operations was also up 18%. Revenues were a record \$26.6 billion, an increase of 20% over the previous year to date, led by Markets & Banking, up 33%. The bank's international operations recorded revenue growth of 34% in the quarter, with International Consumer up 16%, International Markets & Banking up 50%, and International Global Wealth Management more than doubling. U.S. Consumer revenues grew 3%, while Alternative Investments revenues increased an impressive 77%.	Acquisitions represented approximately 4% of the bank's revenue growth.
August 7, 2007	Bank of America	At June 30, 2007, the Corporation had \$1.5 trillion in assets and approximately 196 thousand full-time equivalent employees. Net interest income on a FTE basis decreased \$145 million to \$8.8 billion and \$588 million to \$17.4 billion for the three and six months ended June 30, 2007 compared to the same periods in 2006. The primary drivers of the decreases were the impact of the divestitures of certain foreign operations in 2006 and the first quarter of 2007, increased hedge costs, higher cost of deposits, spread compression, reduced benefits from purchase accounting adjustments and the negative impact of the adoption of FSP 13-2. These decreases were partially offset by a higher contribution from market-based activity, higher levels of consumer and commercial domestic loans and increased ALM portfolio levels.	In July 2007, the Corporation completed the acquisition of U.S. Trust Corporation (U.S. Trust) for \$3.3 billion in cash.

Date of Filing	Organization	Key Performance Metric Highlights	Comments
August 9, 2007	JP Morgan	The company reports \$1.5 trillion in assets, \$119.2 billion in stockholders' equity and operations worldwide. The company reported 2007 second-quarter Net income of \$4.2 billion, or \$1.20 per share, compared with Net income of \$3.5 billion, or \$0.99 per share, for the second quarter of 2006. Return on common equity for the quarter was 14% compared with 13% in the prior year. Net income for the first six months of 2007 was \$9.0 billion, or \$2.55 per share, compared with \$6.6 billion, or \$1.85 per share, in the comparable period last year. Return on common equity was 16% for the first six months of 2007 compared with 12% for the prior-year period.	The second quarter of 2007 economic environment was a contributing factor to the performance of the Firm and each of its businesses. The overall economic expansion, strong level of capital markets activity and positive performance in equity markets helped to drive new business volume and organic growth within each of the company's wholesale businesses; however, weakness in the housing markets resulted in increased losses in Retail Financial Services, causing in an increase in provision related to the home equity portfolio.
July 30, 2007	Wachovia Corporation	Wachovia's net income in the first six months of 2007 was \$4.6 billion, up 29 percent from the first six months of 2006, and diluted earnings per common share were up 7 percent to \$2.42. After-tax net merger-related and restructuring expenses amounted to 1 cent per share in the first six months of 2007 and 4 cents per share in the same period of 2006. Tax-equivalent net interest income increased 24 percent in the first six months of 2007 from the first six months of 2006, reflecting a larger balance sheet. The net interest margin declined 22 basis points to 2.97 percent, primarily due to growth in lower-spread consumer and commercial loans, a shift in deposits toward lower-spread categories, the impact of acquisitions and the effect of an inverted yield curve.	Wachovia and certain of its subsidiaries are currently involved in a number of judicial, regulatory and arbitration proceedings concerning matters arising from the conduct of its business activities; these proceedings include actions brought against Wachovia and/or its subsidiaries with respect to transactions in which Wachovia and/or its subsidiaries acted as banker, lender, underwriter, financial advisor or broker or in activities related thereto. The actual costs of resolving legal claims may be substantially higher or lower than the amounts reserved for those claims.
March 1, 2007	Wells Fargo	At December 31, 2006, the company reports assets of \$482 billion, loans of \$319 billion, deposits of \$310 billion and stockholders' equity of \$46 billion; based on total assets, WFC is the fifth largest bank holding company in the United States. At December 31, 2006, the bank had 158,000 active, full-time equivalent team members. The filing reports that the bank enjoyed record earnings in 2006 with record diluted earnings per share of \$2.49, record net income of \$8.5 billion, both up 11%, and exceptional, broad-based performance across the company's 80+ businesses. The report also emphasizes that, "Over the past twenty years, our annual compound growth rate in earnings per share was 14% and our annual compound growth rate in revenue was 12%. Our total annual compound stockholder return of 14% the past five years was more than double the S&P 500 — and at 15% almost double for the past ten years. We far out-paced the S&P 500 the past 15 and 20 years with total annual compound shareholder returns of 18% and 21%, respectively — periods with almost every economic cycle and economic condition a financial institution can experience" (p. 34).	All common share and per share disclosures in this Report reflect the two-for-one stock split in the form of a 100% stock dividend distributed on August 11, 2006.

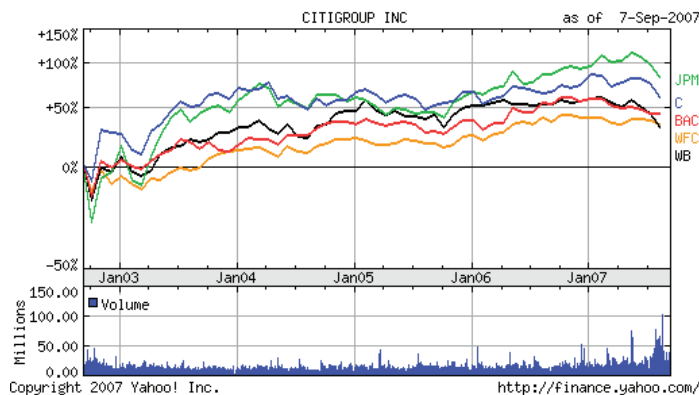
Sources: As indicated.

Stock Performance of Top Five Bank Holding Companies in the U.S.: Past Five Years to Date.

A comparison of the top five bank holding companies' stock performance for the past five years to date is provided in Figure 7 below.

- Key:
- C = Citigroup Inc.
 - BAC = Bank of America
 - JPM = JPMorgan Chase & Co.
 - WB = Wachovia
 - WFC = Wells Fargo & Company

Figure 7. Stock Performance of Top Five Bank Holding Companies in the U.S.: Past Five Years to Date



Source: Yahoo! Finance, 2007.

Methodology

Description of the Study Approach

This study used a mixed methodology to achieve the above-stated research purpose. The first component of the research methodology consisted of a comprehensive review of the relevant peer-reviewed, scholarly and organizational literature. This approach is congruent with various social researchers who report that such a literature review is the natural place to begin such an endeavor (Neuman, 2003; Wood and Ellis, 2003). According to one authority, "Both the opinions of experts in the field and other research studies are of interest. Such reading is referred to as a review of the literature" (Fraenkel and Wallen, 2001 p. 48). Similarly, Gratton and Jones (2003) emphasize that

a critical reviewing of the timely literature is an essential component of almost any type of research endeavor: “No matter how original you think the research question may be,” they advise, “it is almost certain that your work will be building on the work of others. It is here that the review of such existing work is important. A literature review is the background to the research, where it is important to demonstrate a clear understanding of the relevant theories and concepts, the results of past research into the area, the types of methodologies and research designs employed in such research, and areas where the literature is deficient” (p. 51).

In addition, Wood and Ellis (2003) identified the following as important outcomes of a well conducted literature review:

1. It helps describe a topic of interest and refine either research questions or directions in which to look;
2. It presents a clear description and evaluation of the theories and concepts that have informed research into the topic of interest;
3. It clarifies the relationship to previous research and highlights where new research may contribute by identifying research possibilities which have been overlooked so far in the literature;
4. It provides insights into the topic of interest that are both methodological and substantive;
5. It demonstrates powers of critical analysis by, for instance, exposing taken for granted assumptions underpinning previous research and identifying the possibilities of replacing them with alternative assumptions;
6. It justifies any new research through a coherent critique of what has gone before and demonstrates why new research is both timely and important.

Likewise, Silverman (2005, p. 300) suggests that a literature review should aim to answer the following questions:

1. What do we know about the topic?
2. What do we have to say critically about what is already known?
3. Has anyone else ever done anything exactly the same?
4. Has anyone else done anything that is related?
5. Where does your work fit in with what has gone before?
6. Why is your research worth doing in the light of what has already been done?

It was with the above goals and guidance that the review of the relevant peer-reviewed, scholarly and organizational

data was conducted. Both university and public libraries were consulted for this purpose, as well as a range of online resources including EBSCO, Questia, Edgar Online, Yahoo! Finance and others.

The econometric approach used in the study is also congruent with a number of economic researchers who emphasize that it is common practice for economists to describe or discuss a theory in terms of an equation or a set of equations; moreover, even elementary economics textbooks present postulated relationships between economic variables in an algebraic form, and suggest inferences by mathematical manipulations (Charemza, Deadman & Elgar, 1997).

Therefore, extending the process to include assignation of quantitative measures to these relationships represents a logical step. According to Charemza and his colleagues, “The most widely used tool of economists to determine empirical forms of theoretical constructs is that of econometrics. The likely originator of the term 'econometrics' defined it as ‘...the unification of economic theory, statistics, and mathematics...’ Much of the early empirical work in economics (in other words, prior to 1940) was concerned with the measurement of demand elasticities, and the representation of the business cycle” (p. 1).

To a great extent, these trends were reflective of the activity of economists in developing theory in these areas, and the increasing availability of reasonably long runs of statistical data on agricultural commodities, foreign trade and various industries (Charemza et al., 1997). Subsequent developments of national income accounting in conjunction with Keynesian economic theory further created new opportunities for the econometric analysis of macroeconomic series, including complete models of economies; these estimated macroeconomic models could be used for economic policy purposes, such as forecasting or simulation (Charemza et al., 1997).

Regardless of the objectives being considered, it is clear that in order to undertake econometric analysis, the following must be used:

1. A relevant economic theory;
2. Statistical data;
3. A method that allows for the expression of the economic theory using the statistical data (in practice, a theory of estimation stemming from econometric theory) (six properties that would be considered desirable in an estimated model: (a) relevance, (b) simplicity, (c) theoretical plausibility, (d) explanatory ability, (e)

accuracy of coefficients and (f) forecasting ability; a “good” model will display all of these properties to some degree, but the existence of a potentially large number of theoretically plausible models which also satisfy some or all of the criteria makes the model choice problem a nontrivial one in practice;

4. A “know-how,” which guides how to apply the estimation theory to the statistical data, and how to decide whether this application has been successful; in this case, the requisite “know hows” relate to methods of defining “good” models, and in finding them (Charemza et al., 1997, p. 3).

Based on the foregoing guidance, this study used a weighted average approach to determining the impact of the external national economy on the five leading bank’s profitability according to their total assets. The econometric model described further in Chapter 4 below that was developed for this study was deemed to have satisfied all of these criteria to some extent.

Data-Gathering Method and Database of Study

Beyond the critical review of the relevant peer-reviewed, scholarly and organizational literature concerning profitability determinants in the banking industry today, this study also used bank-level data for the top five banks in the United States for last five years for its econometric analysis, as well as five years’ of data from various international financial statistics for the U.S. banking industry in general.

As noted above, these data were collected from reliable online resources such as the U.S. Federal Reserve System’s National Information Center, Free Edgar, Yahoo! Finance and comparable organizational and governmental Web sites.

Data Analysis

Econometric Model.

In their study, “Profitability of Credit Unions, Commercial Banks and Savings Banks: A Comparative Analysis,” Kaushik and Lopez (1996) report that, “Profitability is the measure of both performance of each of the industries and the degree of competition among them” (p. 66). On the one hand, a straightforward approach to defining competitiveness at any industry level is in terms of the percentage of market shares held domestically and

internationally (Saunders and Walter, 1998). While this is fairly simple task when it comes to industries such as steel or automobiles that provide comparatively homogeneous goods and services, such an application to the financial services industry is far more complicated because of the wide range of mixes and national settings involved (Saunders and Walter, 1998).

Moreover, defining competitiveness in these terms may not be especially reflective of an individual organization’s profitability, which depends as well on a variety of market structure and other cost factors such as scale and scope economies (Saunders and Walter, 1998). On the other hand, using market share is a commonly used indicator of the outcome of the competitive process itself because in free markets, companies that enjoy the lowest cost structure or feature highest product quality generally gain market share compared to those with a higher cost structure or lower product quality (Saunders and Walter, 1998).

In terms of applying this method to the financial services industry, the picture becomes more complex. For instance, Saunders and Walter emphasize that, “The financial services industry sells perhaps 50 more or less distinct services to perhaps 20 more or less distinct client groups. They range from credit card loans to lower middle income households all the way to swap-driven repackaged synthetic securities engineered for the largest multinational companies. Some of these services are highly internationalized, indeed globalized, while others are individually sold or mass-marketed domestically” (p. 24). Further complicating any such across-the-board analysis is the paucity of market share data; in some cases, this information is reasonably available; however, in other cases, there are no available market share data whatsoever (Saunders and Walter, 1998). Moreover, some information is also obscured or contaminated by exchange rate changes that take place during the periods of time that data are available to researchers (Saunders and Walter, 1998).

Based on the foregoing constraints, a better indicator of profitability was required for the purposes of this investigation. As noted above, the empirical test used in this study is concerned with the determinants profitability of these five leading bank holding companies in the United States as of June 2007. For this purpose, the measure of profitability of each bank was defined as the return on assets (ROA); the ROA is a ratio that is calculated by dividing the net income over total assets. The macro-economic variable GDP per capita growth was also used in the model as estimated by the CIA World Factbook for 2006 and the International Monetary Fund for the years 2004 and 2005.

The GDP per capita growth rate was expected to have a positive impact on bank’s performance according to the well documented literature on the association between economic growth and financial sector performance by virtue of economies of scale that accrue to larger banking organizations whose assets run into the billions. This is congruent with the findings of Berger et al. (2007) who report, “Early research on bank cost scale economies using data on U.S. banks from the 1980s generally finds very little scale economies or diseconomies except at very small sizes, typically well under \$1 billion in assets. Later research suggests that there may be more extensive cost scale economies in the 1990s, with average costs declining up to asset sizes of \$25 billion or more” (p. 331).

The rationale in support of this model was found extensively throughout the body of evidence concerning relevant profitability indicators for the banking industry that clearly demonstrated economies of scale for larger financial institutions, particularly as they compete across international borders, notwithstanding any substantive changes in the external operating environment to the contrary. To gauge the soundness of this rationale, the degree of profitability for each bank holding company was determined by using a return on investment weighted average approach. In this regard, Li, Pan and Tse (1999) report that, “Profitability is measured by returns on assets (ROA)” (p. 81). According to the editors of MoneyTerms, “A weighted average is more heavily influenced by some of the numbers it is calculated from than others. It is calculated by multiplying each number by a weight, adding these together and then dividing the total by the sum of the weights” (Weighted Average, 2007 p. 3). The formula for this model is shown below:

$$ROA \text{ (net income/total assets)} * GDP \text{ per capita growth} / (ROA * GDP \text{ per capita growth} / ROA + GDP \text{ per capita growth})$$

The return on assets calculations internal aspect for the five respective banks compared with the GDP per capital growth external factor rate is provided in Tables 9 through 13 below, as well as graphic representations of the data in the accompanying figures; the percentage differential is also shown.

Table 9. Bank of America: December 31-December 2006.

Period Ending	31-Dec-06	31-Dec-05	31-Dec-04
Net Income	21,133,000	16,465,000	14,143,000
Total Assets	1,459,737,000	1,291,803,000	1,110,457,000
Return on Assets (ROA)	1.45%	1.27%	1.27%
Per Capita Growth Rate*	3.20%	3.70%	4.20%
Weighted Average	1.00%	0.95%	0.98%
Percentage Difference ROA-Weighted Avg.	0.45%	0.33%	0.30%

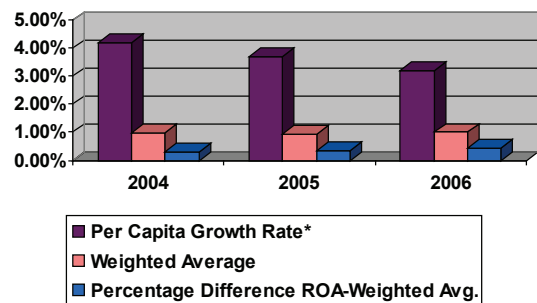


Table 10. JP Morgan: December 31-December 2006.

Period Ending	31-Dec-06	31-Dec-05	31-Dec-04
Net Income	14,444,000	8,483,000	4,466,000
Total Assets	1,351,520,000	1,198,942,000	1,157,248,000
Return on Assets (ROA)	1.07%	0.71%	0.39%
Per Capita Growth Rate*	3.20%	3.70%	4.20%
Weighted Average	0.80%	0.59%	0.35%
Percentage Difference ROA-Weighted Avg.	0.27%	0.11%	0.03%

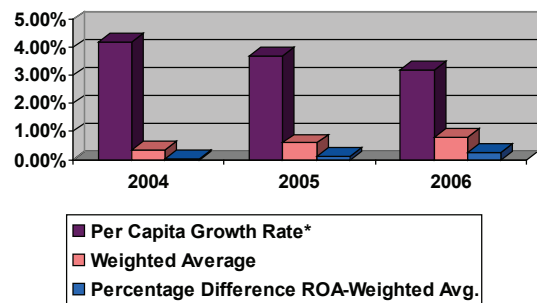


Table 11. Citigroup: December 31-December 2006.

Period Ending	31-Dec-06	31-Dec-05	31-Dec-04
Net Income	21,538,000	24,589,000	17,046,000
Total Assets	1,884,318,000	1,494,037,000	1,484,101,000
Return on Assets (ROA)	1.14%	1.65%	1.15%
Per Capita Growth Rate*	3.20%	3.70%	4.20%
Weighted Average	0.84%	1.14%	0.90%
Percentage Difference ROA-Weighted Avg.	0.30%	0.51%	0.25%

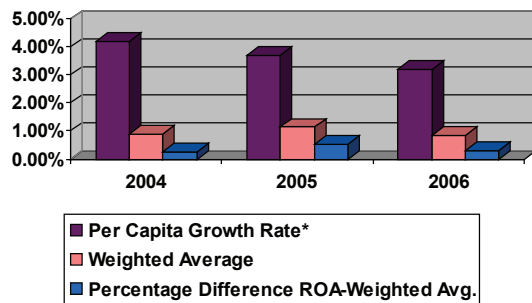


Table 13. Wells Fargo & Co.: December 31-December 2006

Period Ending	31-Dec-06	31-Dec-05	31-Dec-04
Net Income	8,482,000	7,671,000	7,014,000
Total Assets	481,996,000	481,741,000	427,849,000
Return on Assets (ROA)	1.76%	1.59%	1.64%
Per Capita Growth Rate*	3.20%	3.70%	4.20%
Weighted Average	1.14%	1.11%	1.18%
Percentage Difference ROA-Weighted Avg.	0.62%	0.48%	0.46%

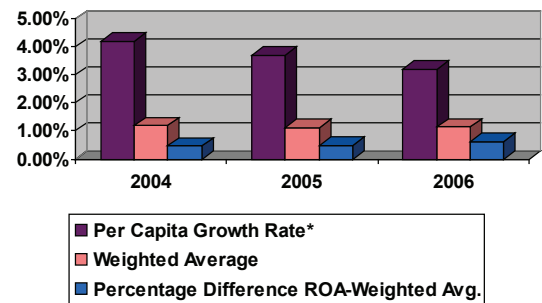


Table 12. Wachovia: December 31-December 2006.

Period Ending	31-Dec-06	31-Dec-05	31-Dec-04
Net Income	7,791,000	6,643,000	5,214,000
Total Assets	707,121,000	520,755,000	493,324,000
Return on Assets (ROA)	1.10%	1.28%	1.06%
Per Capita Growth Rate*	3.20%	3.70%	4.20%
Weighted Average	0.82%	0.95%	0.84%
Percentage Difference ROA-Weighted Avg.	0.28%	0.33%	0.21%

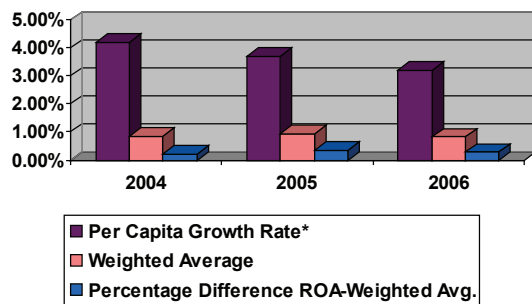
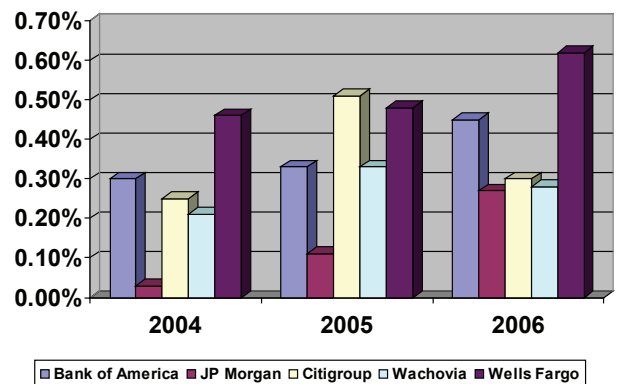


Table 14. Comparison of Percentage Differences in ROA-Weighted Averages.

Period Ending	31-Dec-06	31-Dec-05	31-Dec-04
Bank of America	0.45%	0.33%	0.30%
JP Morgan	0.27%	0.11%	0.03%
Citigroup	0.30%	0.51%	0.25%
Wachovia	0.28%	0.33%	0.21%
Wells Fargo	0.62%	0.48%	0.46%



Summary and Conclusions

Summary

The purpose of this study was to develop an appropriate econometric model whereby the primary determinants of profitability of the top five bank holding companies in the United States could be examined and understood. To this end, the research showed that profitability determinants for the banking industry include positive relationship between the return of equity and capital to asset ratio as well as the annual percentage changes in the external per capita income. There was also a virtual consensus identified concerning the effect that the internal factor of size as measured by an organization's total assets had on its ability to compete more effectively, even in times of economic downturns.

This relationship was clearly identified in the data analysis, wherein all five of the leading bank holding companies in the United States (as of June 2007) enjoyed increases in their weighted averages of return on assets despite decreases in the GDP per capita rate. While there were some fluctuations and variations identified between the respective organizations in spite of their relative sizes, these differences could be accounted for by virtue of specific economic initiatives in place during these isolated points in time that are not accounted for in the analytical model.

Some of the constraints identified during the research process included the fact that the majority of research to date has investigated determinants of profitability at the bank and/or industry level, with the choice of variables used failing to provide internal consistency in some cases and a paucity of timely research concerning the potential influence of the macroeconomic environment in which financial services companies compete. There were also a broad range of unique fiscal activities that took place during the time period examined that clearly influenced a given bank's profitability, either positively or negatively, over the short-term while failing to provide any indication of its potential long-term impact on the bank's profitability.

In the final analysis, it would appear that the industry analysts and experts were absolutely correct in their assertions that although it is possible to develop a model that can provide researchers with an indication of the relative importance of internal and external factors on a company's profitability, the analysis is rife with opportunities to miss important yet unforeseeable influences that may contribute to changes in short-term profitability while leaving long-term profitability unaffected. Likewise, there are unforeseeable

factors concerning innovations in technology that relate both to a financial services company's internal and external environment that will depend on the effectiveness of the bank's management to add value or not. Responsiveness to the external economic environment and potential threats to far-flung operations based on terrorist activities abroad represent yet more factors that may be highly significant, but are difficult to model accurately.

Conclusions

The studies on the determinants of bank's performance in the United States in recent years have shown some mixed results, with some researchers finding that little cost saving can be achieved by increasing the size of the banking firm and others report significant scale economies for banks whose asset size extends well into the billion range such as those investigated herein. In addition to being extremely difficult to measure on an international level, determinants of profitability may be skewed by an inability to obtain accurate and timely data and by an unbalanced competitive environment in which a given bank may be forced to compete with smaller players that can market high profit products more efficiently. In fact, it would be reasonable to conclude that the determinants of profitability can be discerned at a given point in time as they relate to a specific set of factors, but there is much more involved in the analysis than a straight-forward modeling approach can address. Nevertheless, the research was absolutely consistent in emphasizing the need to gauge profitability and to identify what revenue sources provide financial services companies with the biggest "bang for the buck" so they can focus their energies where they will do the most good both in the short term and for the long haul. In conclusion, analyzing profitability in the financial services sector requires constructing a comprehensive picture of a wide range of relevant performance metrics. This analysis also requires a significant amount of judiciousness and recognition of their limitations when interpreting them.

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Appendix A

United States' Largest Bank Holding Companies (as of June 2007)

Rank	Institution Name (RSSD ID)	Location	Total Assets
1	CITIGROUP INC. (1951350)	NEW YORK, NY	\$2,220,866,000
2	BANK OF AMERICA CORPORATION (1073757)	CHARLOTTE, NC	\$1,535,684,280
3	JPMORGAN CHASE & CO. (1039502)	NEW YORK, NY	\$1,458,042,000
4	WACHOVIA CORPORATION (1073551)	CHARLOTTE, NC	\$719,922,000
5	TAUNUS CORPORATION (2816906)	NEW YORK, NY	\$579,062,000
6	WELLS FARGO & COMPANY (1120754)	SAN FRANCISCO, CA	\$539,865,000
7	HSBC NORTH AMERICA HOLDINGS INC. (3232316)	PROSPECT HEIGHTS, IL	\$483,630,057
8	U.S. BANCORP (1119794)	MINNEAPOLIS, MN	\$222,530,000
9	SUNTRUST BANKS, INC. (1131787)	ATLANTA, GA	\$180,314,372
10	ABN AMRO NORTH AMERICA HOLDING COMPANY (1379552)	CHICAGO, IL	\$160,341,966
11	CITIZENS FINANCIAL GROUP, INC. (1132449)	PROVIDENCE, RI	\$159,392,731
12	CAPITAL ONE FINANCIAL CORPORATION (2277860)	MCLEAN, VA	\$145,937,957
13	NATIONAL CITY CORPORATION (1069125)	CLEVELAND, OH	\$140,648,168
14	REGIONS FINANCIAL CORPORATION (3242838)	BIRMINGHAM, AL	\$137,624,205
15	BB&T CORPORATION (1074156)	WINSTON-SALEM, NC	\$127,577,050
16	BANK OF NEW YORK COMPANY, INC., THE (1033470)	NEW YORK, NY	\$126,457,000
17	PNC FINANCIAL SERVICES GROUP, INC., THE (1069778)	PITTSBURGH, PA	\$125,736,711
18	STATE STREET CORPORATION (1111435)	BOSTON, MA	\$112,345,777
19	FIFTH THIRD BANCORP (1070345)	CINCINNATI, OH	\$101,389,721
20	KEYCORP (1068025)	CLEVELAND, OH	\$93,490,903
21	BANCWEST CORPORATION (1025608)	HONOLULU, HI	\$70,661,335
22	HARRIS FINANCIAL CORP. (1245415)	WILMINGTON, DE	\$64,475,903
23	NORTHERN TRUST CORPORATION (1199611)	CHICAGO, IL	\$59,609,734
24	COMERICA INCORPORATED (1199844)	DETROIT, MI	\$58,945,727
25	MARSHALL & ILSLEY CORPORATION (1199497)	MILWAUKEE, WI	\$58,327,527
26	M&T BANK CORPORATION (1037003)	BUFFALO, NY	\$57,869,069
27	UNIONBANCAL CORPORATION (1378434)	SAN FRANCISCO, CA	\$53,173,833
28	CHARLES SCHWAB CORPORATION, THE (1026632)	SAN FRANCISCO, CA	\$49,003,812
29	ZIONS BANCORPORATION (1027004)	SALT LAKE CITY, UT	\$48,703,130
30	COMMERCE BANCORP, INC. (1117679)	CHERRY HILL, NJ	\$48,231,325
31	POPULAR, INC. (1129382)	SAN JUAN, PR	\$46,985,000
32	MELLON FINANCIAL CORPORATION (1068762)	PITTSBURGH, PA	\$43,389,057
33	TD BANKNORTH INC. (1249196)	PORTLAND, ME	\$42,981,084
34	FIRST HORIZON NATIONAL CORPORATION (1094640)	MEMPHIS, TN	\$38,395,825
35	HUNTINGTON BANCSHARES INCORPORATED (1068191)	COLUMBUS, OH	\$36,422,081
36	COMPASS BANCSHARES, INC. (1078529)	BIRMINGHAM, AL	\$34,938,942
37	SYNOVUS FINANCIAL CORP. (1078846)	COLUMBUS, GA	\$33,295,823
38	NEW YORK COMMUNITY BANCORP, INC. (2132932)	WESTBURY, NY	\$29,638,404
39	RBC CENTURA BANKS, INC. (1826056)	RALEIGH, NC	\$25,374,678
40	COLONIAL BANCGROUP, INC., THE (1080465)	MONTGOMERY, AL	\$23,823,484
41	ASSOCIATED BANC-CORP (1199563)	GREEN BAY, WI	\$20,849,531

Rank	Institution Name (RSSD ID)	Location	Total Assets
42	BOK FINANCIAL CORPORATION (1883693)	TULSA, OK	\$19,363,601
43	W HOLDING COMPANY, INC. (2801546)	MAYAGUEZ, PR	\$17,894,049
44	FIRST BANCORP (2744894)	SAN JUAN, PR	\$17,596,317
45	WEBSTER FINANCIAL CORPORATION (1145476)	WATERBURY, CT	\$16,964,451
46	SKY FINANCIAL GROUP, INC. (1071203)	BOWLING GREEN, OH	\$16,807,287
47	FIRST CITIZENS BANCSHARES, INC. (1075612)	RALEIGH, NC	\$16,012,041
48	COMMERCE BANCSHARES, INC. (1049341)	KANSAS CITY, MO	\$15,531,107
49	NEW YORK PRIVATE BANK & TRUST CORPORATION (3212091)	NEW YORK, NY	\$15,095,466
50	FULTON FINANCIAL CORPORATION (1117129)	LANCASTER, PA	\$15,078,415

Appendix B

Excel Spreadsheet Results of Data Analysis

Period Ending	31-Dec-06	31-Dec-05	31-Dec-04
Bank of America			
Net Income	21,133,000	16,465,000	14,143,000
Total Assets	1,459,737,000	1,291,803,000	1,110,457,000
Return on Assets (ROA)	1.45%	1.27%	1.27%
Per Capita Growth Rate*	3.20%	3.70%	4.20%
Weighted Average	1.00%	0.95%	0.98%
Percentage Difference ROA-Weighted Avg.	0.45%	0.33%	0.30%
JPMorgan			
Net Income	14,444,000	8,483,000	4,466,000
Total Assets	1,351,520,000	1,198,942,000	1,157,248,000
Return on Assets (ROA)	1.07%	0.71%	0.39%
Per Capita Growth Rate*	3.20%	3.70%	4.20%
Weighted Average	0.80%	0.59%	0.35%
Percentage Difference ROA-Weighted Avg.	0.27%	0.11%	0.03%
Citigroup			
Net Income	21,538,000	24,589,000	17,046,000
Total Assets	1,884,318,000	1,494,037,000	1,484,101,000
Return on Assets (ROA)	1.14%	1.65%	1.15%
Per Capita Growth Rate*	3.20%	3.70%	4.20%
Weighted Average	0.84%	1.14%	0.90%
Percentage Difference ROA-Weighted Avg.	0.30%	0.51%	0.25%
Wachovia			
Net Income	7,791,000	6,643,000	5,214,000
Total Assets	707,121,000	520,755,000	493,324,000
Return on Assets (ROA)	1.10%	1.28%	1.06%
Per Capita Growth Rate*	3.20%	3.70%	4.20%
Weighted Average	0.82%	0.95%	0.84%
Percentage Difference ROA-Weighted Avg.	0.28%	0.33%	0.21%
Wells Fargo & Co			
Net Income	8,482,000	7,671,000	7,014,000

Period Ending	31-Dec-06	31-Dec-05	31-Dec-04
Total Assets	481,996,000	481,741,000	427,849,000
Return on Assets (ROA)	1.76%	1.59%	1.64%
Per Capita Growth Rate*	3.20%	3.70%	4.20%
Weighted Average	1.14%	1.11%	1.18%
Percentage Difference ROA-Weighted Avg.	0.62%	0.48%	0.46%

**Based on 2006 estimates from CIA World Factbook and bar graph data from International Monetary Fund*