

How do banks make money? The fallacies of fee income

Robert DeYoung and Tara Rice

Introduction and summary

“How do banks make money?” is a deceptively simple question. Banks make money by charging interest on loans, of course. In fact, there used to be a standard, tongue-in-cheek answer to this question: According to the “3-6-3 rule,” bankers paid a 3 percent rate of interest on deposits, charged a 6 percent rate of interest on loans, and then headed to the golf course at 3 o’clock.

Like most good jokes, the 3-6-3 rule mixes a grain of truth with a highly simplified view of reality. To be sure, the interest margin banks earn by intermediating between depositors and borrowers continues to be the primary source of profits for most banking companies. But banks also earn substantial amounts of noninterest income by charging their customers fees in exchange for a variety of financial services. Many of these financial services are traditional banking services: transaction services like checking and cash management; safe-keeping services like insured deposit accounts and safety deposit boxes; investment services like trust accounts and long-run certificates of deposit (CDs); and insurance services like annuity contracts. In other traditional areas of banking—such as consumer lending and retail payments—the widespread application of new financial processes and pricing methods is generating increased amounts of fee income for many banks. And in recent years, banking companies have taken advantage of deregulation to generate substantial amounts of noninterest income from nontraditional activities like investment banking, securities brokerage, insurance agency and underwriting, and mutual fund sales.

Remarkably, noninterest income now accounts for nearly half of all operating income generated by U.S. commercial banks. As illustrated in figure 1, fee income has more than doubled as a share of commercial bank operating income since the early 1980s.

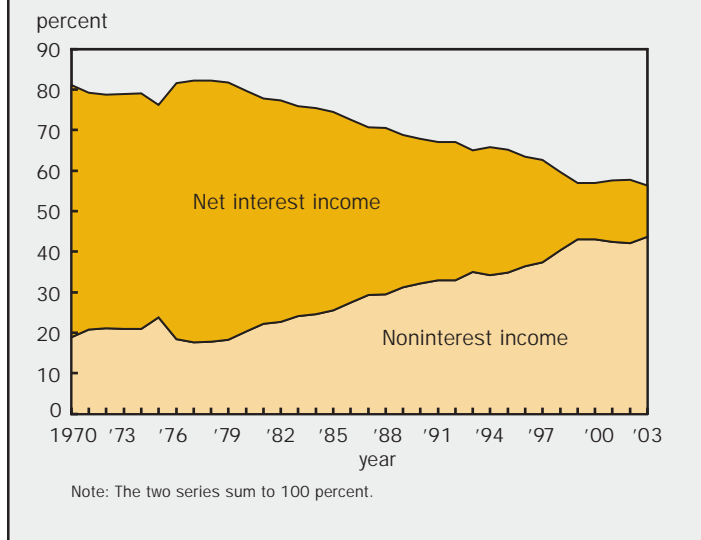
This shift has been larger than most industry experts expected, and we have only recently begun to understand the implications of this shift for the financial performance of banking companies. Only a handful of systematic academic studies have been completed thus far, and those studies have tended to contradict the conventional industry beliefs about noninterest income. Many in the banking industry continue to discount, underestimate, or simply misunderstand the manner in which increased noninterest income has affected the financial performance of banking companies.

This article documents the dramatic increase in noninterest income at U.S. banking companies during the past two decades, the myriad forces that have driven this increase, and the somewhat surprising implications of these changes for the financial performance of commercial banks. We pay special attention to two fundamental misunderstandings about noninterest income at commercial banks. The first is the belief that noninterest income and fee income are more stable than interest-based income. We review the most recent evidence from academic studies that strongly suggest—contrary to the original expectations of many—that increased reliance on fee-based activities tends to increase rather than decrease the volatility of banks’ earnings streams. The second misunderstanding is the belief that banks earn noninterest income chiefly from nontraditional, nonbanking activities. We perform some calculations of our own and demonstrate that payment services—one of the most traditional of all

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FIGURE 1

Noninterest and net income as a % of total operating income in U.S. commercial banking, 1970–2003



banking services—remain the single largest source of noninterest income at most U.S. banking companies.

This is the first of two articles in this issue of *Economic Perspectives* that examine “how banks make money.” The companion piece that follows describes the wide diversity of business strategies being used by commercial banking companies—some of which rely disproportionately on activities that generate noninterest income—and compares and contrasts the risk-return profiles of banking companies that employ those strategies.

Noninterest income, deregulation, and technological change

Banks earn noninterest income by producing both traditional banking services and nontraditional financial services. In fact, even before deregulation provided banks with increased opportunities to sell nontraditional fee-based services (say, in the mid-1980s), noninterest income already represented about \$1 out of \$4 of operating income generated by commercial banks. And the dramatic increase in noninterest income at U.S. banking companies over the past two decades reflects not only a diversification of banks into nontraditional activities, but also a shift in the way banks earn money from their traditional banking activities.

Table 1 organizes selected fee-generating activities into two groups: traditional activities that have always been provided by commercial banks and nontraditional financial services that banks have only recently begun to provide. (This is a selected list of activities

for illustrative purposes only and is not meant to cover all fee-based activities.)

The first column in table 1 would have been empty for the years prior to the deregulation of the financial industry. Deregulation opened the door for commercial banks to earn fee income from investment banking, merchant banking, insurance agency, securities brokerage, and other nontraditional financial services. The key deregulation was the Gramm–Leach–Bliley (GLB) Act of 1999, which created a financial holding company (FHC) framework that allowed common ownership of, and formal affiliation between, banking and nonbanking activities. Although GLB was the “big bang” that eliminated most of the Glass–Steagall Act (1933) prohibitions on mixing commercial banking and other financial services, partial deregulation had occurred during the 1980s and 1990s. In the late

1980s the Federal Reserve allowed commercial banks to set up investment banking subsidiaries with limited underwriting powers, and in the mid-1990s the Office of the Comptroller of the Currency granted national banks the power to sell insurance from offices in small towns.

The fees generated by these new, nontraditional activities are uneven across banking companies. On the one hand, investment banking has been a natural addition to the product lines of large banking companies that have large corporate clients. On the other hand, insurance agency has been a good fit for banking companies of all sizes that wish to cross-sell new financial services to their retail (household) clients.

In contrast, the fee-generating activities listed in the second column of table 1 are very traditional banking activities. Banks have always earned noninterest income from their depositors, charging fees on a variety of transaction services (for example, checking and money orders), safe-keeping services (for example, insured deposit accounts, safety deposit boxes), and cash management services (for example, lock box or payroll processing). Other traditional lines of business for which banks have always earned fee income include trust services provided to a wealthy retail clientele and providing letters of credit (as opposed to immediate dispersal of loan funds) to corporate clients.

In recent years, advances in information, communications, and financial technologies have allowed banks to produce many of their traditional services more efficiently. These efficiencies not only reduced

TABLE 1

**Selected sources of noninterest income
at banking companies**

Fee-generating activities: Nontraditional

Investment banking
Securities brokerage
Insurance activities
Merchant banking^a

Fee-generating activities: Traditional

<i>Traditional production methods</i>	<i>New production methods</i>
Deposit account services (e.g., safe-keeping, checking)	Deposit account services (e.g., online bill-pay, ATMs)
Lending (e.g., letters of credit)	Lending (e.g., securitization, servicing)
Cash management (e.g., payroll processing, traditional lock box)	Cash management (e.g., lock box check conversion to electronic ACH payments)
Trust account services (e.g., wealth management)	

^aA merchant bank invests its own capital in leveraged buyouts, corporate acquisitions, and other structured finance transactions. The merchant bank typically arranges credit financing, but does not hold the loans to maturity. Source: Fitch (2000).

per unit costs, enhanced service quality, and increased customer convenience, but also represented a source of increased fee income for banks. Some examples are displayed in the third column of table 1. Advances in credit-scoring models and asset-backed securities markets have transformed the production of consumer credit and home mortgages from a traditional portfolio lending process, where banks earn mostly interest income, to a transaction lending process, in which banks earn mostly noninterest income (for example, loan origination fees and loan servicing fees). Advances in communications and information technologies have led to new production processes for transactions and liquidity services, such as ATMs (automated teller machines) and online bill-pay, and deposit customers have been willing to pay fees for these conveniences. (The phase out of Regulation Q ceilings on deposit interest rates assisted banks in this regard, allowing them to price depositor services in a more rational and competitive fashion.)

Similar to the noninterest income generated by nontraditional activities, the fee income derived by these new production methods is uneven across banking companies. Securitized lending processes generate

significant scale economies, and as a result fee income from securitized consumer and mortgage lending has flowed predominantly (though not completely) to large banking companies. In contrast, the scaleable technologies necessary to produce ATM and Internet banking services are accessible to even relatively small banks.

Financial statement data

Taking advantage of the highly detailed financial statements that commercial banks and bank holding companies provide to their regulators, we collected data for established U.S. banking companies in 1986, 1990, 1995, 2000, and 2003. This multi-year, multi-company dataset allows us to observe how business strategies differ across banking companies in a given year and how banking strategies have changed over the past two decades as regulatory, technological, and competitive conditions have changed.¹ For the purpose of our analysis, an “established banking company” is either an independent commercial bank that is at least ten years old or a bank holding company (BHC) or financial holding company (FHC)

that controls one or more commercial banks that are on average at least ten years old. These categories of banking companies are inclusive of all mature U.S. commercial bank charters and, as such, they include banking companies of all sizes—from small, independently organized community banks to large financial holding companies—that operate using a diverse array of banking business strategies.

We approach these data somewhat differently than most financial analyses of the commercial banking industry. First, we pay as much attention to bank income statements as we do to bank balance sheets. Financial analysis of commercial banks often concentrates on bank balance sheets, which display the most direct evidence of banks’ traditional intermediation activities between depositors and borrowers. (Deposits are the largest single item on the liability side of most banks’ balance sheets, and loans are the largest single item on the asset side of most banks’ balance sheets.) But balance sheets have become an increasingly incomplete records of banks’ profit-generating activities; they convey very little information about the fee-based activities that now generate over 40 percent of total operating income in the banking industry.

TABLE 2

**Size of banking companies in DeYoung–Rice dataset,
thousands of 2003 dollars, unless indicated otherwise**

		1986	1990	1995	2000	2003
Number of banking companies		3,799	3,127	2,924	2,644	2,662
Assets	Mean	552,527	1,019,863	1,454,478	2,346,017	2,746,374
	Median	46,720	56,083	95,565	202,791	232,224
Operating income	Mean	25,701	53,062	78,535	142,446	157,582
	Median	2,085	2,431	4,663	9,362	10,536
Book value	Mean	33,387	62,097	115,193	182,256	225,723
	Median	4,358	5,252	10,406	18,230	21,475
No. of full-time employees	Mean	34.76	35.78	39.35	42.38	44.31
	Median	18	18	21	20	20
No. of branches	Mean	3.94	8.71	16.82	21.32	22.06
	Median	1	1	3	5	5

Some of these fee-based activities are traditional (like providing services to depositors and private banking clients); some are new to commercial banks (like investment banking, venture capital, and insurance underwriting); and some are traditional banking activities produced using new, nontraditional methods (like automated lending processes). Because income statements display the revenues and expenses generated by all of a bank's activities—whether or not they are represented on the balance sheet—we analyze bank income statements first before moving on to bank balance sheets.

Second, we construct financial ratios two different ways: We construct composite (or size-weighted) financial ratios using aggregate data for the entire commercial banking industry; and we construct bank-level (or unweighted) financial ratios using data from individual commercial banks. The composite financial ratios are informative about the overall product mix, financing mix, risk, and profitability of the commercial banking industry, but these ratios may not be descriptive of the “typical” commercial bank because large banks dominate the aggregate data. To the extent that a typical bank exists (and this is a problematic concept in itself, as discussed in the companion article that follows), it would be better described by taking the average of the bank-level ratios. For some financial ratios the size-weighted and unweighted averages have similar values; but for other ratios these two approaches yield substantially different values. As we shall see, these differences can reveal important information about how commercial banks make money. Large size allows banking companies to serve large corporate clients and provides them with access to low-cost, high-volume production, distribution, and marketing processes. But large size can make it difficult for

banking companies to provide personalized retail service and/or build relationships with their small business loan customers.

The financial data for independent banks were drawn primarily from the Reports of Condition and Income (call reports), and the financial data for BHCs and FHCs were drawn primarily from the Federal Reserve Board FR Y-9C reports. These data were augmented with data from a number of other sources, including the Federal Reserve Board National Information Center's (NIC) structure database, the Federal Deposit Insurance Corporation's Summary of Deposits database, and the Center for Research on Stock Prices (CRSP). To be included in the dataset in any given year, a banking company had to be domestically owned, have positive amounts of loans and transaction deposits, have positive book value, and be FDIC-insured or own at least one commercial bank that was FDIC-insured. We express all data in thousands of 2003 dollars, unless otherwise indicated.

Table 2 displays some basic summary statistics for each of the years in our 1986–2003 sample period. The number of banking companies has declined over time for two reasons: nearly a thousand commercial banks failed during the first ten years of our sample period and, in each year of our sample period, hundreds of banking companies were merged or acquired. These trends were mitigated to some extent by the thousands of new banking companies that were started up during the 1980s and 1990s (entering our dataset upon turning ten-years old) and by the entry of some nonbank FHCs (investment banks, insurance companies, and securities firms) after 1999 under the provisions of the Gramm–Leach–Bliley Act. The size of the average banking company increased substantially during our sample period, in terms of assets, operating income, book value, employees, and branches.

Noninterest income: Evidence from the income statement

Table 3 displays income statement data from the five years contained in our 1986–2003 dataset. Each of the revenue, expense, and profit items is expressed as a percentage of operating income, except return on assets (ROA) and return on equity (ROE). The size-weighted ratios are indicative of the composition of total industry revenues, expenses, and profits. The unweighted ratio averages are indicative of the composition of revenues, expenses, and profits at the average bank.²

The most systematic change in bank income statements during our sample period is the increasing incidence of noninterest income, which now accounts for about 20 percent of operating income at the average commercial banking company (up from about 13 percent in 1986) and about 47 percent of total industry operating income (up from about 30 percent). In

other words, today the banking industry generates slightly more than \$1 of net interest income for every \$1 of noninterest income, compared with just two decades ago when this industry multiple was well over \$2. As discussed above, the increased importance of fee income at commercial banking companies is a direct result of structural changes like industry deregulation, new information technologies, and financial innovation. The companion article that follows discusses the implications of these changes for competitive strategies at commercial banking companies.

The expense data suggest that the banking industry has become more cost efficient over the past two decades—noninterest expenses currently consume about \$0.59 of every \$1 of operating income generated by commercial banking companies, down dramatically from about \$0.69 in 1986. A large part of this decline is due to increased competitive pressure and the incentives this creates for banking companies to operate

TABLE 3

Income statement items, as a percent of operating income, except ROA and ROE

	1986	1990	1995	2000	2003
Number of banking companies	3,799	3,127	2,924	2,644	2,662
Size-weighted averages					
Net interest income	70.1	65.2	64.1	51.2	52.9
Noninterest income	29.9	34.8	35.9	48.8	47.1
Noninterest expense	69.2	69.7	63.8	63.0	59.3
Labor expense	34.4	33.6	31.6	29.9	30.2
Full-time employees (workers per \$mil.)	8.6	7.4	6.1	4.4	4.3
Premises expense	11.4	11.4	9.6	8.0	8.0
Other noninterest expense	23.4	24.6	22.5	25.1	21.1
Provisions for loan losses	14.6	18.1	4.7	7.6	7.3
Taxes and extraordinary items	1.2	2.9	10.9	10.6	9.9
Net income (ROS)	15.0	9.3	20.6	18.8	23.5
Return on assets (ROA)	0.0070	0.0048	0.0111	0.0114	0.0135
Return on equity (ROE)	0.1152	0.0789	0.1408	0.1471	0.1641
Unweighted averages					
Net interest income	87.1	85.0	84.3	83.0	79.7
Noninterest income	12.9	15.0	15.7	17.0	20.3
Noninterest expense	67.4	69.5	65.7	64.6	66.2
Labor expense	34.5	35.4	34.6	35.0	36.7
Full time employees (workers per \$mil.)	10.3	10.1	9.0	8.1	7.8
Premises expense	9.7	9.3	8.9	9.2	9.0
Other noninterest expense	23.2	24.8	22.1	20.4	20.4
Provisions for loan losses	18.1	8.3	3.4	5.2	4.9
Taxes and extraordinary items	18.0	13.9	12.4	13.4	11.2
Net income (ROS)	14.5	16.6	21.9	21.9	22.5
ROA	0.0066	0.0074	0.0106	0.0105	0.0105
ROE	0.0476	0.0682	0.1031	0.1064	0.1102

Note: ROS is return on sales.

more efficiently. Shifts in banking product mix and the introduction of new ways to produce and distribute traditional banking products likewise have contributed to this decline in expenses. Note that the number of full-time employees per dollar of operating income has fallen precipitously over time, while industry-wide labor expenses have declined only marginally and have actually increased at the average bank. These conflicting trends provide evidence that new banking products and production methods require a more highly skilled work force and, hence, higher salaries and benefits to attract and retain these workers. For example, while low-wage bank tellers have become less necessary due to ATMs and online banking, high-wage finance and information professionals have become more necessary to manage these systems and the growing array of products offered over them.

Labor expenses, premises expenses, and other noninterest expenses have all declined over time for large banks (which dominate the size-weighted ratio averages), but in contrast, only one of these three expense items has declined for the average bank (which is better represented by the unweighted ratio averages). As large banking companies have grown even larger via industry consolidation, they have increasingly benefited from scale economies that drive down per-unit costs; moreover, large banking companies are more likely to participate in high-volume, fee-based activities like automated lending, online banking, and mass marketing campaigns that benefit from scale economies. Naturally, the small banks cannot benefit as much from these economies of scale—not only because of their small size, but because many small banks practice more personal, relationship-based strategies that require relatively more customer-service labor inputs and relatively more physical spaces to interact with their customers.

Although expenses have declined less for the average banking company than for the industry overall, the proof of improved bank efficiency is in the profit pudding: net income has increased substantially, to just over 20 percent of operating income for both the average banking company and the industry as a whole. Because this return-on-sales (ROS) profit measure is a relatively uncommon way to express banking profitability, we also include the more familiar ROA and ROE measures, both of which have increased over time as well. This broad improvement in profitability has three fundamental causes: improved cost and revenue efficiency due to advances in information technology and financial processes; improved cost and revenue efficiency in response to

the competitive pressures brought on by industry deregulation; and the generally improved banking environment starting in the mid-1990s, reflected in the table as reduced loan loss provisioning.

The ROA and ROE data suggest that the average bank—with an ROA of 1.05 percent and an ROE of 11.02 percent in 2003—is less profitable compared with the industry-wide aggregate ROA and ROE measures of 1.35 percent and 16.41 percent, respectively. As with many of the other differences we observe in the financial data, higher levels of noninterest activities at some banks also help explain these differences in the ROA and ROE measures. Because large banking companies tend to generate large amounts of fee income from activities that are not found on the balance sheet (for example, fee income from securitized lending activities), these banks will naturally appear to be more profitable using an ROA measure. Additionally, because large banking companies tend to be more diversified across product lines and customer bases and are more likely to use derivatives securities and complex modeling techniques to mitigate risk, they can operate with a smaller cushion of equity capital. Therefore, they will also appear to be more profitable using an ROE measure. Thus, for slightly different reasons, large banking companies will have higher traditional accounting performance measures than smaller banking companies, all else being equal.

Note, however, that ROS, ROA, and ROE are not risk-adjusted performance measures and, thus, using these measures to compare the profitability of different banks is an incomplete performance analysis. We compare and contrast risk-adjusted financial performance of different types of commercial banking companies in the companion article that follows this one.

Noninterest income: Evidence from the balance sheet

The dramatic increases in noninterest income over the past two decades have not occurred in isolation from other banking activities and, as such, they have left a trail not only on bank income statements but also on bank balance sheets. The increase in noninterest income has occurred in consort with changes in virtually every other area of commercial bank activities, including interest income, interest and noninterest expenses, bank asset mix, and bank funding sources. We now turn briefly to an analysis of bank balance sheets to illustrate these changes.

Assets

As displayed in table 4, there has been a marked change in asset mix since the mid-1980s. For the

average banking company (unweighted ratio averages), the big story is increased investment efficiency. In 1986 the average banking company had 50 percent of its assets invested in low-yielding assets like cash, securities, and fed funds, and only about 47 percent in loans. But by 2003, investments in loans at the average banking company were nearly twice as large as investments in lower yielding assets (61.1 percent versus 34.9 percent). These figures are clear indications that, despite the increased importance of noninterest income, the survival of the average banking franchise continues to depend on traditional intermediation from depositors to borrowers.

Low-yielding cash balances have also declined for the industry as a whole (size-weighted ratio averages), but investments in loans have also fallen substantially, from 62.3 percent to 52.5 percent of assets. But this does not necessarily indicate a reduction in investment efficiency. These data are consistent with a shift in the production functions of large banking companies away from traditional portfolio lending and its reliance on interest income and toward securitizable transaction lending (especially credit cards and home mortgages) that relies on noninterest income from loan origination and loan servicing fees. The 10 percentage point reduction in loan assets has been more than offset by a 12 percentage point increase in “other assets,” such as the fair value of derivative instruments used to hedge against interest rate and foreign currency risk and receivables on the interest rate portion of asset-backed securities (IO strips).

Real estate loans have become a much more important part of bank loan portfolios over the past two decades. A number of factors played a role in this, including easier access to mortgage financing, the 1986 tax reform act that eliminated the consumer debt interest deduction but maintained the mortgage interest deduction, an increase in home ownership rates, the run-up in single-family home prices in many markets, as well as a need for banking companies to replace lost market share in commercial and industrial (C&I) loans. Between 1986 and 2003, C&I loans declined from 31.53 percent to just 18.90 percent of the overall industry loan portfolio, as large business borrowers began to bypass banks in favor of direct finance (for example, issuing commercial paper or high-yield debt), and nonbank competitors such as insurance companies and investment banks began to compete with banks for the remainder of the shrinking C&I loan market. For some banks, increased fee income from issuing letters of credit has softened the loss of C&I market share.³ In contrast, both C&I loans and commercial real estate loans—on-balance sheet, relationship-based

loans that generate interest income—have increased substantially for the typical banking company.

Financing and deposit mix

Deposits are the single most important source of financing for banking companies. As shown in table 5, about 57 percent of the banking industry’s assets, and about 82 percent of the typical banking company’s assets, were financed with deposits in 2003. Community banks use higher levels of deposit funding, and their noninterest income streams depend heavily on depositor service charges. However, even these high levels of deposit funding mark a decline over the past two decades, in favor of increased funding from federal funds, subordinated debt, “other liabilities,” and equity financing. This reflects at least three developments: increased competition from nonbanks (for example, mutual funds, brokerage accounts) for household and business deposits; expanded ability of large banking companies to raise debt in financial markets (for example, commercial paper, subordinated debt); and regulations that now require banks to hold higher levels of equity capital than in the past.

The composition of deposits has also changed over time, and these trends reflect differences in the ways that large and small banks do business. For the typical banking company, transaction deposits have held relatively steady over the years—at about 28 percent of total deposits in general and about 15 percent of total deposits for banks’ business clients (demand deposits). Thus, relationships with depositors and access to the payments system continue to be essential parts of most banking companies’ business strategies. In contrast, transaction deposits have declined dramatically at the industry level (from 29.8 percent to 15.0 percent of total deposits) since 1986.

A closer look at noninterest income and risk

Both traditional and nontraditional banking activities generate noninterest income. Traditional fee-generating activities include transaction services for retail and business depositors (although in recent years a growing percentage of these fees has been charged for nontraditional technologies like online bill-pay) and fiduciary services for high net worth retail clients. Nontraditional fee-generating activities include investment banking, insurance underwriting and agency, and venture capital. Finally, banking firms generate a substantial amount of noninterest income by using nontraditional methods to produce traditional banking services. For example, in a traditional banking model, loan servicing fees and securitization fees do not exist, because banks hold the loans they originate in their own portfolios and service these loans themselves.

TABLE 4

Asset items, as a percent of total assets

	1986	1990	1995	2000	2003
Number of banking companies	3,799	3,127	2,924	2,644	2,662
Size-weighted averages					
Cash	11.5	8.7	6.5	5.1	4.5
Securities	16.5	16.6	18.1	16.2	17.6
Fed funds sold	3.1	2.4	3.9	5.4	6.5
Loans	62.3	64.3	58.8	57.0	52.7
Allowance for loan losses	(0.9)	(1.6)	(1.2)	(1.0)	(0.9)
Fixed assets	1.6	1.7	1.6	1.2	1.1
Other assets	5.9	8.0	12.4	15.9	18.4
Loan items as % of loans					
Real estate loans	32.35	40.02	43.37	45.04	53.74
Residential mortgages	N/A	20.37	26.29	25.97	32.50
Home equity loans	N/A	3.00	3.30	3.51	6.96
Commercial real estate loans	N/A	17.45	15.19	17.33	19.47
Agricultural land loans	N/A	0.57	0.64	0.69	0.73
Consumer loans	21.25	19.41	13.81	11.08	17.09
Credit cards	N/A	0.18	7.24	5.70	6.96
Commercial and industrial loans	31.53	28.62	25.42	27.50	18.90
Agricultural production loans	1.39	1.09	1.07	0.94	0.79
Other loans	N/A	10.87	16.33	15.44	9.48
Unweighted averages					
Cash	9.1	7.2	5.5	4.8	5.2
Securities	33.0	32.9	32.1	26.3	26.1
Fed funds sold	7.9	6.5	5.1	3.6	3.4
Loans	46.6	49.7	54.0	61.7	61.1
Allowance for loan losses	(0.7)	(0.9)	(0.9)	(0.9)	(0.9)
Fixed assets	1.5	1.5	1.6	1.8	1.8
Other assets	2.5	2.8	2.4	2.6	3.2
Loan items as % of loans					
Real estate loans	40.53	46.77	55.39	60.39	65.91
Residential mortgages	N/A	27.03	29.74	28.53	27.07
Home equity loans	N/A	1.03	1.46	1.72	2.62
Commercial real estate loans	N/A	13.90	20.50	26.89	33.51
Agricultural land loans	N/A	5.61	4.90	4.72	5.04
Consumer loans	23.89	20.77	16.95	13.23	10.46
Credit cards	N/A	0.25	0.71	0.49	0.44
Commercial and industrial loans	3.72	6.09	8.27	11.73	10.44
Agricultural production loans	15.05	13.20	9.59	6.90	5.94
Other loans	N/A	12.76	9.34	7.21	6.72

Notes: Columns may not sum to 100 percent due to rounding errors. N/A indicates that data were not available in 1986. The "other assets" category combines a variety of assets that are not separately reported to regulators at the banking holding company level, including (but not limited to) interest receivable on loans and securities, derivative securities not held for trading purposes, equity securities without readily determinable fair values (for example, stock in a Federal Home Loan Bank or equity holdings in corporate joint ventures), prepaid expenses, repossessed property such as automobiles and boats, credit or debit card sales slips in the process of collection, and assets held in charitable trusts.

By some measures, noninterest income might be characterized as a large-bank phenomenon. As shown in table 6 (p. 47), noninterest income accounts for only about \$1 in \$5 of operating income at the average banking company with assets less than \$1 billion but about \$1 in \$2 of operating income at the average banking company with assets greater than \$25 billion.

Moreover, the lion's share of noninterest income is being generated by a very small number of banking companies: In our sample, 84 percent of all noninterest income in 2003 was generated by just 1 percent of the banking companies (not shown).

Scale economies in production are one reason that noninterest income represents such disparate amounts

TABLE 5

Liability and equity items, as a percent of total assets

	1986	1990	1995	2000	2003
Number of banking companies	3,799	3,127	2,924	2,644	2,662
Size-weighted averages					
Deposits	74.1	75.7	66.7	58.2	57.2
Fed funds purchased	7.6	5.2	7.2	8.7	9.3
Subordinated debt	0.5	0.7	1.7	1.8	1.9
Other liabilities	11.7	12.3	16.5	23.5	23.4
Equity	6.0	6.1	7.9	7.8	8.2
Deposit items as % of deposits					
Transactions deposits	29.8	25.8	27.0	17.4	15.0
Demand deposits	21.9	17.6	18.9	13.4	10.5
Nontransactions deposits	70.2	74.2	73.0	82.6	85.0
Savings and MMDAs	38.0	34.1	42.3	51.2	61.4
Small CDs	20.0	26.8	23.1	18.9	12.7
Large CDs	12.2	13.3	7.8	12.5	11.0
Unweighted averages					
Deposits	88.3	87.8	85.6	82.7	81.8
Fed funds purchased	0.7	0.8	1.1	1.8	1.7
Subordinated debt	0.1	0.1	0.1	0.1	0.1
Other liabilities	1.4	1.8	2.3	5.0	6.0
Equity	9.4	9.5	10.7	10.4	10.3
Deposit items as % of deposits					
Transactions deposits	28.7	27.4	30.4	27.0	27.6
Demand deposits	16.5	14.5	16.4	15.3	15.2
Nontransactions deposits	71.3	72.6	69.6	73.0	72.4
Savings and MMDAs	23.9	20.0	23.2	23.7	29.5
Small CDs	38.0	41.7	35.6	33.4	27.6
Large CDs	9.0	10.6	10.5	15.3	14.8

Notes: Columns may not sum to 100 percent due to rounding errors. The "other liabilities" category combines a variety of liabilities that are not separately reported to regulators at the banking holding company level, including (but not limited to) accounts payable, deferred compensation, trust preferred securities, dividends declared but not yet payable, allowances for credit losses on off-balance-sheet credit exposures, and selected insurance subsidiary liabilities (such as unearned premiums and claims expense reserves). MMDA is money market deposit account and CD is certificate of deposit.

of income at large and small banking companies. For example, loan servicing and other automated techniques, which generate large amounts of fee income relative to traditional production techniques, are most cost-effective when used at high volumes. Similarly, investment banking and other nontraditional banking products that generate large amounts of fee income tend to be practiced at banking companies that are large enough to service big corporate clients.

The composition of noninterest income also differs across banking companies of different sizes. Large banking companies generate disproportionately more noninterest income from securitizing and servicing mortgage and credit card loans, because the automated production processes used to produce these services exhibit substantial scale economies. Similarly, large banking companies are better able

to employ the concentrations of financial experts and develop the institutional information databases necessary for the production of investment banking, insurance underwriting, and private banking (fiduciary) services. However, there are other areas in which smaller banking companies generate a higher percentage of noninterest income than larger banking companies. Because small banking companies rely more on core deposit funding (such as household and small business checking accounts) than do larger banks, deposit service charges comprise a large part of their fee income base. And fee income from the sale of insurance products shows no size bias—possibly because small banking companies have been successful at cross-selling insurance products to their existing household and small business clients.

Noninterest income and financial performance

As discussed above, increased competition from nonbanks and out-of-state banks in the years following deregulation put downward pressure on the profitability of commercial banking companies. Banks were sensitive to these coming challenges long before deregulation was fully implemented. For example, in a 1983 study the Texas Bankers Association concluded that if the banking industry was “to remain profitable in a deregulated environment, it must fundamentally change the way in which it makes money.” The study found that in order to offset expected declines in net interest margins due to post-deregulation competition, fee income would have to increase from about 15 percent of total income to over 50 percent of total income by 1986 (Lane, Friars, and Goldberg, 1983). As we have seen above, many banking companies heeded the spirit of this advice by offering an expanded menu of fee-based products and services.

The financial consequences of these strategic shifts toward fee income were not well understood at the time. The upward trend in noninterest income during the 1990s was generally believed to have two risk-reducing effects: shifting banks’ income mix away from intermediation-based activities would reduce banks’ exposure to credit risk and interest rate risk, and shifting banks’ income mix toward fee-based financial products and services would reduce earnings volatility via diversification effects. As late as 2000, many bankers continued to believe that fee income would be a stable income stream: “Indeed, shareholders and analysts alike have grown fond of the earnings, diversity, growth potential, and market insulation that fees provide” (Engen, 2000).

To some extent industry-wide trends in income mix and profitability offered superficial support for this view. As shown in figure 2, between 1980 and 2003 noninterest income doubled as a percent of total industry operating income at U.S. commercial banking companies, while at the same time aggregate industry profitability (ROE) not only increased but became more stable. But such an analysis is indeed superficial and it ignores growing evidence to the contrary. Recent empirical studies indicate that although an increase in noninterest income may improve bank earnings, this seldom occurs without concomitant changes in interest income, variable inputs, fixed inputs,

financing structure, and other changes that have risky implications for the variability of bank earnings.

DeYoung and Roland (2001) suggest three reasons that noninterest income may increase the volatility of bank earnings. First, loans that are held in a bank’s portfolio—especially loans to businesses—are relationship based. That is, banks have close ties to their borrowers that allow them to ascertain borrower creditworthiness by building up a storehouse of private information about the borrower and to monitor the activities of the borrower going forward. Because these informational ties are costly for both the bank and the borrower to replicate, relationship-based loans often have high switching costs. In contrast, some fee-based activities are not relationship based and, hence, have low switching costs, such as fees from originating a mortgage or from non-customers using a bank’s ATM machines.⁴ Thus, despite exposing the bank to credit risk and fluctuations in interest rates, interest income from loans may be less volatile than noninterest income from many fee-based activities.

Second, a bank that shifts its product mix from traditional asset-based, interest-generating activities to nontraditional fee-based activities tends to increase its “degree of operating leverage.” For example, within the context of an ongoing lending relationship, the main input needed to produce more loans is a variable input (that is, interest expense); in contrast, the main input needed to produce more fee-based products is typically a fixed or quasi-fixed input (that is, labor expense). Thus, fee-based activities may require greater operating leverage than lending activities, which makes bank earnings more vulnerable to declines in

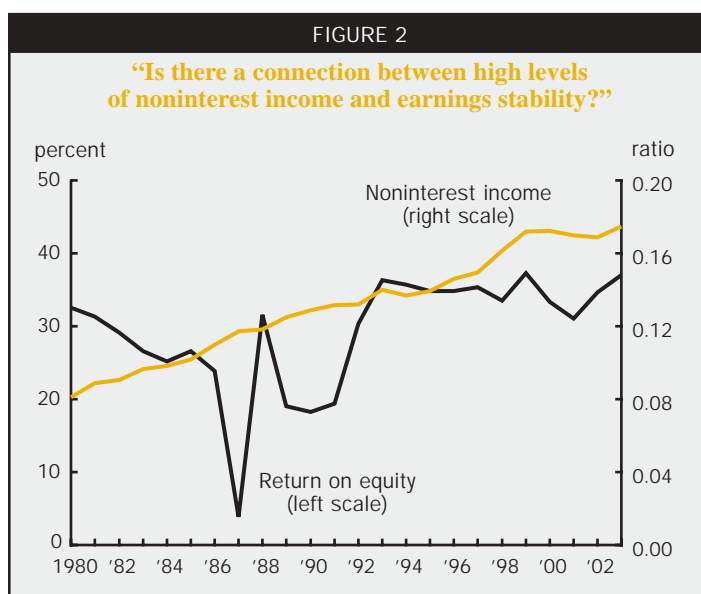
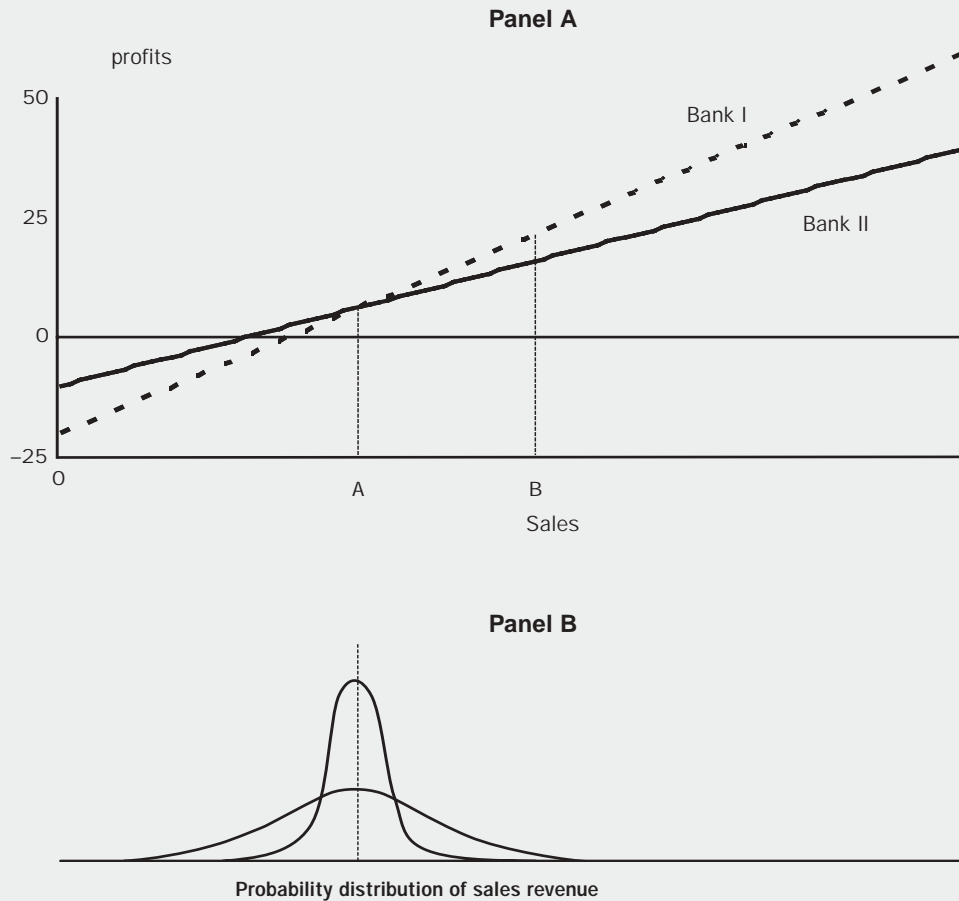


FIGURE 3

**Bank I has high fixed and low variable costs (high degree of total leverage);
Bank II has low fixed and high variable costs (low degree of total leverage)**



Source: Modified from DeYoung and Roland (2001).

revenues. Third, most fee-based activities require banks to hold little or no fixed assets, so unlike interest-based activities like portfolio lending, fee-based activities like trust services, mutual fund sales, and cash management require little or no regulatory capital. This allows banks to finance a greater amount of their income-generating activities with debt, which increases fixed interest expenses. In other words, fee-based activities allow banks to use a greater “degree of financial leverage” than lending activities.

The theoretical implications of these phenomena are illustrated in figure 3. Banks with low fixed costs and high variable costs, that is, a low degree of total leverage, are represented in panel A by the solid line (labeled Bank II). Banks with high fixed costs and low variable costs, that is, a high degree of total leverage, are represented by the dashed line (Bank I). Theoretically, banks

with large amounts of fee-based income will have a high degree of total leverage like Bank I, so that any given change in revenue (along the horizontal axis) gets amplified into a greater change in earnings (along the vertical axis). For example, when sales equals amount A, both Bank I and Bank II are earning about 5 units of profit. If sales revenue for both firms increases to B, Bank I will realize a much greater change in profits, from 5 units to 25 units, while the earnings for Bank II will increase from 5 units to about 15 units.

To make matters worse, the distribution of sales revenues can also vary across banks. Panel B illustrates two probability distributions for sales revenue. The flatter of the two distributions represents sales that are more volatile, while the more bell-shaped of the two represents sales that are less volatile, that is, they will not vary as much around the mean (represented

by the dotted line.). Theoretically, revenues derived from non-relationship-based fee-generating activities with low switching costs (that is, home mortgage origination) or high sensitivity to the business cycle (that is, investment banking) can be more volatile than revenues from traditional relationship-based banking lines of business. A bank with more of these types of activities would be likely to have sales revenues represented by the flatter of the two distributions. This would compound the change in profits illustrated in panel A because sales at Bank I would be more likely to change from quarter to quarter, all else being equal.

Using data from U.S. banks during the 1990s, DeYoung and Roland (2001) find evidence consistent with these theoretical conjectures. They demonstrated that income from fee-based activities was more volatile than income related to traditional intermediation activities (that is, interest from loans, interest from securities, and service charges from deposits), and that the degree of total leverage tends to be greater at banks that generate large amounts of fee income from non-traditional activities. They find also that the type of fee-based activity in which the bank engages makes a difference. Increased reliance on trading activities increases the volatility of overall bank revenues, while increased reliance on charging fees to depositors reduces the volatility of overall bank revenues.

Studies that followed generated similar findings. Stiroh (2004a) finds that an increased focus on non-interest income is associated with declines in risk-adjusted performance. In another study, Stiroh (2004b) finds potential diversification benefits for banks that offer a variety of different fee-based services, but no diversification benefits for banks that produce a combination of interest-based and fee-based services. In DeYoung and Rice (2004), we find that increases in noninterest income are associated with higher, but more volatile, accounting rates of return, resulting in reduced risk-adjusted returns.

We also find that an increase in noninterest income does not necessarily indicate that intermediation activities have become less important at banking companies. If intermediation activities have become less important for banks over time, we argue in DeYoung and Rice (2004), then it stands to reason that the correlation between bank profitability and bank net interest margin would grow weaker over time. But to the contrary, we show that the correlation of bank earnings (ROE and ROA) and net interest margin has not grown weaker over time and may have actually strengthened slightly. Finally, we find that well-managed banks tend to focus on a narrow set of

fee-based activities, most of which are unrelated to either traditional core deposit business or trading activities. This includes (among other items) fees from the sale of mutual funds and insurance policies, fees from securitization activities, income from loan servicing, fees from providing trust services, and income from providing cash management services. In DeYoung and Rice (2004), we conclude that increased noninterest income is co-existing with, rather than replacing, intermediation activities at the typical commercial bank and that traditional intermediation activities remain the core activity of most profitable banks.⁵

A closer look at noninterest income and payment activities

Providing payment services is an under-appreciated source of noninterest income for banking companies and its importance may be growing. Payment-related information technology at banks was expected to grow about 37 percent between 2003 and 2004 (Access Intelligence, LLC, 2004). Wachovia Corp. reorganized its payment operations to create a centralized payment division (Wade, 2003), while Bank of America Corp. overhauled its internet banking and bill-pay website (Bills, 2003). As the menu of payment products and services available to consumers increases, bankers have recently acknowledged that “only within the last two to three years has there been a realization of the importance of payments” (Wade, 2003).

Since customers generally use transaction accounts to make and receive payments, banking companies play a natural role in the payments system.⁶ And although competition from nonbanks using new payment technologies has increased, it is likely that banks will remain primary providers of payment products and services, because banks have two unique features with regard to the payments system that nonbank firms do not share.

First, financial institutions have the ability to offer settlement activities. Settlement here is defined as the irrevocable transfer of funds between parties in a payments system.⁷ While nonbank firms are very much involved in the processing of payments in the U.S. economy, only financial institutions can settle payment transactions, because all noncash payment transactions, except for on-us transactions, require the transfer of funds between two financial institutions. For example, Fiserv is a large vendor, or “third party provider,” of transaction services, such as customer account processing and check processing and imaging, but it does not settle checks with customers’ accounts. Only banks can settle their customers’ accounts.

Second, because the payments system is heavily reliant upon deposit-based instruments, banks are in a unique position to profit by cross-selling payment-based, payment-related, and non-payment-related products and services to their deposit customers. For example, banks offer customers a broad menu of payment methods with which to access the funds in their deposit accounts—such as checks, debit cards, direct debit for paying bills, direct deposit for receiving paychecks, and online bill paying—and offer payment products peripheral to customers’ accounts, such as credit cards and home equity lines of credit.

Depending on their business model and competitive strategy, banks can and do charge fees for these payment-related services. Chakravorti and Kobor (2003) suggest that banking companies use two different approaches for using payment activities to enhance their profits: a stand-alone product approach and a product-bundling approach. Stand-alone payment strategies are highly specialized; some examples include securities processing and handling, management of large personal and corporate trust accounts, and correspondent banking services. These lines of business tend to generate revenue streams that are independent from banks’ other activities and tend to use specialized (and often large scale) production processes as well.

In contrast, banks that use a product-bundling strategy will market and price their payment products in conjunction with other retail or wholesale products. Retail products would include, for example, services tied to personal deposit accounts, while wholesale products would include corporate transactions. Although payment products may not contribute directly to profits in this approach, including them in a bundle of related services can increase the retention of deposit customers. In contrast to fee-based activities that are not relationship-based (such as home mortgage origination, as discussed above), products and services linked to deposit accounts can be “sticky,” that is, they make it less convenient for deposit customers to transfer their funds to another institution. For example, deposit customers that use direct deposit and automatic bill payments are less likely to switch to another institution, because they will have to incur the costs (time and effort) of undoing these automated arrangements at their current bank and setting them up again at their new bank. Banking companies have become increasingly aware that their profits can be enhanced by offering costly new relationship-based services (such as expanded networks of branches or ATMs) at low prices or for a fee (where payment is in the form of foregone interest),

because the switching costs associated with these services can embed the customer more firmly in the long run (Furst, Lang, and Nolle, 1998; Kiser, 2002; DeYoung and Hunter, 2003).

Given that banks use payments for vastly different strategic reasons, it is difficult to model and measure how payments contribute to profits. Two recent Federal Reserve studies have grappled with this problem. Radecki (1999) estimated that the top 25 U.S. banking companies derived between one-third and two-fifths of their operating revenue (noninterest income plus net interest income minus provisions for loan losses) from payment-related activities in 1996. This innovative study was the first to estimate the proportion of income at banks that is attributable to payment activities, and it made two essential contributions to our knowledge of the role of payment services in banking strategy. First, by expanding the definition of payment activities to include “transaction services performed outside a deposit account relationship,” Radecki revealed the surprising depth of payment activities at large banking companies. Second, his study reminds us that payment services are integral to the strategic and financial functioning of most banking companies, because they are intertwined with the production of depositor-taking and information-intensive lending activities.

Rice and Stanton (2003) updated and expanded Radecki’s study by estimating the volume of payment-driven revenues at the top 40 bank holding companies in 2001. In order to obtain a larger sample of banking companies, Rice and Stanton drew their data from the financial reports (call report and Y9) that U.S. banking companies file with their regulators, rather than relying on banking company annual reports, which do not offer consistent information on payment-driven revenues in several important categories. In addition, these authors adjusted some of Radecki’s approximation methods, which may have over-allocated some bank revenues to payment activities. They conclude that payment revenue accounts for 16 percent to 19 percent of operating revenue—a substantially lower estimate than Radecki’s but still a surprisingly large contribution to the overall revenue streams of banking companies.

Estimating the importance of payment revenues

To estimate the contribution of payment activities to the income of the 2,662 banking companies in our sample in 2003, we apply the estimation employed by Rice and Stanton, using the call and Y9 reports. (Most of these data are not available prior to 2001.) The method identifies four separate sources of payment-driven revenues:

TABLE 6

Noninterest income items, unweighted averages

	All banking companies	Assets < \$1 billion	Assets > \$1 billion– < \$25 billion	Assets > \$25 billion
Noninterest income	20.4	19.0	30.1	49.2
		<i>% of total operating income</i>		
		<i>% of total noninterest income</i>		
Fiduciary activities	4.2	3.5	9.7	15.0
Deposit fees	51.6	53.8	35.2	17.5
Loan servicing fees	1.8	1.8	1.9	4.1
Investment banking	2.1	1.7	4.9	13.5
Venture capital	-0.01	-0.01	-0.04	0.27
Securitization fees	0.2	0.1	0.9	10.2
Insurance agency	3.4	3.3	3.5	2.8
Insurance underwriting	0.1	0.1	0.4	1.9
Gains on asset sales	9.5	9.2	12.0	6.5
Other noninterest income	27.1	26.5	31.7	28.3

Notes: Columns may not sum to 100 percent due to rounding errors. The "other noninterest income" category combines fee income from a variety of traditional and nontraditional banking activities that are not separately reported to regulators at the banking holding company level, including (but not limited to) fees for retail services such as mutual fund sales, safety deposit boxes, and credit cards, and fees for commercial services such as cash management, standby letters of credit, loan commitments, correspondent banking services, and financial consulting.

Traditional service charges on deposit accounts

Traditional service charges on deposit accounts are composed of two parts: the explicit fees charged to depositors (displayed in table 6) and the foregone interest revenue implicitly charged to depositors. It is easy to overlook the fact that depositors compensate banking companies for the convenience of having transaction accounts by foregoing interest on their account balances. Customers earn no interest on demand deposit account (DDAs) and earn below-market rates on deposits in negotiable order of withdrawal (NOW), savings, and money market accounts (MMDAs). These low-cost funds are key to banking companies' traditional intermediation activities, in which they earn profits by reinvesting these funds in higher yielding (and higher risk) market-rate loans and investments.

Foregone interest revenue is relatively straightforward to estimate. For our calculations we assume that deposits in all accounts earn the banking company the federal funds rate (that is, the bank's alternative funding rate). For each type of deposit account, we take the average spread between the federal funds rate and the deposit rate and multiply it by the aggregate balance in each type of deposit account. We then sum up the interest foregone by depositors by account type: DDAs, NOW and other interest checking accounts, and MMDA and other savings accounts. These explicit (service charges) and implicit (foregone interest) charges on deposit accounts make up the lion's share of payment-driven revenue at the typical banking

company. Radecki (1999) contains an in-depth discussion on estimating foregone interest payments from banking companies.

Trust and investment services income

Some portion of banks' income from fiduciary (trust) activities is payment-related; as such, this should be included in the aggregate estimates of payment-driven revenues. Estimating the amount of payment-related trust revenues, however, is extremely difficult. Depending on the type of trust account that is managed or held by a BHC's trust department, the BHC will earn a wide range of revenues from payment activities. At one end of the spectrum are trust accounts, where no cash will be distributed nor payments made to the customer in the foreseeable future. A personal trust containing non-dividend-paying market securities is a good example—the main fees charged to that trust by the BHC are portfolio management fees, not payment-activity fees. At the other end of the spectrum are trusts that pay out monthly distributions of income to the beneficiary of a trust account that does not require much, if any, portfolio management. The majority of the activity in this type of account is payment related, so the majority of revenue earned by the BHC can be attributed to payment activities.

Because the available data do not allow us to observe these differences in the intensity of fee income in the trust accounts of different banking companies, we create both a high estimate and a low estimate of these revenues for each bank. At the low end of the

spectrum we only include revenues generated from “custody and safekeeping accounts,” since most of the revenue earned in these accounts is derived directly from payment-related activities. We acknowledge that this excludes payment-related activities in other types of accounts, such as retirement and corporate accounts; however, some of these revenues are captured above as service charges and foregone interest revenues associated with deposit accounts. At the high end of the spectrum, we add in revenues from employee benefit accounts and corporate trust and agency accounts. This may overstate payment-related revenues, because the revenues recorded in these additional categories include fees from some nonpayment-related activities.

Credit cards

Payment-related credit card fees are also difficult to measure. Fee income from credit cards includes late payments, interest on credit card balances above the cost of a traditional loan, finance charges for cash advances, fees for handling transactions on behalf of merchants and card holders, and interchange fees for credit card purchases. Not all of these fees can be considered payment-related, however, and the situation is complicated further by the securitization of credit card assets, which moves a considerable amount of this activity off of the main balance sheet of the banking company. The banking company continues to earn a portion of the revenue from securitized credit card receivables through the excess collateral from annual fees and other payment-related service charges, and so we must account for revenue generated by those assets as well.

Following Rice and Stanton (2003), we estimate the payment-related revenue from both the on-balance-sheet and off-balance-sheet credit card receivables. Based on data from Visa and MasterCard (Credit Card Management, 2001), Rice and Stanton estimate that about 17 percent of all credit card revenues are derived from payment services. Hence, we estimate both on-balance-sheet and off-balance-sheet payment-related credit card revenue by multiplying total revenue associated with credit cards by 0.17.

ATM revenues

Beginning in 2001, the call and Y9 reports require that all banks report the “income and fees from automated teller machines” (ATMs) in the category of “other noninterest income” when it exceeds 1 percent of gross interest income plus noninterest income. As a result, some banking companies show ATM revenues of zero (or missing), when in fact they are just below the 1 percent threshold. This will obviously result in an understatement of ATM revenues in our estimates.

Estimation results

Table 7 displays our estimates of payment-driven revenue for our sample of 2,662 banking companies in 2003, expressed as a percentage of operating income and broken out by bank size and payment category. We find that payment-related income comprises about 21 percent of operating revenue.⁸ Given that we arrive at this estimation using a modified version of the Rice and Stanton (2003) methodology, it is not surprising that this figure is more in line with their previous estimates than with the larger estimates made by Radecki (1999). Still, our estimated figure of 21 percent remains substantial; it is nearly twice as large as the 12 percent of operating income that the average bank generates from fee-based activities that are unrelated to payments.

The importance and the mix of payment-related fees vary considerably by banking company size. For small banks, payment-related income is twice as large as non-payment-related fee income (21.12 percent versus 10.45 percent), while these figures are reversed for large banking companies (17.96 percent versus 38.55 percent). The average small banking company earns 97 percent of its payment-related revenue through traditional deposit accounts (deposit fees plus foregone interest), compared with only about 65 percent for the average large banking company. The typical large bank earns the balance of its payment-related revenue primarily through fiduciary income on trust accounts (about 23 percent) and credit card fees (about 10 percent).

Some large banking companies specialize in payment activities. State Street Corporation, for example, is the largest servicer of mutual funds and pension plans in the U.S., with more than \$9 trillion in assets under custody. It earns an estimated 36 percent of its operating revenue from fiduciary fees on those custodial accounts. Other large banking companies emphasize payment activities from more traditional sources—for example, as mentioned above, Bank of America reorganized its online bill payment webpage, eliminated its monthly fee, and saw its usage more than double between 2002 and 2003. As a result, the bank achieved both “higher deposits and the higher retention benefits” (Bills, 2003).

Conclusions and implications

Clearly, banking companies do more than just intermediate between depositors and borrowers. The industry has never limited itself to simply earning interest margins, and over time it has moved further away from that stylized version of “how banks make money.” The most telling symptom of this movement is the remarkable increase in noninterest income at

TABLE 7

Payment-related income, unweighted averages

	All banking companies	Assets < \$1 billion	Assets > \$1 billion–< \$25 billion	Assets > \$25 billion
		<i>% of total operating income^a</i>		
Income from payments-related activities (estimates)	20.68	21.14	17.06	17.96
Noninterest income unrelated to payment activities	11.76	10.45	20.86	38.55
		<i>% of total payment-related income</i>		
Deposit fees	56.16	56.32	55.54	44.04
Foregone interest revenue	40.02	40.75	33.98	20.55
ATM fees ^b	1.93	1.94	2.11	2.06
Fiduciary fees ^c	1.16	0.62	5.27	23.44
Credit card fees	0.72	0.38	3.10	9.91

^aFor the analysis in this table, operating revenue is defined net of provisions for loan and lease losses to remain consistent with the previous literature on this topic.

^bBanking companies report ATM (automatic teller machine) fees only when they are at least 1 percent of total income.

^cBased on the “upper bound” estimates of trust revenues.

Note: Columns may not sum to 100 percent due to rounding errors.

commercial banks, which by some measures now accounts for nearly half of the industry’s income. For some banks, increases in noninterest income flow from new lines of business—such as investment banking, securities brokerage, and insurance agency—that were made possible by a historic dismantling of restrictive financial regulations in the 1990s. For other banks, increases in noninterest income flow from producing traditional banking services—such as securitized lending and electronic payment services—with new production processes that were made possible by advances in information technology, communications channels, and financial processes. Many banks have done both.

These changes have some surprising implications for the performance of financial institutions. Conventional industry wisdom held that rebalancing bank income away from interest income and toward noninterest activities and fee income would make banking companies less risky. Replacing interest income—with its sensitivity to unpredictable movements in interest rates and the business cycle—would reduce the volatility of bank income and expanding into nontraditional fee-based activities would yield risk-reducing benefits of diversification. However, recent research suggests that, at least so far, this has not come to pass. Diversification gains from fee-based activities appear to be

scarce, and although there is some evidence that fee income can pump up bank earnings, this also tends to make bank earnings more, not less, volatile.

Perhaps just as surprising is the realization that traditional banking activities, namely, the provision of payment services, generate the lion’s share of noninterest income at most banking companies. We extend the work of Radecki (1999) and Rice and Stanton (2003) and find that for the average banking company with assets less than \$1 billion, payment-related revenues account for about 20 percent of total operating income and about two-thirds of total noninterest income.

Of course, the concept of “the average banking company” has become less meaningful over time, because technological change and industry deregulation have permitted (and the resulting increase in competition has encouraged) banking companies to experiment with innovative products, production processes, organizational forms, and business strategies. We explore the implications of these developments in the companion article that follows, which compares the financial performance of banking companies across different business strategies—from community banking to private banking to corporate banking and beyond.

NOTES

¹We start our empirical analysis in 1986 because this is the first year that detailed financial data are available for bank holding companies.

²We truncated the values of the bank-level ratios at the 1st and 99th percentiles of their sample distributions (but did not discard those observations) in order to reduce the influence of outlying values.

³Fees from letters of credit (not shown) increased fourfold at the average banking company between 1986 and 2003, from approximately \$2.40 to approximately \$8.60 for every \$1,000 of loans on the balance sheet.

⁴See Knittel and Stango (2004) for a discussion of ATM surcharges.

⁵This finding is reminiscent of the arguments made by Boyd and Gertler (1994) a decade earlier in a paper titled “Are banks dead? Or are the reports greatly exaggerated?”

⁶The payments system consists of a legal framework, rules, institutions, and technical mechanisms for the transfer of money. As such, it is an integral part of the monetary and financial system in a smoothly operating market economy (Hancock and Humphrey, 1997).

⁷For a thorough review of settlement and clearing systems, see the Committee on Payment and Settlement Systems (CPSS) Resources located on the Bank for International Settlements (BIS) website at <http://www.bis.org/cpss/index.htm>.

⁸To remain consistent with the previous literature on this topic, we define operating revenue net of loan loss provisions in this part of our analysis. Thus, payment-related revenue is calculated as the sum of the four payment-related components divided by (noninterest income plus net interest income minus loan loss provisions). Since foregone interest revenue is not included on the balance sheet (banks are not required to account for foregone interest), payment-related income plus noninterest income unrelated to payments will not add up to total noninterest income.

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They make money on the interest they charge on loans because that interest is higher than the interest they pay on depositors' accounts. The interest rate a bank charges its borrowers depends on both the number of people who want to borrow and the amount of money the bank has available to lend. As we mentioned in the previous section, the amount available to lend also depends upon the reserve requirement the Federal Reserve Board has set. Banks also charge fees for services like checking, ATM access and overdraft protection. Loans have their own set of fees that go along with them. Another source of income for banks is investments and securities.

1. 2. Banks typically make money in three ways: net interest margin, interchange, and fees. Here's how that can affect you. By Bobby Glotfelty Investment Advisor Representative, Betterment Published Oct. The money that the bank keeps is considered the net interest margin: put another way, the difference between how much the bank earns on their loans versus what they payback to customers is their net interest margin. For example, someone can get a \$100,000 mortgage from a bank, but it will come with an annual percentage rate (APR) that the customer needs to pay in order to get that loan. Interchange is the money banks make from processing credit and debit transactions. Each time you swipe your card at a store, the store, or merchant, pays an interchange fee. The majority of money from interchange goes to your bank—the consumer's bank—and a little goes to the merchant's bank. Interchange is also how many banks are able to offer such high credit card rewards. Fees are a relatively modern banking phenomena. In 1978, the Supreme Court ruled that banks could charge interest according to the laws of the bank's home state of operation. Then in 1996, the Supreme Court built upon this ruling in the landmark case, *Smiley v. Citibank*, finding that credit card late fees and other penalties should be included under the definition of "interest." Banks make money by charging interest on loans, of course. In fact, there used to be a standard, tongue-in-cheek answer to this question: According to the "3-6-3 rule," bankers paid a 3 percent rate of interest on deposits, charged a 6 percent rate of interest on loans, and then headed to the golf course at 3 o'clock. Like most good jokes, the 3-6-3 rule mixes a grain of truth with a highly simplified view of reality. To be sure, the interest margin banks earn by intermediating between depositors and borrowers continues to be the primary source of profits for most banking companies. But banks