POLICY STUDIES

Estimating the Volume of Payments-Driven Revenues

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Abstract

This paper estimates the volume of payments-driven revenues at the top 40 domestic BHCs and builds on the statistical summaries that Radecki (1999) compiles from the top 25 BHCs in 1996. We replicate Radecki's 1996 results, but find that they overstate payments-driven revenues by including entire revenue sources that are not entirely payments-driven. We offer a modified definition of payments-driven revenue and re-estimate BHC payments-driven revenue for the top 40 BHCs. Our modified estimation method suggests that on average 16 percent of the operating revenue of the top 40 BHCs is derived from payments-related activities.

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Estimating the Volume of Payments-Driven Revenues

1. Introduction

The payments system in the US has undergone dramatic changes in the last decade, due to advances in technology, financial institution deregulation and financial market innovation (Berger, Hancock and Marquardt, 1996) [1]. This has given nonbanks the opportunity to enter in to a rapidly-changing market and given banks and bank holding companies the opportunity to enter into new and evolving lines of business closely related to traditional bank functions and activities[2].

Thus, interest in payments systems has increased in the last several years, evidenced by the abundance of studies on payments systems, the focus of the Bank for International Settlements on payments and settlements systems, and recent bank recognition of payments as a revenue stream (*The American Banker,* 03/04/03). [3] Leonard Heckwolf, senior vice president of Bank One acknowledges that "only within the last two to three years has there been a realization of the importance of payments," and that Bank One puts a very high emphasis on payments as a source of revenue (American Banker 03/02/03).

A Federal Reserve Bank of New York study in 1999, using 1996 data, estimates that the top 25 US banks derived between one third and two-fifths of their operating revenue from payments-related activities (Radecki, 1999), where operating revenue is total noninterest income plus net interest income minus provisions for loan losses. While thorough in his description of payments-related revenue, Radecki (1999) lacks a large sample from which to draw inferences and bases his analysis mainly on annual report data, which may vary from firm to firm.

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[1] The payments system is defined as a set of instruments, banking procedures and interbank funds transfer systems that ensure the circulation of money (Bank for International Settlements, 2001).
[2] A nonbank is defined as any firm that is not a depository institution.
[3] Berger, Hancock and Marquart (1998), Hancock and Humphrey (1998), Furst, Lang and Nolle (1998), Radecki (1999), Bauer and Ferrier (1996), Federal Reserve Bank of Kansas City (2002), to name a few.

This paper updates and improves on Radecki's 1999 study by estimating the volume of payments-driven revenues at the top 40 Bank Holding Companies (BHCs) and building on the statistical summaries that Radecki compiles from the top 25 BHCs in 1996. More significantly, it measures payments-driven revenue using the Consolidated Reports of Condition and Income, the required financial reports that US banks and BHCs must complete. Measurement of payments-related revenues using a consistent data set will allow analysis across a large sample of bank holding companies.

Hancock and Humphrey (1998) note that studies on the costs and revenues of payment systems, notably check processing, have focused on Federal Reserve facilities, since data on bank operations are unavailable. Although 85% of banks surveyed by a Boston Consulting Group Study (2003) consider payments-related services an important source of income, only 30% of those banks are able to monitor or measure the channels generating that revenue.

In 2001, however, the Federal Financial Institutions Examination Council (FFIEC) implemented changes to the bank and BHC regulatory report forms, and now requires additional information on payments-derived revenues. For example, the bank reporting forms require information on ATM fees and introduced finer reporting of both interest and noninterest income. The bank form is the "Consolidated Report of Condition and Income" or call report. The BHC form is the "Consolidated Financial Statement for Bank Holding Companies" or the Y9.

More detailed reporting of bank and BHC income, along with efforts to accurately measure bank's payments-related revenues, will aid bankers and regulators in better assessing the profitability and risks associated with the important business line of payment systems.

2. Definition of Retail Payment Services (Radecki, 1999)

To empirically examine the contribution of payment services to total BHC operating revenue, we first define payment services based on Radecki's (1999) definition. We focus this study specifically on retail-based payments services.

Radecki (1999) refers to narrowly-defined payment services as those associated mainly with traditional deposit accounts. He adds, however, that transactions services performed outside a deposit account that are *similar to* deposit account payment services should also be included in the definition of payment services. Radecki, therefore, includes those payments-driven revenues that are arguably or defensibly defined as payments related and defines payment services as *the transfer of money*

(A) held in a *deposit account*,

(B) held in a *custodial account*, and

(C) in accord with the terms of a *credit agreement.*

Based on Radecki's (1999) definition of payment services, we define payment services-driven revenue as comprised of the following four types of payments-driven revenue sources:

(1) *Traditional service charges on deposit accounts*[4]. Including check-clearing fees, actual transfer of currency and to meet cash withdrawals at the teller window.

[4] Definitions*: On-line (PIN based):* sales and payment information are collected electronically. The payment information is then passed on to the financial institution or payment processor and the sales data is forwarded to the retailer's management information system for updating of sales records. *Off-line (signature-based) system:* merchant terminal is not connected directly to central computer for authorization or processing of sales receipts. *Interchange*: exchange of transactions between financial institutions participating in a bank card network, based on a common set of rules. Card interchange allows a bank's customer to use a bank credit card at any card-honoring merchant and to gain access to multiple ATM systems from a single ATM. *Interchange Fees:* fees paid by one bank to another to cover handling costs and credit risk in a bank card transaction. Interchange fees generally flow toward the bank funding a transaction and assuming some risk in the process. In a credit-card transaction, the interchange fee is paid by the bank accepting the merchant's sales draft (the merchant bank) to the card-issuing bank, who then bills the cardholder. In an automated teller and on-line systems, interchange flows in the opposite direction: the card-issuing bank (or customer) pays the fee to the terminal-owning bank. *Surcharge:* transaction fee for withdrawing cash at an ATM machine, charged by the ATM owner. Such fees must be displayed at the ATM site. *Acquirer Fees:* fees paid to the acquirer (purchaser) of the merchant sales drafts. The acquirer of the sales drafts collects a 'merchant discount fee' (or a processing fee) from the merchant; different from an interchange fee. (Source: Barron's Dictionary of Banking Terms and author)

(2) *Trust and investment services income (and cash management fees).* Including administration and custody of mutual funds, securities-handling services to corporate and institutional customers for pension funds, mutual funds and endowments.

(3) *Credit card revenue.* Including fees for handling transactions on behalf of merchants and card holders, fees for late payments, annual account maintenance, fees for online and offline purchases. Applies to POS and offline systems.

(4) *Revenues obtained through electronic delivery channels: Internet banking, debit and automated teller machine (ATM) related service charges and fees.* Including off-line debit card (signature) and on-line (PIN-based) interchange, merchant discount and/or acquirer fees, ATM surcharge and interchange fees, stored-value card system operational fees, business-to-business electronic payments system support and maintenance fees.

We separate electronic delivery channels from the account type because a large sum of the revenues obtained from an electronic delivery channels are not included in deposit account fees, such as ATM fees (which are listed separately in the Y9s) and interchange fees (listed separately in the annual reports).

2.1 Data

We use two data sources in our analysis. In Section 2.3, we use primarily annual report data and some Y9 information to update Radecki's 1999 study. In section 3, we use exclusively Y9 data to re-estimate the volume of payments-driven revenues using our modified approach. We focus on payments-driven revenues, rather than costs for two reasons. First, measures of profit efficiency are typically preferred over measures of cost efficiency, because a seemingly inefficient bank might be offsetting higher expenses with higher revenues (Sprong, Sullivan and DeYoung, 1996). Measurement of profits allows us to examine the "bottom line" and to analyze the degree to which banks are managing their inputs and costs to produce the highest, or "best practice" profit. Secondly, as Radecki notes, in the last several years, BHCs have made concerted efforts to improve financial disclosures with regard to detailed income reporting. Furthermore, supervisors in 2001 began to require more detailed reporting in income. Because far less information is available on costs incurred by BHC in offering payments services, we focus on revenues. One drawback in examining payment-driven revenues in absence of the costs is that we have no information about how profitable these activities are. Therefore, we can draw no conclusions on how these activities add to overall bank profitability.

Our analysis includes end-of-year 2001 data from the annual reports of selected large BHCs. We choose our sample based on the list of the top 50 US BHCs published by the Board of Governors of the Federal Reserve System. We then aggregate annual report and annual financial statement (FR-Y9C) data for these BHCs. The FR-Y9C is the Consolidated Reports of Condition and Income for Bank Holding Companies filed by all US BHCs with the Federal Reserve Board.

Of the 50 largest BHCs, however, 10 offer limited information, and we exclude them in our empirical analysis. Nine of the 50 are foreign-owned BHCs and file different reports than US BHCs; the top-tier BHC consolidated reports are filed in their home countries. The nine foreign-owned BHCs are listed below. One domestic BHC, Charles Schwab and Co., does not provide sufficient information in its 2001 Annual Report to examine payments-driven revenues.

Radecki notes significant differences between the annual reports and the FR-Y9C. In its annual report, each BHC chooses categories that correspond to its main sources of noninterest income. In addition, each BHC exercises its own judgement to determine the types of information and level of detail that is expected by shareholders and analysts. Because each BHC has a different mix of business lines and makes an independent judgement regarding what is useful, the formats of the disclosures of noninterest income are not strictly comparable across the industry (Radecki, 1999)[5].

Moreover, the categories of noninterest income appearing in the BHC annual reports do not necessarily correspond exactly to the categories defined by the Y-9C. Even when the categories in each data source seemingly correspond to one another, the exact information contained in those categories may differ slightly due to the flexibility that BHCs have in filing their annual reports.

Table 1 lists the largest bank holding companies in the US and includes information on the location of their headquarters (or top-tier BHC office), their BHC "type," and rank by asset size. We divide our sample of BHCs into subsamples based in their business strategy or operations. Five BHC types are identified: Conglomerate BHCs, Global Processing Banks, Regional Banks, Foreign BHCs, and Credit Card Banks. We define each of the BHC types as follows:

Conglomerate BHCs are composed of affiliate companies in a variety of businesses including, but not limited to, insurance, securities, commercial banking, and payments-processing activities. *The companies included in this group are Citigroup, JP Morgan Chase, Bank of America, Wells Fargo, Bank One and FleetBoston Financial.*

Global processing banks handle the cross-border safeguarding, settlement, and reporting of clients' securities and cash on a worldwide basis. These global custodians execute security trades, collect dividend and interest income on securities and cash holdings, recover taxes imposed on such income by the local governments and notify clients of corporate actions affecting their securities holdings. Accounting tasks include reporting all transactions, providing an accurate listing of a fund's assets, and valuing the

[5]BHCs are particularly inconsistent with regard to reporting of debit and credit card income. There appears to be no pattern of disclosure. For some BHCs, debit card or credit card data may be either aggregated, or listed in such a way as to make it unclear in which category it belongs.

fund's individual assets as well as the fund itself, if so desired by the client. *The companies included in this group are Bank of New York, State Street, Northern Trust and Mellon Financial Corporation.*

Credit Card companies are defined as either mono-line companies focused on credit card operations or banking companies that are not mono-line but have large credit-card operations. *Companies included in this group are MBNA, Charter One, Provident Financial and Synovus.*

Regional BHCs focus on large and middle-market commercial lending and retail banking. These companies have a presence in specific geographic areas of the country, i.e., the Southwest or the Midwest. *Companies included in group are Wachovia, US Bancorp, SunTrust, National City Corporation, KeyCorp, BB&T, Fifth Third, PNC Financial Services Group, Comerica, SouthTrust, Regional Financial Corporation, AmSouth Bancorporation, Union Planters Corporation, M&T, Marshall & Ilsley Corporation, Zions Bancorporation, Huntington Bancshares, Compass Bancshares, Greenpoint Financial, Banknorth Group, National Commerce Financial, First Tennessee, North Fork Bancorporation, Hibernia Corporation, Associated Banc-Corp and Colonial Bancgroup.*

Foreign BHCs are those whose top-holder BHC is located outside of the US. These BHCs file different quarterly reports with the Federal Reserve System and are not consolidated at the top-tier holding company level in the US as are the domestic bank holding companies. *Companies included in group are Bancwest Corporation (owned by BNP Paribas), Citizens Financial (Royal Bank of Scotland), Taunus Corporation (Deutsche Bank), ABN AMRO North American Holding Co, parent of LaSalle (ABN AMRO), HSBC North America (HSBC), Bankmont Financial Corporation, parent of Harris Bank (Bank of Montreal), Popular, Inc., (Popular), Allfirst Financial Incorporated (Allied First) and Unionbancal Corporation (Mitsubishi Tokyo Financial Group).*

2.2 Comparison of Payment-Services-Based Revenue Across Subsamples

Table 2 shows the composition of total revenues for our sample of 40 BHCs using information compiled from their annual reports in 2001. Total noninterest income comprises 56 percent of operating revenue and 34 percent of total revenue. Service charges on deposit accounts make up 7.3 percent of operating income and income from fiduciary activities totals 7.5 percent of operating revenue.

Radecki (1999) finds service charges on deposit accounts to comprise 6.8 percent of operating revenue. He finds that revenue from fiduciary activities make up 7.3 percent of operating revenue. All other fee income comprises 17 percent of operating revenue in Radecki's sample of 25 BHCs, but comprises 21 percent of operating revenue in our sample of 40 BHCs.

Table 3 aggregates the percentage of income derived from payments activities by BHC type. Aggregate revenues are listed for lower and upper bounds of our estimates. For select categories of payments-driven revenue where Radecki's estimates may be overstated, he gives a range of values, the upper range, or the upper bound of that estimate that likely picks up excess profits (revenue) from non-payments-related sources. We follow Radecki's method, but extend it to all categories, by listing a lower and upper bound for each of the payment-driven revenue categories aggregated in Table 3.

As discussed above, each BHC is free to make its own judgement to determine the types of information and level of detail that it presents in its annual reports. Table 4 lists institution-specific differences between the BHCs in their reporting of payments-driven revenue sources. Based on our calculations, we find revenue derived from payments activities comprises 27 percent of operating income in the lower bound and 40 percent of income in the upper bound.

Despite minor differences in sample size and aggregation of payments-driven revenue, our results correspond closely with Radecki's estimates. He finds that payments services generates between 36 and 42 percent of the operating revenue. Subtracting foregone interest, Radecki finds that income from payment activities approximates <u>35 to 41 percent of total *noninterest income*</u> for the 25 largest BHCs. We find that payments activities comprise between <u>27 percent and 40 percent of operating revenue</u>. Subtracting interest revenue, we find payments activities totals about <u>39 percent of total noninterest income</u>. Thus we conclude, in following Radecki's method, that the contribution of payment activities to a bank's operating revenue has not changed significantly over the past five years.

2.3 Shortcomings of Estimation Method

In this section, we briefly discuss the categories of payments-related revenue that may be mismeasured. Payments-related and non-payments-related revenue streams are included in BHC line items in financial reports, because these reports are not intended to break revenues into payments and non-payments related. For example, many BHCs aggregate in their annual reports the revenues derived from trust and custodial services. We consider electronic-banking fees that may be associated with a custodial account to be payments related, but not the fees for investment advisory services.

Several of the BHCs list interchange fees as a separate item in their annual reports (5 of 40 or 12.5 percent). However, 39 of the 40 BHCs list *either* interchange or credit-card revenue, so it is difficult to tell for these institutions whether they include interchange fees in credit-card revenue. Also, in the Y9 reports, cash from the fiduciary accounts in included in deposit account categories. Counting the revenue from these fiduciary accounts within both the trust accounts and within the deposit accounts would be double counting the revenues obtained from these fiduciary accounts. Because the annual reports do not contain detailed information on what in included in each line item, one could be double counting the payments-related revenues from several categories.

In his initial estimation of the volume of payments-driven revenues, Radecki (1999) states that, for some types of payment services, the amount of revenue received is determined directly from the annual reports by aggregating specific categories of noninterest income. However, for those categories where the information is limited or missing in some annual reports, Radecki takes the information on a subset of the twenty-five BHCs and extrapolates a combined total for the group.

One drawback of this approach is that many of these BHCs produce largely different products and services, or business strategy. We discuss above the different BHC business strategies that identify at the top 40 domestic BHCs. We also note the large difference in noninterest income categories by BHC type. Table 3 lists noninterest categories by BHC type. Credit card companies earn 44 percent of their operating revenue from securitization (net securitization income), while conglomerates earn 2.9 percent and the other two BHC types (global processors and regional BHCs) earn less than 1 percent of their operating income from this activity. Global processors earn 36 percent of their operating income from fiduciary activities, while the regional BHCs, conglomerates and global processors earn 8.3, 5.0 and 0.4 percent of operating income, respectively, from this activity.

Extrapolation of securities processing and handling fees from a small number of BHCs to the sample overstates these revenues, as only a small number of BHCs engage in securities handling and processing. These BHCs, which we define as global processors, undertake these custodial services not only for personal and corporate customers but also for other banks (as a correspondent). Thus, we argue that extrapolation of payments-related revenues in one category based on data from one type of BHC that mainly produces this type of activity will overstate revenues for the other BHC types.

In summary, while Radecki (1999) provides a thorough review of payments-related revenues at the top 25 BHCs in 1996, we believe that he overstates the contribution of payments services to operating revenue.

3. An Improvement on Estimating the Volume of Payments-Related Revenue

As discussed, the Annual Reports do not offer consistent information on payments-driven revenues in several categories. Furthermore, collecting data on individual BHCs from their annual reports is extremely time-consuming and does not easily allow us to expand our study across as larger sample of US BHCs. In the second part of this study, we create a data set, using the Y9 reports, that allows us to include all domestic BHCs and that is consistent across BHCs. Furthermore, due to the detailed instructions for filing these FR-Y9C reports, the definition of each and every item in the report is extremely well-defined. We, therefore, know exactly what is included in every line-item and need not guess what each BHC may have included in each category.

Table 5 details our modified definition of payments-driven revenue. The first column lists the category of revenue from the four types listed above: (1) *Traditional service charges on deposit accounts, (2) Trust and investment services income (and cash management fees), (3) Credit card revenue, and (4) Revenues obtained through electronic delivery channels.*

These four revenue categories are detailed in Table 5, Panels A-D. Each of the Panels contained in Table 5 breaks down one of the four payments-related categories into those components that are "narrowly-defined," "broadly-defined" or "not" payments-systems driven revenues. We refer to "narrowly-defined" payments-driven revenues as revenues that are, *regardless of the type of account in which the service is performed,* clearly payments-related.

The broadly-defined revenues are those that are widely accepted as payments driven, and one may argue either for or against their inclusion when aggregating BHC payments-driven revenues. Lastly, the "not" payments-driven revenue column of each Panel in Table 5 are those BHC revenues which cannot be considered to be payments-related. This column includes, as means of illustration, the types of BHC revenues often categorized with payments-driven revenues, but clearly not included in aggregation of payments-driven revenues.

The fifth and final column in Table 5 contains sources of information of each of the revenues listed in this table. "A" denotes annual report and "Y-9" denotes Consolidated Financial Statements for Bank Holding Companies (FR-Y9C). Each of these sources of financial information is discussed below.

Starting from this table of revenue categories, we make some inferences based on payments-related revenue within larger revenue categories. When possible, we extract the nonpayments-related income from the payments-related income, and when that is not possible, we find proxies for those individual payments activities that are combined with non-payments-related revenues. Below we discuss each of the categories of revenue, and the modifications we make to measuring payments-driven revenue.

3.1 Foregone Interest Revenue

BHCs receive compensation for their payment services not simply through noninterest income (explicit fee income). In addition to paying explicit account maintenance and activity fees, depositors compensate BHCs by forgoing interest in their account balances. Customers earn no interest on demand deposits and earn below-market rates on deposits in negotiable order of withdrawal (NOW), savings and money market accounts. Banks then benefit by reinvesting these funds in market-rate investments.

Radecki finds this implicit income to be a substantial amount, approximately three times as large as explicit fees collected on those deposit accounts. Following Radecki (1999), we calculate foregone interest income by assuming that deposits in all accounts earn the bank the federal funds 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. The estimated amount of foregone interest is listed in Table 7.

To measure foregone interest revenue, we estimate the amount of interest expense that banks would earn if they had to pay the federal funds rate to all deposit account holders. We also estimate the amount of interest expense that banks pay to the transactions account holders. The difference between the two is the amount of interest that the bank "saves" by offering customers transactions accounts. We calculate foregone interest (FI) revenue as follows:

$$FI = \$DDA*(fed\ funds)+\$NOW*(fed\ funds\text{-}NOW_r)+\$MMDA*(fed\ funds\text{-}MMDA_r), \quad (1)$$

where $DDA denotes aggregate balance in dollars in demand deposit accounts, $NOW denotes the balance in negotiated order of withdraw accounts, and $MMDA denotes the balance in money market deposit accounts.

The subscript, *r*, on each of the account types denotes the average rate those accounts paid to deposit holders. The rates for each of the account types are national averages on the last reported date of the year 2001 obtained from the Bank Rate Monitor, a weekly publication of deposit rates. Future research will use a local rate, rather than a national rate (i.e., state or MSA rate). The balances on each deposit account types are obtained from the FR-Y9C reports.[6]

3.2 Payments-Related Trust Revenues

Radecki (1999) acknowledges that some portion of income from fiduciary activities (trust revenues) is payments-related, and, as such, should be included in the aggregate estimates of payments-driven revenues. Estimating the amount of payments-related trust revenues, however, is extremely difficult. First, not one of the BHCs in our sample breaks out in its annual report, nor does the FR Y9C ask for, the amount of trust revenues derived from payment activities. Moreover, service charges from the trust balances that are swept into demand deposit accounts (DDAs) are included in "service charges in deposit accounts", so attempts to measure the payments-related trust revenues must recognize potential double counting issues.

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[6] Radecki (1999) uses individual bank rates rather than national rates.

Radecki's solution is to measure the fee income from "securities handling and other processing services", because a large majority of the 25 BHCs that he reviews state their fee income earned through these securities-handling activities. In his estimates of payments-driven revenues, Radecki includes all securities-handling trust revenues. We believe, however, that this assumption overstates trust revenues derived from payment activities. Securities-handling services performed by a bank's trust department are classified by Radecki (1999) as follows:

(1) *Master trust and custody:* acting as custodian or safekeeper, recordkeeper, and administrator (involving disbursements, tax payments, and accounting services) of securities and other assets, and providing trade execution, settlement, cash management, foreign exchange execution, and information services (including investment performance measurement and customized reporting) for private pension plans, public pension plans, and institutional trust funds.

(2) *Global custody:* acting as custodian for foreign assets, which requires multi-currency reporting, accounting, and cash management.

(3) *Corporate trust:* acting as trustee, fiscal agent, paying agent, registrar, and defeasance escrow agent for the issuer of bonds, commercial paper, or other debt instruments.

(4) *Stock transfer:* acting as transfer agent and dividend paying agent for an equity issuer. Mutual fund services are a type of stock transfer service (Radecki, 1999, p. 60).

Other processing services include the processing of checks, airline coupons, remittances with their accompanying documents, and ATM, On-line debit and credit card transactions (Radecki, 1999).

Of the securities-handling services listed above, some would be categorized as investment management services[7] or administration services[8]. Therefore, only a portion of securities handling and other processing fees would be considered payments related. This portion of fee income that is not

[7] Investment management services include the prudent portfolio management of an individual's or institutional investor's assets in return for a fee. Assets may include stocks, bonds, cash equivalents, real estate.

payments related will vary by BHC, therefore, we do not know, nor can we assume, the degree of mismeasurement.

We seek, therefore, a more precise estimate of payments-related trust revenue, as well as a measure that we can apply to all BHCs using the Y9 reports. As of 2001, the Y9s break down the trust revenue into nine distinct categories.

These revenue streams are derived from:

(1) Personal trust and agency accounts

(2) Retirement related trust and agency account

(a) Employee benefit – defined contribution

(b) Employee benefit – defined benefit

(3) Corporate trust and agency accounts

(4) Investment management agency accounts

(a) Fiduciary and related services income (foreign offices)

(5) Other fiduciary and related services income

(6) Custody and safekeeping accounts

(7) Other fiduciary and related services income

(8) Total gross fiduciary and related service income

(9) Intracompany income credits for fiduciary and related services

The *intracompany income credits* for fiduciary and related activities account for the benefits that a bank accrues in having trust balances in DDA accounts. Similar to traditional deposit accounts, the bank is able to lend the funds that are in the deposit accounts. The Federal Reserve accounts for this benefit by

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[8] Administrative service include accounting, documentation, correspondence and record-keeping.

calculating a credit (the trust-related DDA balance times the federal funds rate). We account for this portion in "service charges on deposit accounts" and in estimated foregone interest revenue.

Dependent upon 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, 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. These types of trusts could also contain shares of a closely-held business, in which case the fee charged to the trust is set by valuation of the company, which may vary from year to year. Eventually, this trust will distribute cash, but it may be years in the future. 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 is this type of account payments related, so the majority of revenue earned by the BHC can be attributed to payment activities. Other measurable Y9 trust account types include retirement related trust and agency accounts, investment management agency accounts and "other" fiduciary accounts.

Based on this information, the ability to systemically / accurately measure the amount of revenue derived from payment activities in bank trust accounts is limited. We, therefore, propose to estimate a range of revenues earned through payments-related activities in trust accounts. We include, on the low end, one category of trust revenue. On the high end, we aggregate four of the eleven revenue categories listed in the Y9.

At the low end of the spectrum we include only "custody and safekeeping accounts". We argue that all or almost all of the revenue earned in custody and safekeeping accounts is derived from payments-related activities. We acknowledge that we are excluding payments-related activities in other types of accounts, such as retirements and corporate accounts, but acknowledge, also, that we include all trust balances that are in deposit accounts in "service charges" and foregone interest revenue categories.

At the high end of the spectrum, we aggregate revenues from employee benefit (defined contribution and defined benefit) accounts, corporate trust and agency accounts, and custody and safekeeping accounts. Payments-related revenues are overstated in employee benefit accounts and corporate trust and agency accounts by including nonpayments-related income with payments-related income. However, we omit revenues from "investment management agency accounts" and "other fiduciary accounts" and "other fiduciary and related services" income, which understates our aggregate estimate of payments-related revenues. To our knowledge, this is the first attempt to measure payments-related trust revenues on a wide-scale basis for bank holding companies. The lower and upper range of payments-related trust revenues are contained in Table 8.

3.3 Payments-Related Credit Card Revenues

Another difficult-to-quantify payments-related revenue stream is that from securitized credit-card receivables. Although the BHC may securitize the credit-card receivables, it generally holds the excess collateral tranche of the trust. The BHC continues to earn revenue from those credit-card receivables through the excess collateral from annual fees and other payments-services charges. In securitization, the on balance sheet receivables are typically separated into three tranches, or security classes. The C class, or excess collateral tranche is usually retained by issuing BHC. The BHC continues to collect interest and fees on those outstanding credit card receivables, and earns additional income for servicing the credit cards in the tranches sold to investors. The payments-related fees still accrue to the BHC from those securitized credit card receivables.

We first estimate the payments-related credit card revenue from on balance sheet receivables, and, based on that measurement, search for suitable proxies for payments-related securitized credit card receivables.

The four credit card banks in our sample earn 48 percent of their revenue in interest income and 52 percent of their revenue in noninterest income, thus a large part of credit card receivables is fee income. Fee income may include 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, fees for online and offline purchases, Interchange fees for credit card purchases. We cannot break any of these items out of the Y9 reports. However, the major credit card issuers (Visa, MasterCard) have been able to discern the percent of revenue earned from different payments-related credit card services.

Credit Card Management (2001) breaks down 1999 revenues of Visa and MasterCard issuers into six subcategories: interchange fees, annual fees, penalty fees, cash-advance fees, enhancements, and interest. We consider interchange fees, annual fees, and enhancements to be payments-related revenues. Based on this figure, 14 percent of total MasterCard and Visa issuer revenues come from interchange fees, another 2 percent from annual fees, and 1 percent from enhancements. Generalizing this result, we assume that 17 percent of all credit card revenues are derived from payments-services. We then take total revenue from credit cards and multiply that by 0.17 to give us an estimate of on balance sheet payments-related credit card revenue.

We then estimate the payments-related revenue from the securitized credit cards by converting the off balance sheet securitized credit card receivables into an on balance sheet equivalent. Payments-related revenue from securitized credit card receivables includes the same activities as the on balance sheet receivables, except that the revenues from these activities accrue to the credit card master trusts.

These revenues include similar fees as in the on balance sheet credit card receivables, such as annual fees and late fees. Some of the fees in the credit card balances that are securitized accrue to the bank, other fees accrue to the excess collateral or cash investment account of the trust. However, regardless of where these fees are "booked" they accrue to the bank either immediately, or when the trust has been dissolved. The credit card securitized trusts also earn income from the servicing of securitized credit card receivables, but we do not consider this to be payments related.

We first assume that the securitized credit card receivables earn the same rate of return that the on balance sheet credit card receivables earn. This assumption implies that the portfolio composition of the off balance sheet credit card receivables is the same as the on balance sheet credit card receivables and that fees earned from these activities are roughly similar. We then multiply 0.17 (our on balance sheet estimate of payments-related revenue) times a rate of return (revenue / receivables) that the on balance sheet receivables would earn. The calculation of payments-related securitized credit card revenue (SCC) is as follows:

$$SCC = 0.17 * (\text{securitized credit card receivables})\left(\frac{\text{on balance sheet credit card revenue}}{\text{on balance sheet credit card receivables}}\right) \quad (2)$$

3.4 ATM revenues

Beginning in 2001, the Bank Call reports require that banks report the "income and fees from automated teller machines" (ATMs) in the category of "other noninterest income" when it exceeds 1 percent of total revenue (defined as total interest income plus total noninterest income). We aggregate the ATMs fees by BHC. We collect data on all bank subsidiary ATM fees and sum those fees for each BHC by linking each bank subsidiary with its parent BHC. One issue with using this variable is that, because banks must only report this item when it exceeds 1 percent of total revenue, some BHCs show ATM revenues of zero (or missing), when in fact, they are just below the 1 percent threshold.

However, in cases where we find missing data on ATM fees, we compare our data with data on selected BHC ATM fees (Stango, 2002) and find that our calculations are consistent with those detailed in other sources. We address these ATM fees either by setting them to a percentage just under 1 percent of total revenues, or can leave them as non-reporting (or zero).

4. Modified Estimation of the Volume of Payments-Driven Revenues

Table 6 displays the summary of our modified estimate of the payments-driven revenue by BHC type, using the Consolidated Financial Statements (FR-Y9C). Table 7 lists additional detail on the composition of operating revenue for our sample of BHCs.

We find that payments-driven revenues comprise about 16 percent of operating revenue, where operating revenue is defined similarly to Radecki (1999) as total noninterest income plus net interest income minus provisions for loan losses, or approximately 29 percent of total noninterest income. Our estimate includes service charges on deposit accounts, ATM fees, and estimates of payments-driven credit card revenue, forgone interest revenue and payments-related trust revenues. While other studies (Radecki, 1999 and Boston Consulting Group, 2003) find a higher percentage of revenue derived from payments-related activities, we argue that by defining and measuring payments-related activities more precisely, we are able to exclude erroneous activities that are often aggregated with payments-related income and to avoid double counting.

Both tables (Table 3 and Table 6) suggest that different BHC types produce different quantities of payment services, measured by the percentage of operating revenue derived from these services. We note that the global processing BHCs (State Street, Bank of New York, Mellon and Northern Trust) have a larger range of payments-driven revenue than other BHC groups. This is due to addition of trust revenues, a larger revenue generator for the global processor and credit-card companies. The global processors earn between 16.8 and 20.5 percent of their operating revenue from payment services, while the credit-card companies earn between 9.1 and 9.2 percent, and conglomerates between 15.0 and 15.1 percent of operating revenue from payment services. This suggests that some BHC types operate under a different production function than other BHC types, a topic that will be discussed in greater detail in a later paper in this series ("The Importance of Payments-Driven Revenues to Franchise Value and Bank Performance").

5. Summary and Conclusion

This paper replicates Radacki's 1999 study on estimating the volume of payments-driven revenues. We find in using 2001 rather than 1996 data, that payments-driven revenues measured from annual report data comprise 27 to 40 percent of operating revenue. We note that this figure has not increased significantly over the last several years. We next describe several shortcomings of this approach, namely that annual report data are inconsistent across firms and that using annual reports limits the sample size due to availability and time-consuming data collection and entry.

We then look to the FFIEC reporting data for more detailed and consistent information over a larger sample. The population of FFIEC reporting institutions includes all US banks and bank holding companies. The required call and Y9 reports contain homogenous information on hundreds of required line items. We draw what payments-related information we can out of the 2001 reports and find suitable proxies for those payments-related activities which we cannot extract directly from the call report and Y9 report data.

The modified estimation of payments-driven revenues differs from other studies (Radecki, 1999 and Boston Consulting Group, 2003) that find a much larger percentage of revenue derived from payments-related activities. We find that payments-driven revenue comprises approximately 16 percent of operating revenue in 2001. We argue that our conservative estimate is more accurate than previous studies based on the following modifications. We eliminate double counting, exclude non-payments-related activities, account for both on balance sheet and off balance sheet credit card revenue, and, due to new information available in 2001 forms, are able to account for activities which were previously not measurable.

Finally, by separating the BHCs in our sample into BHC types based on business strategy, we find that payments-driven revenues vary by BHC type. We infer from this that BHC types may operate under a different production function than other BHC types, a topic that will be discussed in greater detail in a later paper in this series ("The Importance of Payments-Driven Revenues to Franchise Value and Bank Performance").

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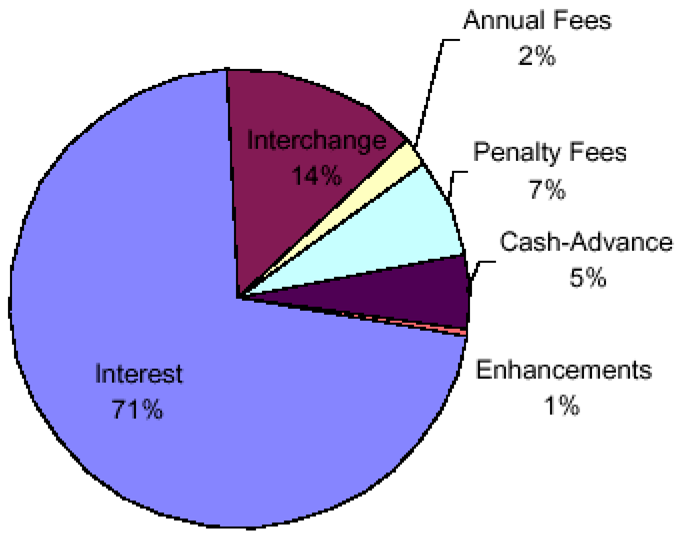
Figure 1
MasterCard and Visa Issuer's Revenues: 1999



Source: Credit Card Management (2001), 11.

Table 1
The Fifty Largest Bank Holding Companies in the US

Bank Holding Company Name	Headquarters Location	BHC Type	Total Assets December 31, 2001 (thousands of US dollars)	Rank by Assets
ABN AMRO No. America Holding Co (ABN AMRO)	the Netherlands	Foreign	171,795,842	10
Allfirst Financial Inc. (Allied First, Ireland)	Ireland	Foreign	18,878,772	44
Amsouth Bancorporation	Birmingham, AL	Regional Focus	38,622,252	27
Associated Banc-Corp	Green Bay, WI	Regional Focus	13,640,285	49
Bancwest Corp (BNP Paribas)	France	Foreign	21,646,514	39
Bank Of Amer Corp	Charlotte, NC	Conglomerate	621,764,000	3
Bank Of NY Co	New York, NY	Global Processor	81,025,323	15
Bank One Corp	Chicago, IL	Conglomerate	268,954,000	7
Bankmont Financial Corp. (Bank of Montreal)	Cananda	Foreign	34,641,608	31
Banknorth Group	Portland, ME	Regional Focus	21,095,424	40
BB&T Corp	Winston-Salem, NC	Regional Focus	70,869,945	18
Charles Schwab and Co	San Francisco, CA	Conglomerate	40,463,921	25
Charter One Financial	Cleveland, OH	Credit Card	38,221,017	28
Citigroup	New York, NY	Conglomerate	1,051,450,000	1
Citizens Financial Group (Royal Bank of Scotland)	Scotland	Foreign	454,540,000	4
Colonial Bancgroup	Montgomery, AL	Regional Focus	13,202,561	50
Comerica	Detroit, MI	Regional Focus	50,949,608	21
Compass Bshrs	Birmingham, AL	Regional Focus	23,078,952	38
Fifth Third Bancorp	Cincinnati, OH	Regional Focus	71,026,340	17
First Tennessee National Corp	Memphis, TN	Regional Focus	20,618,320	41
Fleetboston Fncl Corp	Boston, MA	Conglomerate	203,638,000	9
Greenpoint Fc	New York, NY	Regional Focus	20,186,070	42
Hibernia Corp	New Orleans, LA	Regional Focus	16,618,176	47
HSBC North America (HSBC Corp)	Hong Kong	Foreign	109,741,278	12
Huntington Bshrs	Columbus, OH	Regional Focus	28,496,659	35

Table 1 (continued)

Bank Holding Company Name	Headquarters	BHC Type	Total Assets	Rank
J P Morgan Chase & Co	New York, NY	Conglomerate	693,575,000	2
Keycorp	Cleveland, OH	Regional Focus	80,399,503	16
M&T Bancorp	Buffalo, NY	Regional Focus	31,450,196	33
Marshall & Ilsley Corp	Milwaukee, WI	Regional Focus	27,272,753	36
MBNA Corp	Wilmington, DE	Credit Card	45,450,837	24
Mellon Fncl Corp	Pittsburgh, PA	Global Processor	35,771,807	30
National City Corp	Cleveland, OH	Regional Focus	106,894,340	13
National Commerce Fncl Corp	Memphis, TN	Regional Focus	19,278,386	43
North Fork Bc	Chicago, IL	Regional Focus	17,232,103	45
Northern Trust Corp	Chicago, IL	Global Processor	39,664,457	26
PNC Financial Services Group	Pittsburgh, PA	Regional Focus	69,570,206	20
Popular, Inc. (Banco Popular)	San Juan, PR	Foreign	30,745,000	34
Provident Fncl Group	Cincinnati, OH	Credit Card	15,793,507	48
Regions Financial Corporation	Birmingham, AL	Regional Focus	45,545,287	23
Southtrust Corp	Birmingham, AL	Regional Focus	48,754,548	22
State Street Corp	Boston, MA	Global Processor	69,895,857	19
Suntrust Corporation	Atlanta, GA	Regional Focus	104,740,644	14
Synovus Financial Corp	Columbus, GA	Credit Card	16,657,947	46
Taunus Corporation (Deutsche Bank)	Germany	Foreign	227,229,000	8
U S Bancorp	Minneapolis, MN	Regional Focus	171,390,000	11
Union Planters Corporation	Memphis, TN	Regional Focus	33,197,604	32
Unionbancal Corp (Mitsubishi Toyko Financial Group)	Tokyo, Japan	Foreign	36,077,515	29
Wachovia Corp	Charlotte, NC	Regional Focus	330,452,000	5
Wells Fargo & Co	San Francisco, CA	Conglomerate	307,569,000	6
Zions Bancorporation	Salt Lake City, UT	Regional Focus	24,304,164	37

Conglomerate BHCs are composed of affiliate companies in a variety of businesses; including, but not limited to insurance, securities, commercial banking, and payments processing. Global Processing BHCs are those that specialize in the service, research and management of assets for both individual and corporate and institutional clients. Credit-card companies are defined as either mono-line companies focused on credit card operations or banking companies that are not mono-line but have large credit card operations. Regional BHCs focus on community and retail banking. These companies have a presence in specific geographic areas of the country. Foreign BHCs are those whose top-holder BHC is located outside of the US.

Table 2
Composition of Operating Revenue for the 40 Largest Bank Holding Companies
Using Annual Report Data

As of December 31, 2001	Combined Total of 40 BHCs (000s of USD)	Combined Totals as a Percentage of Operating Revenue	Combined Totals as a Percentage of Total Revenue	Combined Totals as a Percentage of Assets
Total noninterest income	149,911,782	56.0%	33.6%	3.0%
Service charges on deposit accounts (in domestic offices)	19,594,706	7.3%	4.4%	0.4%
Income from fiduciary activities	20,066,109	7.5%	4.5%	0.4%
Trading revenue	16,665,540	6.2%	3.7%	0.3%
Other fee income (note 1)	56,704,821	21.2%	12.7%	1.1%
All other noninterest income	36,880,606	13.8%	8.3%	0.7%
Net interest income	150,322,577	56.2%	33.7%	3.0%
Provisions for loan losses	32,748,345	12.2%	7.3%	0.7%
Net-net interest income (net interest income - provisions for loan losses)	117,574,232	44.0%	26.3%	2.4%
Operating revenue (total noninterest income + net-net interest income)	267,486,014	.	59.9%	5.4%
Total Revenue	446,613,297	N/A	.	9.0%
Total Assets	4,988,317,078			

The Top 50 bank holding companies (BHCs) as listed by the Federal Reserve System's National Information Center (NIC) contain 9 foreign BHCs, or companies which are headquartered outside of the US. For this study, we exclude the foreign BHCs because these entities file different quarterly reports from the domestic BHCs.

Note 1: Includes the following: (1) investment banking, advisory, brokerage, and underwriting fees and commissions, (2) insurance commissions and fees and (3) net servicing fees.

Table 3
Summary of Top BHCs Payments-Driven Revenue by BHC Type
In Thousands US Dollars and as a Percentage of Revenue: 2001
Using Annual Report Data

Bank Holding Company Group	Total Value of Payments-Related Revenue ($000)		Payments-Related Revenue as a Percentage of Operating Revenue		Payments-Related Revenue as a Percentage of Total Revenue		Number of BHCs
	Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound	Upper Bound	
Conglomerate BHCs	43,510,504	57,631,504	25.58%	33.88%	15.33%	20.30%	6
Global Processing BHCs	4,064,684	9,706,984	25.61%	61.16%	18.25%	43.57%	4
Credit Card Companies	1,616,813	7,680,193	15.48%	73.51%	9.98%	47.40%	4
Regional Focus BHCs	23,579,529	32,310,241	33.17%	45.46%	18.98%	26.01%	26
Total	**72,771,530**	**107,328,922**	**27.21%**	**40.13%**	**16.29%**	**24.03%**	**40**

The lower and upper bound figures on payments-driven revenues are based on Bank Holding Company specific notes/details in each of their Annual Reports. Generally, the lower bound includes revenues from services charges on deposit accounts (including cash management fees and electronic banking fees), foregone interest revenue and credit card revenues. The upper bound includes all revenues in the lower bound plus revenues from trust and investment services.

Conglomerates BHCs are composed of affiliate companies in a variety of businesses; including, but not limited to insurance, securities, commercial banking, payments processing activities. Companies included in group: Citigroup, JP Morgan, Bank of America, Wells Fargo, Bank One and FleetBoston Financial.

Global Processing BHCs are those that specialize in the service, research and management of assets for both individual and corporate and institutional clients. Companies included in the group: Bank of New York, State Street, Northern Trust and Mellon Financial Corporation.

Credit Card companies are defined as either mono-line companies focused on credit card operations or banking companies that are not mono-line but have large credit card operations. Companies included in group: MBNA, Charter One, Provident Financial and Synovus.

Table 4
Notes On Bank Holding Companies' Annual Reports

Amsouth Bancorp	Interchange fees are a subset of the "other" category.
Associated Banc-Corp	No Comment
Bank Of Amer Corp	No Comment
Bank Of New York Co	Private client services and asset management fees are listed under "administration and custody."
Bank One Corp	No Comment
Banknorth Group	Merchant and electronic banking income are listed under electronic banking income. Investment planning services are listed under administration and custody.
BB&T Corp	Bankcard fees and merchant discounts are listed as interchange income.
Charter One Fncl	No Comment
Citigroup	No Comment
Colonial Bancgroup	The "other" category includes check commissions.
Comerica	No Comment
Compass Bshrs	No Comment
Fifth Third Bc	Electronic payment processing fees are listed under electronic banking fees. Cardholder fees are listed under other service charges.
First Tennessee National Corp	Cardholder fees are listed under credit card revenue.
Fleetboston Fncl Corp	Credit card revenue likely contains securitization revenue.
Greenpoint Fc	No Comment
Hibernia Corp	ATM fees are listed under interchange fees. Debit and credit card fees are listed together under credit card revenue.
Huntington Bshrs	No Comment
J P Morgan Chase & Co	No comment
Keycorp	Electronic banking and credit fees are listed as a subset of "other" income.
M&T Bc	No Comment
Marshall & Ilsley Corp	No Comment
MBNA Corp	Some securitization revenue is listed under foregone interest revenue.
Mellon Fncl Corp	No comment
National City Corp	Electronic payment processing fees are listed under electronic banking fees. Credit card fees listed in another category.
National Commerce Fncl Corp	No Comment
North Fork Bc	Check cashing fees are listed under check clearing fees.
Northern Tr Corp	No Comment
Pnc Fncl Svc Group	PNC has a "consumer services" listing, which is categorized as electronic banking fees.

Provident Fncl Group	Credit card fees are included in “other service charges and fees.”
Regions Fc	No Comment

Table 4 (continued)

Southtrust Corp	Bank card fees and debit card fees are included in “interchange income.”
State Street Corp	Mutual funds, collective funds, and pensions are listed under fiduciary income.
Suntrust Bk	No Comment
Synovus Fc	Third-party services on credit cards are listed as a subset of “other.”
U S Bc	Merchant and ATM processing revenue are listed under interchange fees.
Union Planters Corporation	No Comment
Wachovia Corp	No Comment
Wells Fargo & Co	Administration and custody fees and mutual funds are listed as subsets of fiduciary income.
Zions Bc	No Comment

Table 5A
Definitions of Banks' Payments-Services-Driven Revenues
Deposit Accounts

Category Of Revenues	NARROWLY DEFINED Payments-Driven Revenue	BROADLY DEFINED Payments-Driven Revenue	NOT Payments-Driven Revenue	SOURCES of information / data (see KEY below)
Traditional Service Charges On Deposits in Transactions Accounts	Check Clearing Fees			*Service Charges on Deposit Accounts* (A,Y-9)
Transactions accounts include: NOW, demand deposit, ATS, Telephone or pre-authorized transfer accounts	Transfer of Currency or Federal Funds			*Service Charges on Deposit Accounts* (A,Y-9)
	Maintenance fees on deposit accounts			*Service Charges on Deposit Accounts* (A,Y-9)
		Foregone interest by demand deposit account holders[9]		Included *in Noninterest income* (Y-9). Can be calculated using method suggested by Radecki (1999)[10]

[9] Depositors compensate the bank by foregoing interest on their balances in addition to paying explicit account maintenance and activity fees (Radecki, 1999).
[10] Radecki (1999) assumes that deposits on all accounts with payment capabilities (i.e., check-writing privileges and immediate remote withdraw) implicitly earn the federal funds rate. Forgone interest is then the difference between the federal funds rate and the rate offered on each type of transaction account times the aggregate dollar amount in each of those accounts.

Table 5B
Definitions of Banks' Payments-Services-Driven Revenues
Trust and Investment Accounts

Category Of Revenues	NARROWLY DEFINED Payments-Driven Revenue	BROADLY DEFINED Payments-Driven Revenue	NOT Payments-Driven Revenue	SOURCES of information / data (see KEY below)
Trust And Investment Services Income[11] Transactions services performed outside a deposit account relationship	Fees for providing the trade execution and settlement of securities in all types of trust and investment services accounts[12]			*Trust and Investment Services Income* (A) / *Income from Fiduciary Activities* (Y-9)
	Fees for collecting dividends and interest on securities held in all types of trust and investment services accounts			*Trust and Investment Services Income* (A) / *Income from Fiduciary Activities* (Y-9)
		Fees for acting as a safe-keeper of securities[13]		*Trust and Investment Services Income* (A) / *Income from Fiduciary Activities* (Y-9)

[11] The types of trust accounts among which the *FFIEC's Consolidated Reports of Condition and Income for Banks* distinguishes are as follows: personal trust and agency accounts, retirement related trust and agency accounts (which includes master trusts), corporate trust and agency accounts, investment management agency accounts, and other fiduciary accounts. Within each of these types of accounts, banks may provide investment management services and/or custodial services. Investment management services include the sharing of market information and buy-sell recommendations to investment clients and managing the securities held in the clients' portfolio. Custodial services include the safekeeping of securities, the collection of dividends and interest on securities held in clients' accounts, and the buying and selling of securities when instructed by corporate clients. Full-trustee services include investment management services and custodial services.

[12] The Y-9 reports exclude commissions and fees received for the accumulation or disbursement of funds deposited to Individual Retirement Programs (IRAs) or Keogh Plan accounts when they are not handled by trust department of the holding company's subsidiary banks. These charges are reported in "service charges on deposit accounts in domestic offices."

[13] A service comparable to keeping securities in a safe-deposit box in a bank.

Table 5B (Continued from Previous Page)
Definitions of Banks' Payments-Services-Driven Revenues
Trust and Investment Accounts

Trust And Investment Services Income	Fees for investment advisory activities	*Investment banking, advisory, brokerage and underwriting fees and commissions* (Y-9)
	Brokerage and underwriting fees	*Trust and Investment Services Income* (A) / *Investment banking, advisory, brokerage and underwriting fees and commissions* (Y-9)

Table 5C
Definitions of Banks' Payments-Services-Driven Revenues
Credit Cards

Category Of Revenues	NARROWLY DEFINED Payments-Driven Revenue	BROADLY DEFINED Payments-Driven Revenue	NOT Payments-Driven Revenue	SOURCES of information / data (see KEY below)
Credit Card Revenue	Fees for handling transactions on behalf of merchants and card holders			*Credit card revenue* (A), *Other noninterest income*[14] (Y-9)
	Fees for online and offline purchases			*Credit Card Revenue* (A), O*ther noninterest income* (Y-9)
	Interchange fees for credit card purchases			*Credit Card Revenue* (A), O*ther noninterest income* (Y-9)
		Interchange and annual fees included in credit card securitizations[15]		Contained in some monthly credit card trust servicer reports. Amount of securitized credit card receivables, but not fees associated with receivables are reported in the Y-9.

[14] 23 items are listed in the category "Other noninterest income". Not all of these items are retail payments-driven. Items that could be considered payments-driven are: service charges for rental of safe deposit box, safekeeping of securities for other depository institutions, the sale of bank drafts, money orders, cashiers' checks and travelers' checks, annual or other periodic fees paid by holder of credit cards issued by the BHC, charges to the merchants for the bank's handling of credit card or charge sales when the BHC does not carry the related loan accounts on its books (BHCs can report this item net of expenses related to handling these credit card sales), interchange fees earned from credit card transactions, and service charges on deposit accounts in foreign offices.

[15] While the credit chard interchange fees of unsecuritized credit card receivables are considered payments-driven revenue, the interchange and other variable fees on securitized credit card receivables accrue to the entire trust (all tranches) and not only the excess collateral or residual tranche. The BHC typically issues bonds for the top credit-rated tranches and keeps the last, or residual tranche, as an off-balance sheet item. Therefore, unless specified, the percentage of payments-driven revenue accruing to the residual tranche, the BHC's tranche, is immeasurable.

Table 5C (Continued from Previous Page)
Definitions of Banks' Payments-Services-Driven Revenues
Credit Cards

Category Of Revenues	NARROWLY DEFINED Payments-Driven Revenue	BROADLY DEFINED Payments-Driven Revenue	NOT Payments-Driven Revenue	SOURCES of information / data (see KEY below)
Credit Card Revenue		Servicing of securitized credit card receivables[16]		*Third-party services on credit cards* (A, limited info), *Net servicing fees* (Y-9)[17]
			Fees for late payments	*Credit card revenue* (A), *Other noninterest income* (Y-9)
		Interest on credit card balances above the cost of a traditional loan[18]		No known source of data.
		Finance Charges for Cash Advances[19]		*Credit card revenue* (A), *Other noninterest income* (Y-9)

[16] BHCs securitize credit card receivables by selling them into an off-balance sheet trust (a special purpose vehicle, or SPV). The BHC, however, retains the role of servicing the credit card pool, including collection, administration and bookkeeping of the underlying credit card accounts. Thus, fees associated with the servicing of the credit card accounts could be considered revenue derived from payment services. However, the net servicing fees reported in the FR-Y-9C include servicing of the trust (i.e., operating costs) which could not be considered payments-driven.
[17] Net servicing fees, included as of 2001 in the Y-9C, are defined as income from servicing real estate mortgages, credit cards, and other financial assets held by others. Also included are (1) premiums received in lieu of regular servicing fees on such loans only as earned over the life of the loan, (2) impairments on servicing assets, (3) increases in servicing liabilities recognized when subsequent events have increased the fair value of the liability above its carrying amount.
[18] The additional interest earned by the bank substitutes for explicit maintenance and activity fees.
[19] Finance charges associated with cash advance when no other means of payment is available could be considered payments-driven revenues. An example would be a purchase at a store that does not accept checks and or credit card payments, only cash. A customer without sufficient cash in hand and no debit card could get a cash advance at an ATM machine and use that cash to make a purchase. If the cash advance for the purchase was paid off at the end of the month then this transaction more closely resembles a payments-driven activity than a loan activity.

Table 5D
Definitions of Banks' Payments-Services-Driven Revenues
Electronic Delivery Channels

Category Of Revenues	NARROWLY DEFINED Payments-Driven Revenue	BROADLY DEFINED Payments-Driven Revenue	NOT Payments-Driven Revenue	SOURCES of information / data (see KEY below)
Revenues Obtained Through Electronic-Delivery Channels Internet Banking, Debit & ATM Related Service Charges & Fees.	On and off-line debit card interchange, merchant discount and/or acquirer fees[20] *(These fees are defined at end of table*)			*Interchange fees* (A, limited info), *Service Charges on Deposit Accounts* (Y-9)
	Electronic Banking Fees[21]			*Service Charges on Deposit Accounts* (Y-9), *Electronic Banking Fees* (A, limited info)
	ATM interchange, surcharge, foreign and switch fees			*Income & fees from ATMs* (Y-9 memo), *Monthly ATM & POS activity* (CID, limited info)
		Business-to-business electronic payments system support and maintenance fees		No known source of information.
		Printing and selling of checks		*Income & fees from printing and selling of checks* (Y-9 memo)

[20] A card-issuing bank may assess fees on its own deposit account holders for use of an ATM or debit card. However, because a card issuer collects these fees directly from its customers, this portion of ATM and debit-card revenue would be recorded in the category "fees on deposit accounts." (Radecki, 1999).
[21] Internet and telephone banking.

Table 5 (Continued from Previous Page)

KEY:	**A** =	Individual Annual Reports for the top 50 BHCs, 2001
	Y-9=	Consolidated Financial Statements for Bank Holding Companies (FR Y-9C), collected by the supervisory agencies and filed quarterly with the Federal Reserve System.
	CID =	Credit Card Management (2001). Card Industry Directory. New York: Faulkner & Grey Publishers
	Limited info =	Limited information. Data are not available for all BHCs in sample due to BHCs not reporting specific data.

Definitions of ATM and debit fees: Source: Barron's Dictionary of Banking Terms and author.

Interchange: Exchange of transactions between financial institutions participating in a bank card network, based on a common set of rules. Card interchange allows a bank's customer to use a bank credit card at any card honoring merchant and to gain access to multiple ATM systems from a single ATM.
Interchange Fees: Fees paid by one bank to another to cover handling costs and credit risk in a bank card transaction. Interchange fees generally flow toward the bank funding a transaction and assuming some risk in the process. In a credit-card transaction, the interchange fee is paid by the bank accepting the merchant's sales draft (the merchant bank) to the card-issuing bank, who then bills the cardholder. In an automated teller and electronic debit POS systems, interchange flows in the opposite direction: the card-issuing bank (or customer) pays the fee to the terminal-owning bank. When transaction is an off-line debit sale, then the card-issuing bank collects an interchange fee from the merchant, rather than from the customer, unlike in a POS transaction, where the customer pays the interchange fee.
Point-of-sale (POS): Sales and payment information are collected electronically. The payment information is then passed on to the financial institution or payment processor and the sales data is forwarded to the retailer's management information system for updating of sales records.
Off-line system: Merchant terminal is not connected directly to central computer for authorization or processing of sales receipts. Off-line debit charges take several days to settle, where on-line or POS
Switch: Computer facility in shared electronic funds transfer networks that routes transactions between a terminal and a card issuing bank's host computer. Two types of switch fees are those that clear all transactions processed through a network and those that clear only transactions initiated by customers of other financial institutions.
Surcharge: Transaction fee for withdrawing cash at an ATM. Such fees must be displayed at the ATM site.
Foreign Fee: Fee paid by debit cardholder to own bank when cardholder withdraws cash at another bank's ATM.
Acquirer Fees: Fees paid to the acquirer (purchaser) of the merchant sales drafts. The acquirer of the sales drafts collects a 'merchant discount fee' (or a processing fee) from the merchant. Different from an interchange fee.

Table 6
Summary of Top BHCs Payments-Driven Revenue by BHC Type
In Thousands US Dollars and as a Percentage of Revenue: 2001
Using Consolidated Financial Statements (Y9s)

Bank Holding Company Group	Total Value of Payments-Related Revenue ($000)		Payments-Related Revenue as a Percentage of Operating Revenue		Payments-Related Revenue as a Percentage of Total Revenue		Number of BHCs
	Lower Bound	Upper Bound	Lower Bound	Upper Bound	Lower Bound	Upper Bound	
Conglomerate BHCs	25,565,928	25,755,278	15.0%	15.1%	9.0%	9.1%	6
Global Processing BHCs	2,672,424	3,260,199	16.8%	20.5%	12%	14.6%	4
Credit Card Companies	947,132	954,453	9.1%	9.2%	5.8%	5.9%	4
Regional Focus BHCs	14,676,809	14,693,757	20.6%	20.7%	11.8%	11.9%	26
Total	**43,862,293**	**44,663,687**	**16.40%**	**16.70%**	**9.82%**	**10.00%**	**40**

The lower bound includes the lower bound of payments-related trust revenues, while the upper bound includes the upper bound of payments-related trust revenues.
Conglomerates BHCs are composed of affiliate companies in a variety of businesses; including, but not limited to insurance, securities, commercial banking, payments processing activities. Companies included in group: Citigroup, JP Morgan, Bank of America, Wells Fargo, Bank One and FleetBoston Financial.

Global Processing BHCs are those that specialize in the service, research and management of assets for both individual and corporate and institutional clients. Companies included in the group: Bank of New York, State Street, Northern Trust and Mellon Financial Corporation.

Credit Card companies are defined as either mono-line companies focused on credit card operations or banking companies that are not mono-line but have large credit card operations. Companies included in group: MBNA, Charter One, Provident Financial and Synovus.

Table 7
Composition of Operating Revenue for the 40 Largest US Domestic BHCs
Aggregated by BHC Type

	Conglomerates		*Global Processors*		*Credit Card BHCs*		*Regional BHCs*	
As of December 31, 2001	**Total ($000s)**	**% of Operating Revenue**	**Total ($000s)**	**% of Operating Revenue**	**Total ($000s)**	**% of Operating Revenue**	**Total ($000s)**	**% of Operating Revenue**
Service Charges on Deposit Accounts	*10,718,000*	6.3%	*1,012,738*	6.4%	*367,109*	3.5%	*7,496,859*	10.5%
Payments-Driven Credit Card Revenue (incl. securitized CC receivables)	*4,571,204*	2.7%	*41*	< 0.1%	*263,119*	2.5%	*220,234*	0.3%
ATM Fees	*2,387,228*	1.4%	*222,774*	1.4%	*143,393*	1.4%	*924,970*	1.3%
Foregone Interest on Transaction Accounts	*7,812,376*	4.6%	*571,875*	3.6%	*171,564*	1.6%	*6,029,661*	8.5%
Payments-Related Trust Revenues - Lower Bound	*77,120*	< 0.1%	*864,996*	5.4%	*1,947*	< 0.1%	*5,085*	< 0.1%
Payments-Related Trust Revenues - Upper Bound	*266,470*	0.2%	*1,452,771*	9.2%	*9,268*	0.1%	*22,033*	< 0.1%
Income from Fiduciary Activities	*8,437,000*	5.0%	*5,717,814*	36.0%	*39,158*	0.4%	*5,872,137*	8.3%
Trading Revenue	*13,783,000*	8.1%	*1,066,132*	6.7%	*3,504*	< 0.1%	*1,812,904*	2.6%
Investment Banking, Advisory, Brokerage and Underwriting Fees and Commissions	*20,796,000*	12.2%	*2,370,604*	14.9%	*48,569*	0.5%	*5,024,432*	7.1%
Net Servicing Fees	*9,542,000*	5.6%	*11,803*	0.1%	*1,372,504*	13.1%	*1,046,634*	1.5%
Net Securitization Income	*4,881,000*	2.9%	*70,078*	0.4%	*4,603,893*	44.1%	*636,999*	0.9%
Insurance Commissions and Fees	*15,308,000*	9.0%	*44,518*	0.3%	*153,104*	1.5%	*986,653*	1.4%
Other Noninterest Income	*15,347,000*	9.0%	*2,143,735*	13.5%	*1,752,571*	16.8%	*9,077,958*	12.8%
Interest Income	*186,429,000*	109.6%	*10,423,790*	65.7%	*7,836,246*	75.0%	*92,012,479*	129.4%
Noninterest Income	*97,473,000*	57.3%	*11,853,604*	74.7%	*8,366,323*	80.1%	*32,218,855*	45.3%
Payments-Driven Revenues (lower bound)	***25,565,928***	**15.0%**	***2,672,424***	**16.8%**	***947,132***	**9.1%**	***14,676,809***	**20.6%**
Payments-Driven Revenues (upper bound)	***25,755,278***	**15.1%**	***3,260,199***	**20.5%**	***954,453***	**9.2%**	***14,693,757***	**20.7%**
Operating Revenue	170,085,000		15,871,935		10,447,506		71,081,573	
Total Revenue	283,902,000		22,277,394		16,202,569		124,231,334	

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