

2004 Electronic Payments Study

for
**Retail Payments Office
at the Federal Reserve
Bank of Atlanta**

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Study Methods and Results

Summary Report

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Table of Contents

Introduction	1
Research Objectives	1
2004 EP Study Participation Rate	2
Aggregate Results.....	2
Research Methodology	4
Scope of Research	5
Data Collection and Validation	6
General Purpose Credit Card Research.....	11
Private Label Credit Card Research	12
Signature Debit Card Research.....	14
PIN Debit Card Research	15
ACH Research.....	16
EBT Research	22
Emerging Payments Research.....	23

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I n t r o d u c t i o n

The Federal Reserve Bank of Atlanta's Retail Payments Office (RPO) engaged Dove Consulting to provide updated data on the number and value of various types of electronic payments made in the United States in 2003. This Electronic Payment Instruments Study (2004 EP Study) will be used to support the FRB's ongoing efforts to understand payment system trends. Specifically, this information on consumer, business, and government initiated electronic payments and remittances will provide valuable input into the policy and longer-term operational decision-making of the Federal Reserve Bank.

The primary purpose of this research was to determine the volume and value of electronic payment transactions originating in the United States for the year 2003. As the 'core' transaction volume and value data to be collected needs to be directly comparable with those previously gathered for the year 2000 (to estimate growth rates of the electronic payment instruments), Dove employed the same census-style survey approach used in 2001. Dove staff distributed surveys to entities involved in the origination, processing, and settlement of credit and charge card; PIN and signature debit card; Automated Clearing House; EBT payment instruments; and emerging payments. Collectively, these organizations have a unique ability to "view" virtually all of the retail electronic payments made in the United States.

R e s e a r c h O b j e c t i v e s

The objective of the Electronic Payment Instruments Study was to develop a database and report summary based on the results of a survey of industry sources to determine the aggregate volume and dollar values for the following payment instruments in the United States during the year 2003:

- General purpose and private label credit cards
- PIN and signature debit cards
- Automated Clearing House (ACH) transactions
- Electronic Benefits Transfer (EBT) payments
- Emerging Payment Instruments

The primary sources for this information are major card industry associations and processors, EFT networks, federal government agencies, and others that could provide accurate and reliable data on electronic payments originated in the United States. The 2001 EP Study focused on obtaining aggregate estimates of totals for each payment instrument. The 2004 EP Study, in addition to aggregate totals, also sought to collect periodic data to measure and explain growth patterns of electronic payments. This information will contribute to a better understanding of substitution rates between checks and electronic payments and among various electronic payment instruments.

2004 EP Study Participation Rate

The following table shows the results of the compilation of study participants' data and Dove Consulting's estimates for non-participants. The 79% participation rate in the 2004 EP Study is indicative of the interest that payments organizations have in providing reliable volume and value data to the Federal Reserve System and the EFT industry. Collectively, the 86 potentially participating EFT networks, payments processors and proprietary operations accounted for approximately 98% of the payment volumes and 99% of the value of electronic payments originated in the United States during the year 2003.

Summary of Participation Rates

Payment Instrument	Potential Participants	Participation Rate By		
		Organiz- ation	Transaction Volume	Dollar Value
General Purpose Credit Cards	7	100%	100%	100%
Private Label Credit Card	54	74%	85%	84%
Signature Debit	2	100%	100%	100%
PIN Debit	14	86%	99%	92%
ACH ¹	3	100%	100%	100%
EBT ²	6	67%	98%	98%
Sub Total Established Pmts	86	79%	98%	99%
Emerging Payments ³	39	77%	n/a	n/a
Total	125	78%		

¹ Includes NACHA

² Includes Food & Nutrition Service

³ Volume and value was not estimated for non-participants

Aggregate Results

The 2004 EP Study shows that there were 44.5 billion electronic payments made in the United States during 2003 with a value of \$27.4 trillion. Overall, electronic payment volumes grew at a compound annual rate (CAGR) between the years 2000 and 2003 of 13.2% in volume and 10.7% in dollar value. All of the electronic payment instruments grew during this period; however, much of the volume growth was driven by debit cards, where signature debit grew at a 24.9% rate followed closely by PIN debit's 21.0% growth rate. ACH grew at a 13.4% rate to exceed 9 billion payments. Credit card payment volume grew at slower rates, particularly private label credit cards, which grew at a slower 4.4% rate in volume and grew at a faster 11.5% rate on a dollar value basis. The size and growth rates for each of the electronic payment instruments are shown in the following tables:

Number of Payments for the Years 2000 and 2003 (Millions)

Payment Instrument	2000	2003	CAGR 2000-2003
General Purpose Credit Cards	12,300.2	15,212.1	7.3%
Private Label Credit Cards	3,300.6	3,753.2	4.4%
Signature Debit	5,268.6	10,262.9	24.9%
PIN Debit	3,010.4	5,337.9	21.0%
ACH ¹	6,211.3	9,061.8	13.4%
EBT	537.7	826.8	15.4%
Total	30,628.8	44,454.7	13.2%
Memo: ACH CCD Payments	1,060.7	1,459.6	11.2%
Total EP w/o CCDs ²	29,568.2	42,995.1	13.3%
Emerging Payments	76.2	1,383.3	Not Meaningful

Values for the Years 2000 and 2003 (Millions)

Payment Instrument	2000	2003	CAGR 2000-2003
General Purpose Credit Cards	\$1,072,555	\$1,409,744	9.5%
Private Label Credit Cards	\$204,771	\$283,758	11.5%
Signature Debit	\$209,980	\$426,671	26.7%
PIN Debit ²	\$138,151	\$204,251	13.9%
ACH	\$18,564,758	\$25,072,327	10.5%
EBT	\$13,744	\$21,567	16.2%
Total	\$20,203,959	\$27,418,318	10.7%
Memo: ACH CCD Payments	\$13,401,949	\$16,748,153	7.7%
Total EP w/o CCDs	\$6,802,010	\$10,670,165	16.2%
Emerging Payments	\$12,679	\$1,055,293	Not Meaningful

The average payment value for credit cards increased to \$92.67 for general purpose cards and \$75.60 for private label cards. Signature debit average payment values grew by \$1.72 to \$41.57. Interestingly, the average payment declined for PIN debit by \$7.63 to \$38.26 and ACH by \$222.03 to \$2,766.82 suggesting that they are being used more for smaller value payments than in the past. Anecdotally, this may be due to increasing merchant acceptance of

¹ These figures include ACH Corporate Cash Concentration and Disbursement Standard Entry Class code (CCD) volumes, which had been excluded in 2001 EP Study.

² Cash back at the POS was not accounted for in the 2001 EP Study.

² Total Electronic Payments (EP) without ACH CCD are shown for comparison with the 2001 EP Study.

PIN debit and the introduction of consumer payment oriented ACH transactions such as WEB, TEL, ARC and POP.

Average Payment Values for 2000 and 2003

Payment Instrument	2000	2003	Difference
General Purpose Credit Cards	\$87.20	\$92.67	\$5.47
Private Label Credit Cards	\$62.04	\$75.60	\$13.56
Signature Debit	\$39.85	\$41.57	\$1.72
PIN Debit*	\$45.89	\$38.26	(\$7.63)
ACH	\$2,988.85	\$2,766.82	(\$222.03)
EBT	\$25.56	\$26.08	\$0.52
Total	\$659.64	\$616.77	\$42.87
Memo: ACH CCD Payments	\$15,790.21	\$11,474.52	(\$4,315.68)
ACH Payments w/o CCDs	\$230.05	\$248.17	\$18.13
Emerging Payments	\$166.39	\$762.87	Not Meaningful

* Includes cash back

A more detailed description of the data gathered on each payment instrument for the 2004 EP Study is provided in the subsequent research methodology sections of this report. To protect the confidentiality of the participant data, only aggregate data are provided.

Research Methodology

The 2004 EP Study was a census-style survey of payments organizations that originated electronic payments and routed them through various EFT networks, processors or private card issuers for the calendar year 2003. Data were collected during February-May 2004. The data collection and estimation methods used for this retail payments research are consistent with those used to estimate the number and value of electronic payments in the 2001 EP Study. In the 2001 EP Study, electronic payments were estimated via a survey of the universe of electronic payment network operators and payment card issuers in the United States.

Except as noted in this document, the definitions and methods used for the 2004 EP Study are equivalent to those used in the 2001 EP Study. In addition to the annual number and value of electronic payments for 2003, the research also gathered periodic data (i.e., monthly or quarterly statistics) for 2003 and, to the extent participants were willing to share, periodic data for the years 2002 and 2001.

Scope of Research

The Electronic Payment Instruments Study collected data on electronic payments made in the United States during the year 2003. Transactions from consumers, businesses, and government entities are included in the statistics gathered. The FRB's primary goal in collecting this information is to understand growth and substitution trends within the retail payments system. To that end, data has been gathered in three primary areas:

1. Electronic payment options used by buyers of goods or services, including point-of-sale transactions.
2. Electronic payment products used on the 'back-end' to effect final settlement for purchase transactions, including bill payment.
3. Electronic payment options used by employers, state agencies and others for disbursements of income payments, such as payroll and benefit disbursement transactions.

Sample Frame / Select Organizations

Based on the transactions examined in this study, the sample frame included national and regional electronic payment organizations that provide electronic payment services in the United States. The types of electronic payments to be included in the study and organizations surveyed are summarized in the following table:

Payment Instruments	Organization Type Surveyed
General purpose credit / charge card	Credit and charge card associations such as Visa, MasterCard, American Express, Diner's Club, Discover, UATP and JCB
Private label credit credit / charge card	Retailers, oil companies, fleet card issuers, processors, third party receivables owners
PIN (online) debit	Regional and national EFT networks such as Interlink, Maestro, STAR, PULSE and NYCE
Signature (offline) debit	Visa CheckCard and MasterCard Debit
Automated Clearing House (ACH)	NACHA, ACH operators (EPN, FedACH)
Electronic Benefits Transfer (EBT)	USDA FNS, EBT contractors
Emerging Payments	Companies involved in bill payment, P2P, stored-value, Internet currencies, and other new payment technologies

In 2001, we identified that most of the emerging payment types are a new front-end payment method to the consumer, but use traditional funding and settlement systems behind the scenes. Adding their volume numbers into the aggregate totals would result in double-counting. However, the emerging payment organizations' data are presented as a memo item and are not included in the aggregate totals.

Methodology for Selecting Organizations to be Contacted

The methodology for identifying organizations contacted for this study is consistent with the definitions included in 2001 EP Study. Organizations that are engaged in the business of originating, switching and/or processing electronic payment instruments and remittances were identified based on industry directories and Dove Consulting's knowledge.

As this study focused on payments made in the United States in 2003, only unique payment instruments and their final settlement were counted for the purpose of computing totals. Therefore, organizations were selected on the basis of their ability to monitor transaction and dollar volume data on a non-duplicative counting basis.

There are variations of payment instruments, as well as components of the payments value chain, that the FRB considered to be outside the scope of the present study. Each payment transaction has a unique, and sometimes complex, transaction flow involving the exchange of information, issuer-to-acquirer settlement, and customer-to-issuer settlement.

Outside the Scope of the 2004 EP Study

The following transaction information was considered outside the scope of work for the 2004 EP Study:

- Cash and check deposits and payments
- Electronic bill presentment transactions
- Bill payment transactions which are:
 - Initiated and settled via paper (cash or check)
 - Initiated electronically, paid via paper
- Closed-system stored-value loads and purchases, including:
 - Gift cards
 - Internet currencies
 - Loyalty-based accounts (e.g., airline frequent flier accounts)
 - Phone cards
 - University and military closed payment systems
- Consumer and business wire transfers via Fedwire[®] and CHIPS
- Issuer-to-acquirer settlement transactions

Data Collection and Validation

Processes for Collection and Validation of Data

Participation in the study was voluntary but was also encouraged by the Fed team through industry-wide communications and personalized letters.

Data Collection

The primary data collection method was a set of questionnaires or survey forms that were provided in both paper and electronic formats. Each organization on the potential participant list was mailed a survey invitation and data contact form with instructions to specify the type of transactions that they handle. Survey kits were then sent to the payment organization executives and included a personalized letter, faxable forms, and where possible, a hyperlink to the Microsoft Excel data collection files. This mailing included a business reply envelope for returning the survey as well as instructions for submitting the data electronically. These instructions also included information on how to download the survey from Dove's Web site should the respondent prefer to complete the survey online. We made telephone calls and sent emails to follow-up with the organizations that had been invited to participate in the study. In addition, follow-up clarification calls were made to each participant in the event there was misclassified or incomplete data.

As this survey topic is very important to most electronic payment organizations, incentives or gratuities were not needed to obtain participation. We anticipated that gratuities would not provide meaningful incentive for organizations to participate in this survey; rather, participants were offered access to the information at the earliest occasion permitted by the Fed.

Questionnaires with Definitions

The questionnaires were identical to those used in 2001 with modifications to accommodate the collection of periodic data. Dove sought to gather quarterly and, if possible, monthly data for each payment instrument from participants on a voluntary basis. At a minimum, Dove collected data for 2003 and made every reasonable effort to gather historical monthly and/or quarterly data from participants for the years 2002 and 2001. The questionnaires and data collection forms varied depending on the type of payment instrument, but were as uniform as possible within organization type. Survey instructions included definitions of the data items to be reported due to the broad range of transaction types that could be processed by an organization. It was important to avoid double counting of transactions which can occur when multiple networks are involved in a transaction authorization through a "gateway" switch. Our experience with the 2001 EP Study showed that EFT networks are capable of distinguishing between payments that were originated on their own networks and those that were processed but originated on other networks.

Prior to administration, Dove pre-tested questionnaire forms and materials with eight representative organizations to obtain feedback about the forms and guidance on how to improve their clarity and ease of use.

Communications Plan

Dove anticipated that most organizations would participate if we used appropriate and timely communications. Our approach was similar to the one used in the 2001 EP Study, with specific actions to follow-up and escalate with non-respondents.

During the 2001 EP Study, Dove confirmed that effective communications are a critical element in achieving a high participation rate for this census-style study, especially since it requires gaining voluntary participation from leading EFT organizations. Dove anticipated that most of the leading payment organizations and clearinghouses that participated previously would again participate, and that many of the non-participants would participate this time due to the interest that the previous study generated in the industry. Our goal was to exceed the 75% participation rate that was achieved for established payment organizations in 2001.

The purpose of the communications plan was to outline the specific actions used to build awareness of the research and to encourage organizations to share their transaction data. There were two audiences for the communications:

1. Senior executives in the electronic payments industry
2. Managers in EFT payments organizations who have access to pertinent data

Announcements to the Electronic Payments Industry

Multiple communications methods were used to build awareness within the electronic payments industry about the study. Tactics included:

- Press release by the Fed announcing the study (January 12, 2004)
- Industry newspaper coverage (e.g., American Banker article)
- Identification of a key point of contact at the RPO to field potential questions
- A posting on the FRB Web site describing the study
- Speeches, meetings, emails and other communications

Communications with EFT Payment Organizations

Gaining the participation of EFT payment organizations was achieved through the joint efforts of the FRB team and Dove. Communications with these organizations were conducted by mail with telephone and email follow-up that provided information about why each organization had been invited to participate in the study and how the survey results would be used.

There were five components in the communications plan:

1. Pre-survey letter
2. Pre-survey follow-up letter
3. Survey administration
4. Survey follow-up
5. Thank you letter and a summary of results

Pre-Survey Letter (December 2003 – January 2004)

The objective of the pre-survey letter was to obtain agreement by a senior manager in each organization to participate in the study, and to identify the correct person for providing the required transaction data. For prior participants, we pre-populated the names on the data forms with information from 2001.

The pre-survey letter consisted of three components:

- **Letter from the FRB.** A letter on FRB letterhead, signed by Roger Ferguson, Vice Chairman of the Board of Governors of the Federal Reserve System and Gary Stern, President of the Federal Reserve Bank of Minnesota and Chair of the PSDC was mailed out to the senior executives at EFT organizations.
- **Personalized letter from Dove.** A second letter was included on Dove letterhead and signed by Edward Bachelder, Director of Research at Dove. The letter was personally addressed to the executives explaining:
 - The process for participating in the 2004 Electronic Payments Study
 - That survey participants will receive a summary report of the results as an incentive to participate
 - A request to send a completed contact form to Dove Consulting
- **Contact Form.** The contact form asked the executives to provide the name and contact information for the individual(s) in the organization to identify (or verify) the individual who should receive the survey package.

The two letters, the form, and the business reply envelope (BRE) were mailed in Federal Reserve Bank envelopes directly from the Federal Reserve Bank of Atlanta, using a finalized version of the mailing list. Dove provided the letters, the forms, and the BREs, and generated personalized letters. Approximately 180 letters were mailed during December 2003 and January 2004.

Pre-Survey Letter Follow-up

Dove made follow-up calls to organizations that did not respond to the pre-survey invitation letter. If the original contact could not be reached, Dove contacted other appropriate individuals within the organization. If they refused to participate in the survey, Dove noted the reasons and sought assistance from the Fed to encourage participation.

Survey Administration (January - March 2004)

Dove compiled a mailing list of individuals who should be providing data based on the forms returned from the pre-survey mailing and prior participation. Each individual was sent a package including a personalized letter, a paper copy of the survey (which could be returned by fax or mail), and a business reply envelope. The letter included a Web site address where recipients could download an electronic copy of the survey and return it by email.

Survey Follow-up (February – May 2004)

Organizations that did not return completed survey forms within three weeks were sent a reminder letter from Dove. Organizations that still did not respond to the reminder letters received follow-up phone calls and follow-up emails. The calls and emails stressed the importance of their participation. If we could not obtain the information from the primary contact, we followed up with other people within the organization and re-sent the survey materials to another individual as appropriate. To encourage participation and the accuracy of the data submissions the following steps were taken:

- Data collection forms were posted on Dove's servers for access by participants.
- Submitted data was reviewed for reasonableness, completeness and potential for double counting if their volume might be included in another processor or network's submission.
- Followed-up with non-responders by providing them with our estimate and request that they participate or confirm our estimate based on publicly available information and comparative data gathered from comparable participants in the study.

Large organizations that did not respond were identified and in several cases assistance was provided by Fed staff which encouraged their participation in the study. During April and May, all non-responders were called in an attempt to obtain their information over the phone and/or via email. Overall, at least five attempts were made to contact each non-responding organization.

Thank You Letters and Summary of Results

At the conclusion of our data collection and analysis efforts, Dove sent all respondents a letter thanking them for their participation. A report with a summary of the study results will be distributed to participating organizations as soon as permitted.

Validation of Data received from Participants

The data was obtained directly from primary sources whenever possible. Responses were reviewed for consistency and compared with other submissions. In addition, secondary sources for data were considered. Dove Consulting validated the findings through existing relationships with electronic payments industry sources and other available research and reports that we have reviewed.

If the volumes and values reported by study participants differed markedly, either through a significant decline or above market growth rate, they were identified and data was verified through direct communications (telephone or email) to ensure that reporting errors would be avoided. This was very important for the private label credit card and EFT network organizations, where mergers reduced the overall number of organizations processing non-cash payments.

Estimation of Totals and Growth Rates

Dove made every reasonable effort to obtain data through the voluntary survey. However, in cases where organizations chose not to participate, Dove developed estimates for the missing data. Estimates were produced by using secondary information sources, including annual reports, press releases, and industry data, and through applying volume and sales relationships based on data collected from similar organizations. These methods and procedures are based on experience gained from the 2001 EP Study. In all cases, Dove contacted the non-participating organizations and asked the organization about the reasonableness of our estimates. On numerous occasions, non-responders chose to provide actual data for the “Fed Study”. In other cases, organizations would give guidance regarding the accuracy of our estimates.

In each section about the electronic payments instruments, we have provided information on the participation rate and the extent to which primary sources vs. estimates were used for the aggregate totals for the volume and value of payments.

General Purpose Credit Card Research

Though this is one of the largest categories, it is also one of the easiest in which to gather data since all transactions in this category are routed through one of seven national organizations.

The general purpose credit card data totals are based on payments that route transactions through the credit card networks, including:

- Consumer general purpose credit cards
- Commercial cards, including business, corporate, purchasing, and fleet
- Money sent through the credit card networks by person-to-person (P2P) payment systems (i.e., PayPal)
- Amounts charged to a credit card where the original payment mechanism was a transponder, such as the Mobil SpeedPass or an automated toll system
- Open system stored-value cards that route their transactions through the credit card networks

The sources for these numbers are the seven major credit card associations: Visa, MasterCard, American Express, Diners Club, Discover, UATP and JCB. Since these organizations can provide aggregated data, there was no need to survey card issuers or transaction processors.

**General Purpose Credit Card Data Summary for 2003
Transaction Volume and Dollar Value by Source**

	Primary Source	Confirmed Estimate	Estimate	Total
Transactions	13,858,931,239	1,353,200,000	-	15,212,131,239
-Share of Total	91%	9%	-	100%
Dollar Value	\$1,260,552,545,641	\$149,191,000,000	-	\$1,409,743,545,641
-Share of Total	89%	11%	-	100%

2004 EP Study Participants

Since every credit card transaction must be routed through the card association that owns the brand, the survey for the 2004 EP Study focused on card associations to gather credit card and charge card transaction and sales volume information.

General Purpose Credit Card Segment Participation

	Number of Organizations	Participation Rate
Primary Source	5	71%
Confirmed Estimate	2	29%
SUB-TOTAL	7	100%
Unconfirmed Estimate	0	0%
Duplicative/Disqualified	0	
Total Contacted	7	

P r i v a t e L a b e l C r e d i t C a r d R e s e a r c h

Private label credit card transactions are charged to department store, gas, fleet, and other merchant-issued credit cards. Because there is no central clearing network or switch involved, Dove's research staff needed to contact retailers that issue charge cards and the processors that process these transactions. As there are about a dozen processors who process for hundreds of retailers, it was most efficient to gather data from the processors and add that data to the data from the retailers that process proprietary credit card payments in-house (these tend to be just the largest retailers).

Over the past three years, several large portfolios and operations have been sold by retailers (e.g., Sears, Gottschalks, etc.) to a number of financial institutions (FIs) such as Citibank and HSBC, as well as to non-bank organizations like GECC and Alliance Data.

We were mindful of retailers who switched processors mid-year, or switched from processing in-house to outsourcing (or vice versa) mid-year such as the Sears-Citibank transaction. The survey forms asked each retailer if their processing and receivables ownership are done in-house or outsourced. The survey form specifically asked if the participants had switched their card processor during the year.

The following table shows the breakdown of the aggregate data of private label credit card volume by category. With the exception of retailers' in-house programs, all of the categories grew at double-digit rates in dollar value. However, transaction volumes grew more slowly for retailers and third party processors, while oil and fleet cards grew at 18.4% and 40.3% respectively. The largest segment, third-party card processors, did not grow in transaction volume.

**Private Label Credit Card Summary for 2003
Volume and Value by Category**

Category	Payment Volume (Millions)	Dollar Value (\$Millions)	Average Transaction Size
Retailers (in-house)	494.9	\$48,227	\$97.45
Oil Companies (in-house)	641.7	\$14,636	\$22.81
Third-Party Fleet Card Issuers	635.5	\$31,901	\$50.20
Third-Party Card Processors*	1,981.2	\$188,994	\$95.39
Total*	3,753.2	\$283,758	\$75.60

* Companies that issue credit cards and process private label credit and charge card programs for retailers or oil companies

**Private Label Credit Card Data Summary for 2003
Transaction Volume and Dollar Value by Source**

	Primary Source	Confirmed Estimate	Estimate	Total
Transactions	3,071,931,831	104,495,013	576,805,029	3,753,231,873
-Share of Total	82%	3%	15%	100%
Dollar Value	\$172,451,320,723	\$66,391,911,890	\$44,914,693,675	\$283,757,926,288
-Share of Total	61%	23%	16%	100%

2004 EP Study Participants

In the 2001 EP Study, private label credit cards were the most difficult payment instruments to measure, with only 49% of total transaction volume accounted for by primary data from survey respondents. Although it again proved difficult to track down all of the participants, we have achieved a much higher participation rate this time around. For the 2004 EP Study, 82% of transaction volume is accounted for by primary data from survey respondents. For non-responding companies, estimates were made based on public reports, industry statistics, SEC filings, and comparable average ticket sizes from other respondents.

Private Label Credit Card Participants

	Number of Organizations	Participation Rate
Primary Source	37	69%
Confirmed Estimate	3	5%
Sub-Total	40	74%
Unconfirmed Estimate	14	26%
Duplicative / Disqualified	33	
Total Contacted	87	

Signature Debit Card Research

Signature debit transactions are those that go through the Visa (i.e., VisaCheck) or MasterCard (i.e., MasterCard Debit) networks. In this category, information on all signature-based (also known as offline) debit purchase transactions was gathered.

Signature Debit Data Summary for 2003 Transaction Volume and Dollar Value by Source

	Primary Source	Confirmed Estimate	Estimate	Total
Transactions	10,262,867,875	-	-	10,262,867,875
-Share of Total	100%	-	-	100%
Dollar Value	\$426,671,443,053	-	-	\$426,671,443,053
-Share of Total	100%	-	-	100%

2004 EP Study Participants

The participation rate was 100% for the 2003 study, as both MasterCard and Visa provided their signature debit purchase volume and dollar value amounts.

PIN Debit Card Research

In this category, information on all PIN-based (also known as online) debit purchase transactions routed through regional or national EFT networks has been gathered. This category does not include signature-based (also known as offline) debit transactions. This category also does not include non-purchase transactions, such as ATM withdrawals. Data in this category includes any payment methods routed through the EFT networks, including:

- PIN-based debit transactions
- Consumer payments over the Internet using their PIN debit card
- Open system stored-value cards that route their transactions through the EFT networks

Sources for EFT transactions are the regional and national EFT networks that have a PIN debit POS program. In order to avoid this double counting, we asked the networks to include only transactions that carry their network brand. Since all transactions carry one and only one network brand, all transactions are counted only once (to avoid double-counting “gateway” transactions).

PIN Debit Data Summary for 2003 Transaction Volume and Dollar Value by Source

	Primary Source	Confirmed Estimate	Estimate	Total
Transactions	5,262,370,169	-	75,480,000	5,337,850,169
-Share of Total	99%	-	1%	100%
Dollar Value	\$186,892,108,811	-	\$ 17,358,740,559	\$204,250,849,370
-Share of Total	92%	-	8%	100%

2004 EP Study Participants

The data for the PIN debit payment statistics was gathered from regional and national EFT networks. Consolidation over the past three years has reduced the number of networks. All but two of the 14 PIN debit networks participated in the study this year.

PIN Debit Participation

	Number of Organizations	Participation Rate
Primary Source	12	86%
Confirmed Estimate	0	0%
Sub-Total	12	86%
Unconfirmed Estimate	2	14%
Duplicative/Disqualified	17	
Total Contacted	31	

Payment Volume

Some of the networks that responded to the survey were able to provide transaction numbers but not dollar volumes, primarily because they do not track this data on a monthly basis. Since many EFT networks' PIN debit POS pricing is based on transactions as opposed to sales volume, sales volume data is not always aggregated. To estimate dollar volumes, an average transaction value was calculated from the networks that provided both transactions and dollar volume data.

Cash Back

Cash back at the POS proved to be a very difficult element for several networks to track. STAR and NYCE were able to provide information regarding cash back, and PULSE was able to provide information on cash back for some merchants. No other networks were able to provide this information, largely because it is not tracked on a consistent, accurate basis. Using the data from NYCE, STAR and PULSE, we estimated that cash back at the POS accounted for 7% of the total reported dollar volumes for PIN debit. This suggests that PIN debit "POS Cash-Back" value was approximately \$14.3 billion in 2003. Applying this percentage to exclude the value of cash back, the PIN debit transactions would average \$35.59.

Since cash back does not constitute an incremental transaction (i.e., it is part of a purchase transaction), the payment volume for PIN debit transactions remains unaffected by cash back. Cash back data was not collected in the 2001 EP Study.

A C H R e s e a r c h

Automated Clearing House Transactions

Transactions over the ACH network may come from a number of sources, including both traditional ACH payments and new payment technologies that use ACH. These can include:

- Direct deposits, such as payroll, dividends, interest, trust disbursements, IRS tax refunds, pension benefits, commission disbursements, expense reimbursements, child support disbursements, government disbursements and payments
- Direct payments, such as insurance premiums, mortgage payments, loan payments, rents/leases, utility bills, subscription/membership dues, monthly pledges, tuition payments
- Corporate payments, EFTPS federal and state tax, royalty payments, invoice payments, trade payments, debt repayments
- EBPP transactions settled through the ACH such as those conducted by CheckFree and Princeton eCom
- Most check electronification methods, e-check and check truncation and conversion at the lockbox (ARC)—such payments should be separately categorized to track conversions of one primary payment type to another

- ACH debit cards, such as those being developed by DebitMan and large supermarket chains
- P2P payments sent over the ACH network

The sources for data on transactions through the ACH network were the two ACH network operators (the Federal Reserve Banks' FedACH and EPN) as well as the National Automated Clearing House Association (NACHA).

Payment definitions included and excluded Standard Entry Classification (SEC) codes on a basis equivalent to those used for the 2001 EP Study. Modifications to definitions were necessary due to the addition of SEC codes related to check conversion or for other changes to ACH payment options (e.g., ARC, POP, WEB, and TEL).

ACH Data Summary for 2003 Transaction Volume and Dollar Value by Source

	Primary Source Network Vol.	DI Study Estimated¹ On-Us Vol.	Estimate	Total
Transactions	7,491,446,966	1,570,328,881	-	9,061,775,847
-Share of Total	82.7%	17.3%	-	100%
Dollar Value (\$000's)	\$20,692,677,611	\$4,379,649,915	-	\$25,072,327,526
-Share of Total	82.5%	17.5%	-	100%

¹ This is a weighted average of ACH credits and debits: 14.4% of credits and 20.6% of debits are estimated to be in-house on-us payments.

2004 EP Study Participants

In 2001 all four ACH network operators participated in the survey. Since then the industry has consolidated. Additionally, the National Automated Clearing House Association (NACHA) collects annual statistics from these networks; NACHA's data for 2003 was used to validate and verify industry aggregate data for the 2004 EP Study.

ACH Data Considerations

■ Debits vs. Credits

All ACH transactions are classified as an ACH debit or an ACH credit, depending on whether the originator is crediting an account or debiting an account. Either of these is considered a transaction, so they are aggregated for the purposes of this study.

■ Returns

Like a credit card or debit card transaction, ACH transactions can be returned. However, the reporting of returned transactions is more complex within the ACH system and each operator reports returns differently. In the event that ACH returns were reported, that volume was excluded from the aggregate ACH totals to avoid a potential double counting of ACH payment transactions.

SEC Codes

All ACH transactions are routed using one of several Standard Entry Class (SEC) codes defined by the NACHA operating rules. There were 24 such codes effective during the year 2003, though no data was reported for four of the SEC codes. Since 2000, several new SEC codes for payments were added. The SEC codes that have been included and excluded in the 2004 EP Study are shown in the following tables.

SEC Codes Included in ACH Aggregates

Code	Description
ARC	Accounts Receivable Check Conversion
CCD	Cash Concentration or Disbursement
CIE	Consumer Initiated Entry
CTX	Corporate Trade Exchange
POS	Point of Sale Entry
PPD	Prearranged Payment and Deposit Entry
POP	Point-of-Purchase Check Conversion
RCK	Re-presented Check e-check
SHR	Shared Network Transaction
TRC	Truncated Entry
TEL	Telephone e-check
XCK	Destroyed Check Entry
WEB	Web e-check
* Inactive code	

SEC Codes Excluded from ACH Aggregates

Code	Description
ACK	ACH Payment Acknowledgement
ADV	Automated Accounting Advice*
ATX	Financial EDI Acknowledgement*
CBR	Corporate Cross-Border Payment
COR	Automated Notification of Change
DNE	Death Notification Entry
ENR	Automated Enrollment Entry
MTE	Machine Transfer Entry
PBR	Consumer Cross-Border Payment
RET	Automated Return Entry*
TRX	Truncated Entries Exchange*
* Inactive code	

2003 ACH Transaction Volume by Standard Entry Class Codes

	Network Debit Transactions	Network Credit Transactions	Total Transaction Volume	Percent of Total Volume
ARC	160,001,078	21,724	160,022,802	2.1%
CCD	377,671,883	836,964,637	1,214,636,520	16.2%
CIE	107,679	76,075,849	76,183,528	1.0%
CTX	1,834,971	22,420,179	24,255,150	0.3%
POP	148,019,099	2,618	148,021,717	2.0%
POS	17,449,824	118,448	17,568,272	0.2%
PPD	2,014,304,035	3,155,184,173	5,169,488,208	69.0%
RCK	22,757,451	3,499	22,760,950	0.3%
SHR	33,474,405	561,976	34,036,381	0.5%
TEL	123,782,803	36,069	123,818,872	1.7%
TRC	42,627	0	42,627	0.0%
WEB	500,519,343	35,792	500,555,135	6.7%
XCK	56,775	29	56,804	0.0%
Sub-Total	3,400,021,973	4,091,424,993	7,491,446,966	100.0%
Estimated On-Us Volume	884,522,546	685,806,335	1,570,328,881	
Total ACH	4,284,544,519	4,777,231,328	9,061,775,847	
<i>Memo: Estimated On-Us Percentage</i>	20.64%	14.36%		

Note: Excludes non-value Standard Entry Class Codes

2003 ACH Dollar Value by Standard Entry Class Codes (\$000's)

	Network Debit Transactions	Network Credit Transactions	Total Transaction Dollar Value	Percent of Total Value
ARC	\$47,288,134	\$77,628	\$47,365,762	0.2%
CCD	7,885,423,070	5,760,580,338	13,646,003,408	65.9%
CIE	28,312	34,367,636	34,395,948	0.2%
CTX	41,757,175	1,156,845,909	1,198,603,084	5.8%
POP	10,353,267	1,296	10,354,563	0.1%
POS	887,770	39,174	926,944	0.0%
PPD	1,664,521,811	3,892,776,164	5,557,297,975	26.9%
RCK	3,525,609	345	3,525,954	0.0%
SHR	1,184,744	1,184,696	2,369,440	0.0%
TEL	46,321,894	8,669	46,330,563	0.2%
TRC	19,375	6	19,381	0.0%
WEB	145,417,358	53,419	145,470,777	0.7%
XCK	13,803	8	13,811	0.0%
Sub-Total	\$9,846,742,323	\$10,845,935,288	\$20,692,677,611	100%
Estimated On-Us Volume	\$2,561,649,794	\$1,818,000,121	\$4,379,649,915	
Total ACH	\$12,408,392,117	\$12,663,935,409	\$25,072,327,526	
<i>Memo: Estimated On-Us Percentage</i>	20.64%	14.36%		

'On Us' ACH Volume Data:

On-us ACH payments – those cleared in-house (i.e., not sent over the network) – make up 17% of all ACH payments.³ In the 2001 EP Study, Dove included NACHA's on-us volume estimate. NACHA's estimate was based on surveys of the top 50 OFDIs, and may not be fully representative of the total on-us volume generated by FIs.

For the 2004 EP Study, the on-us percentages were derived from data gathered in the nationally representative sample of depository institutions which were surveyed for the purpose of measuring the volume and value of paper check payments. For the purposes of this study, Dove applied the *estimated on-us percentages* shown above.

³ This is a weighted average of ACH credits and debits: 14.4% of credits and 20.6% of debits are estimated to be in-house on-us payments.

The number of ACH payments grew 3 billion between 2000 and 2003, from 6.2 billion to 9.1 billion, for an annual growth rate of 13.4%. ACH debits grew faster than ACH credits. Debits made up 39% of all ACH payments in 2000 compared to nearly half (47%) in 2003.⁴ The growth in the number of ACH debits is due, largely, to the conversion of some check payments to ACH payments.

Number and Value of ACH Payments in 2000 and 2003

	2000	2003	CAGR
Total Number (billion)	6.2	9.1	13.4%
ACH Credits	3.8	4.8	8.0%
ACH Debits	2.4	4.3	21.0%
Total Dollar Volume (trillion)	\$18.6	\$25.1	10.5%
ACH Credits	\$9.0	\$12.7	12.2%
ACH Debits	\$9.6	\$12.4	9.0%
Average Value	\$2,989	\$2,767	-2.5%
ACH Credits	\$2,365	\$2,651	3.9%
ACH Debits	\$3,967	\$2,896	-10.0%

The *Depository Institutions Payments Study* (2004 DI study) estimated the annual number and value of payments in the United States from March and April 2004. The representative sample for the survey was drawn using a stratified random sampling of 2,700 of the 14,117 DIs in the United States. The largest DIs were sampled at a higher rate in an effort to count as many transactions as possible and estimate as few as possible. The sample included commercial banks, savings institutions, and credit unions. A total of 1,501 DIs provided data for the study. DIs were asked to include all value ACHs for debits and credits separately. This information was used to estimate the on-us percentages for debits and credits. These values in turn were applied to the ACH data that had been provided in the 2004 EP Study which had gathered data on network transaction volume by Standard Entry Class Code (SEC). The estimated ratio of on-us debits and credits from the DI study was applied to the number of ACH payments using the ACH networks during 2003. The value of on-us ACH payments was computed by assuming that the average value of on-us was the same as the network on-us for debits and credits separately. Although the survey period was March and April 2004, the estimates were annualized and reported as 2003 estimates.

⁴ Third-quarter 2004 statistics from NACHA indicate that the number of ACH debits now exceeds the number of ACH credits.

EBT Research

Electronic Benefits Transfer (EBT) transactions include any purchase made with an EBT card, whether it uses a magnetic-stripe or a chip. All of the leading EBT prime contractors contributed their data, which represented most of the volume and value data according to the industry aggregate data provided by the Food and Nutrition Service (FNS) of the U.S. Department of Agriculture.

EBT Data Summary for 2003 Transaction Volume and Dollar Value by Source

	Primary Source	Confirmed Estimate	Estimate	Total
Transactions	826,839,678	-	-	826,839,678
-Share of Total	100%	-	-	100%
Dollar Value	\$21,566,807,386	-	-	\$21,566,807,386
-Share of Total	100%	-	-	100%

2004 EP Study Participants

The Food & Nutrition Service (FNS) oversees the management and distribution of food stamp benefits administered through EBT programs. FNS participated in the study and provided complete volume and value data on all “cash benefit” EBT programs in the United States for 2003.

All states participating in EBT have a single primary contractor that administers their EBT payments program. That contractor may subcontract processing or any other aspect of the program to another company. For example, JP Morgan Chase (which acquired Citicorp’s EBT business) subcontracts processing in several states to eFunds. Because of these complex relationships, and to ensure that no transactions were double counted, only the primary contractors were surveyed. All three of the leading EBT contractors participated, covering 46 states.

EBT Organizations by Response Category for the 2004 EP Study

	Number of Organizations	Participation Rate
Primary Source	4	67%
Confirmed Estimate	2	33%
Sub-Total	6	100%
Unconfirmed Estimate	0	0%
Duplicative/ Disqualified	3	
Total Contacted	9	

EBT Prime Contractor by State

Contractor	States & Territories	States	% of Total
JPM Chase (Acquired Citicorp Services, Inc.)	AK, AZ, AR, CA, CO, CT, DC, FL, GA, Guam, HI, ID, IN, KY, LA, MD, MA, MI, NE, NV, NH, NM, NY, NC, ND, OH, PA, RI, SC, SD, TN, VT, WA, WV, WI, Virgin Islands	34	68%
e-Funds	AL, DE, KS, MN, MO, NJ, OR, UT	8	16%
ACS-IMS	IA, ME, MS, OK	4	8%
Northrup Grumman	IL	1	2%
TRW	MT	1	2%
State Itself	TX, WY	2	4%
GM Group	PR	0	0%

E m e r g i n g P a y m e n t s R e s e a r c h

Several emerging payment products are new front-end payment methods to the consumer, but use traditional funding and settlement systems behind the scenes. Examples of this include:

- Online bill payment
- Person-to-person (P2P) payments, which are charged to a credit card or routed through the ACH network
- Open system prepaid and stored-value Visa/MasterCard
- Internet currencies, which charge to a credit card or are routed through the ACH network
- Other front-end mechanisms, including:
 - Transponders, which may charge payments to a credit card (i.e., SpeedPass)
 - ACH debit cards, which use the ACH network (i.e., DebitMan)

These types of transactions are counted within the basic funding and settlement systems (e.g., ACH, debit, and credit card). These have been tracked separately for the purpose of estimating substitutions between payment types.

An important example of this has been the rapid growth of gift cards. Gift cards have been growing quickly as retailers convert their paper-based gift certificates to a closed-system gift card program. This initial load for a gift card is typically a credit card transaction.

Dove's experience with the 2001 EP Study showed that it can be very difficult to obtain the number and value of emerging payments for several reasons:

- Online bill payment applications are typically processed using ACH credits that can be initiated by a bill payment service (i.e., CheckFree) or the consumer directly. Recently, the "Biller-Direct Model" has grown where the consumer visits the biller's Web site and pays the bill using a credit card, debit card or WEB ACH transaction.
- New Internet-based start-ups may have no commercial volume or may inflate their volume data to encourage customers and investors and they often prefer not to share accurate information about their volumes.
- In the 2001 EP Study, data on emerging payments focused on Internet currencies, which were difficult to obtain and relatively small in number and value. Subsequently, many of those firms migrated to new applications, merged with larger companies or went out of business. Beanz and Flooz were notable examples of that experience.

Our discussions with new payment providers could not identify any significant emerging payments that did not use existing payment mechanisms, which means that these payments were counted as part of one of the major payment instruments (e.g., ACH, credit card, etc.) for value loading and redemption.

A purpose of studying emerging payments is to identify additional trends that may have implications for substitution between and away from major payment instrument types. With respect to that issue, several new firms were started in 2003 to support micropayments that may be important to follow, such as Peppercoin to pay for Internet-based music downloads.

Bill Payment Companies

1. Electronic bill payment and presentment (EBPP) refers to online services that enable customers to receive, review and execute payment of their bills over the Internet.
2. The "Bill Payment Service" involves companies that submit remittances authorized through an online banking arrangement with either a bank or a Bill Service Provider that consolidates billing data and forwards it to a customer service provider for presentment.
3. The "Biller-Direct" model allows consumers to visit the biller's site to view billing data and pay their bills. Industry research has indicated that this has become twice as large as the "Bill Payment Service" business, and is growing at a faster rate.
4. The lockbox model allows consumers to re-route their paper bills to the provider, who scans the bills into presentment software for online presentment. This model enables bill payment through one of the methods described above.

EBPP has continued to grow with considerable expansion of the Biller Direct model, which presently cannot be estimated using the study methodology. The Dove/ABA 2003/2004 *Consumer Payment Preferences Study* data suggests that there may have been 3.2 billion bill payments made electronically by consumers in 2003.

2004 EP Study Survey Results — EBPP

	Number of Organizations	Participation Rate
Primary Source	10	77%
Confirmed Estimate	1	8%
Sub-Total	11	85%
Did Not Participate	2	15%
Duplicative/Disqualified	8	
Total Contacted	21	

P2P Companies

P2P companies specialize in the Web-based transfer of funds between two parties. They are usually used in online auction community environments and for casual payments between parties. PayPal dominates this market segment, and financial institutions appear to have exited the Web P2P space. First Data operates BidPay.com, a much smaller service that is able to leverage the Western Union money transfer service in an Internet-payment environment. In 2003, HSBC teamed up with Yahoo! to develop a PayDirect service. This service was discontinued as of November 22, 2004. Although survey participation was low, we did receive information from leading organizations such as PayPal and First Data.

2004 EP Study Survey Participation — P2P

	Number of Organizations	Participation Rate
Primary Source	4	57%
Confirmed Estimate	0	0%
Sub-Total	4	57%
Did Not Participate	3	43%
Duplicative/Disqualified	2	
Total Contacted	9	

Prepaid and Stored-value

The prepaid and stored-value card industry is one of the fastest growing areas of emerging payments. Growth is being fueled by the rapid adoption of gift cards and payroll cards. Gift cards have provided a way for retailers to switch from paper gift certificates to plastic. According to the National Retail Federation, consumer spending on gift cards totaled \$17 billion during the 2003 holiday season, representing 8% of retail sales volume. Responses from retailers, restaurants, and gas companies that participated in the 2004 EP Study indicate that the market is maturing quickly with re-loadable cards accounting for most of the gift cards.

Prepaid cards are promoted for a number of uses. In addition to the gift card applications, they are being issued for flexible benefit programs, payroll, incentives, insurance claims, travel

expenses, store refunds, and other purposes. Even check cashers have become popular providers of prepaid cards, as customers may come in to cash a check, and rather than take cash they may choose an open system card (like the ones provided by MasterCard).

In 2001, Dove reported that prepaid card programs offered a number of advantages to retailers and other issuers as well as consumers, and suggested that there was great potential for the market. Retailers have continued switching from paper gift certificates to cards due to the benefits of easier processing, reduced fraud, and increased breakage. Additionally, prepaid cards are attractive to consumer segments that cannot or choose not to use credit or debit cards, including teens with no credit, adults with poor credit, and people who want to shop anonymously.

An important distinction in this category is open system stored-value cards vs. closed-system stored-value cards. This distinction is similar to general purpose credit cards and private label credit cards. A closed-system card is typically issued by a retailer and is valid only at that retailer's store. An open system card is issued by a bank or a marketer through a bank, and through its affiliation with one of the major credit card associations (Visa, MasterCard, or American Express) or EFT networks, and can be used anywhere that the association's or network's cards can be used.

Closed-system card transactions are settled through the processor that runs the program. There are two major processors specializing in closed-system stored-value card programs, and several other smaller ones. These programs were outside the scope of this project, and therefore these processors were not surveyed. The rapid growth and adoption of prepaid gift cards and payroll cards are of increasing importance in the payments system. It may be important for the Fed to track closed-system prepaid and gift cards in the near future, as they are likely being substituted for cash and checks.

Open system card transactions go through one of several processors that specialize in these types of programs, but are also transmitted through the credit card association or EFT network with which the card is affiliated. These transactions are included in the data reported by the associations and networks.

2004 EP Study Survey Results — Open System Prepaid / Stored-value

	Number of Organizations	Participation Rate
Primary Source	7	70%
Confirmed Estimate	0	0%
Sub-Total	7	70%
Did Not Participate	3	30%
Duplicative / Disqualified	1	
Total Contacted	11	

Internet Currencies

Internet currencies are, as the name implies, currencies intended to be spent on the Web. Web merchants must be set up to accept an Internet currency, and they are generally not widely accepted, though some are much more popular than others. Some can also have their value transferred to a card and spent at a physical location.

Internet currencies are similar to closed-system stored-value cards, but without the card. An amount is paid up front, and that value is stored by the processor. It is then accessed electronically using an account number and PIN entered at a merchant site. This business model has failed and only a few of the firms identified in 2001 are still operating.

2004 EP Study Survey Results — Internet Currencies

	Number of Organizations	Participation Rate
Primary Source	0	0%
Confirmed Estimate	0	0%
Sub-Total	0	0%
Did Not Participate	6	100%
Duplicative/ Disqualified	5	
Total Contacted	11	

Other Emerging Payment Technologies

There are several other types of emerging payment technologies:

- Several companies are working on ways to allow consumers to use their PIN debit cards for Internet purchases. Most of these “hard token” systems have struggled to gain widespread consumer adoption. SafeDebit, developed by NYCE, used a CD-ROM with a digital signature encoded on it. ATM Online is an all-software solution developed by ePacific. These technologies route transactions through the EFT networks.
- Transponders allow consumers to waive a small tag in front of a reader to pay for goods. The biggest example of this is the Exxon Mobil SpeedPass, which was developed to allow motorists to quickly pay for gas at the pump. But now SpeedPass can also be used to pay for goods inside the convenience store and was tested for purchases at 400 McDonald’s restaurants before that pilot program was concluded. Other companies developing transponder payment technology include 2scoot and FreedomPay. Purchases paid for with a transponder are billed to the consumer’s credit card or to a prepaid account. MasterCard has announced growing merchant acceptance for their PayPass contactless card payment system.
- Concord EFS and the Food Marketing Institute are piloting an ACH debit card, which works similarly to a PIN debit card, but routes transactions through the ACH system rather than an EFT network. DebitMan is an example of this payment type. Supermarkets such as Vons, which had offered these types of payments, exited the service

when PIN debit became available. Little volume is likely to have been generated over the past three years, although interest in adding them to retailers' loyalty programs is growing.

- Several companies, including Telecheck, Concord and SVPCo have developed ways to convert checks to electronic transactions at the point-of-sale. These transactions would then go through the ACH system as imaged or POP transactions.

2004 EP Study Survey Results — Other Emerging Payment

	Number of Organizations	Participation Rate
Primary Source	2	67%
Confirmed Estimate	0	0%
Sub-Total	2	67%
Did Not Participate	1	33%
Duplicative/ Disqualified	1	
Total Contacted	4	