

The Electronic Payments Study

A Survey of Electronic Payments for the 2007 Federal Reserve Payments Study



Research Sponsored by the Federal Reserve System

Performed by Dove Consulting, *a Division of Hitachi Consulting*

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Dove Consulting Project Team

| | |
|---------------|---|
| Study Authors | Edward Bachelder, Director of Research and Analytics Joel Stanton, Manager, Financial Services |
| Research Team | Al Haney, Research Analyst Lydia Yu, Research Analyst |
| Support Team | Jennifer Gruz |

Dove Consulting, *a Division of Hitachi Consulting*
2 Atlantic Avenue, 3rd Floor
Boston, Massachusetts 02110 USA
(617) 482-2100
www.doveconsulting.com

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1. Introduction

This report details the methodology and findings of the 2007 *Electronic Payments Study* (2007 EP study). Performed by Dove Consulting, the 2007 EP study determined the number and value of electronic payment transactions originating in the United States for the year 2006.

The 2007 EP study is part of an ongoing effort by the Federal Reserve System to measure and analyze trends in noncash payments in the United States. In 2001, the Federal Reserve System undertook the *Retail Payments Research Project* to estimate the annual number and value of retail payments in the United States.¹ Three studies were performed that year: the *Electronic Payment Instruments Study* (2001 EP study), the *Depository Financial Institution Check Study* (2001 DI study), and the *Check Sample Study* (2001 CS study). In 2004, the EP and DI studies were repeated in order to track shifts in payments numbers and values.

The 2007 *Federal Reserve Payments Study* repeats the efforts of the 2001 and 2004 studies. As in 2001, the 2007 *Federal Reserve Payments Study* consists of three studies: the *Electronic Payments Study* (2007 EP study), the *Depository Institutions Payments Study* (2007 DI study), and the *Check Sample Study* (2007 CS study).²

The 2007 EP study looked at “core” electronic payment instruments and at prepaid cards. The core study produced estimates of the transaction number and dollar value of the established payment types: debit cards, credit cards, Automated Clearing House (ACH), and electronic benefits transfers (EBTs). Like previous EP studies, it also looked at emerging payments.

The prepaid card study looked at prepaid cards. In the previous EP studies, prepaid cards were discussed as part of the emerging payments section. In the 2007 EP study, data on prepaid cards were formally collected, and estimates of the transaction number and dollar value were included in recognition of their growing importance. Responses, however, were relatively low.

¹ The Federal Reserve uses the term “retail” payments to describe any noncash payment besides wire transfer.

² Dove Consulting performed the EP study in 2001, 2004, and 2007. Global Concepts performed the DI study in 2001, 2004, and 2007 and the CS study in 2001 and 2007. The 2007 DI and CS study results are available in separate reports.

2. Core Study

As the ‘core’ electronic payments number and value data to be collected needs to be directly comparable with those previously gathered for the years 2000 and 2003 (to estimate growth rates), Dove employed the same census-style survey approach used in 2001 and 2004. Dove staff distributed surveys to entities involved in the origination, processing, and settlement of general purpose and private label credit cards; PIN and signature debit cards; ACH; 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.

Research Objectives

The objective of the Electronic Payments Study is to develop a database and report summary based on the results of a survey of industry sources to determine the aggregate number and dollar values for the following payment instruments in the United States during the year 2006:

- General Purpose Credit Cards
- Private Label Credit Cards
- PIN Debit Cards
- Signature Debit Cards
- Automated Clearing House (ACH)
- Electronic Benefits Transfer (EBT) Cards
- Emerging Payment Instruments

The primary sources for this information are major card industry associations and processors, EFT networks, federal government agencies, and other entities that can provide accurate and reliable data on electronic payments originated in the United States.³ The 2001 EP study focused on obtaining aggregate estimates of totals for each payment instrument. The 2004 and 2007 EP studies also sought to collect annual data to measure and explain growth patterns of electronic payments, in addition to aggregate totals. This information contributes to a better understanding of substitution rates between checks and electronic payments and among various electronic payment instruments.

³ EFT networks link together automated teller machines (ATMs) and point-of-sale debit card acceptance devices to accounts at depository institutions.

Participation Rate

The following table shows the results of the compilation of study participants' data. A total of 65 out of 73 potential organizations participated in the study. The 89.0 percent participation rate for organizations involved in processing core electronic payments in the 2007 EP study is indicative of the interest that payments organizations have in providing reliable number and value data to the Federal Reserve System and the payments industry.

Collectively, these 65 participating card associations, EFT networks, payments processors and proprietary operations accounted for an estimated 99.8 percent of the payment transactions and 99.9 percent of the dollar value of electronic payments originated in the United States during the year 2006. Estimates were made for the remaining eight organizations who did not participate in the study.

Summary of Participation Rates

| Payment Instrument | Potential Participants | Participation Rate By | | |
|-----------------------------------|------------------------|-----------------------|--------------------|--------------|
| | | Organization | Transaction Number | Dollar Value |
| General Purpose Credit Cards | 7 | 100% | 100% | 100% |
| Private Label Credit Card | 38 | 86.8% | 96.5% | 87.9% |
| Signature Debit | 3 | 100% | 100% | 100% |
| PIN Debit | 14 | 92.9% | 99.8% | 99.8% |
| ACH ¹ | 3 | 100% | 100% | 100% |
| EBT ² | 8 | 75.0% | 100% | 100% |
| Sub Total Established Pmts | 73 | 89.0% | 99.8% | 99.9% |
| Emerging Payments ³ | 32 | 53.1% | N/A | N/A |
| Total | 105 | 78.1% | | |

¹ Includes NACHA

² Includes Food & Nutrition Service

³ Number and dollar value was not estimated for non-participants

Research Methodology

The 2007 core study was a census-style survey of payments organizations that originated electronic payments and routed them through various card associations, EFT networks, processors or private card issuers for the calendar year 2006. Data was collected from April through September 2007 via electronic forms sent to all potential participants. The data collection and estimation methods used for this electronic payments research are consistent with those used to estimate the number and value of electronic payments in the 2001 and 2004 EP studies. In both the 2001 and 2004 EP Studies, electronic payments were estimated via a survey of the universe of electronic payment network operators and payment card processors in the United States.

Except as noted in this document, the definitions and methods used for the 2007 core study are equivalent to those used in the 2001 and 2004 EP studies. In addition to the annual number and value of electronic payments for 2006, the research also gathered periodic data (i.e., annual statistics) for 2004 and 2005.

Scope of Research

The 2007 core study collected data on electronic payments made in the United States during the year 2006. Transactions from consumers, businesses, and government entities are included in the statistics gathered. 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 disbursement 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 included in the study and organizations surveyed are summarized in the following table:

| Payment Instruments | Types of Organizations Receiving Surveys |
|------------------------------------|--|
| General Purpose Credit Card | Credit card associations such as MasterCard, American Express, Discover Network, and Visa |
| Private Label Credit Card | Retailers, oil companies, fleet card issuers, processors, third party receivables owners |
| PIN Debit | Regional and national EFT networks such as Interlink, STAR, and CO-OP Network |
| Signature Debit | Offline debit cards such as Visa Check and Debit MasterCard |
| Automated Clearing House (ACH) | NACHA, ACH operators (EPN, Federal Reserve) |
| Electronic Benefits Transfer (EBT) | USDA FNS, EBT contractors |
| Emerging Payments | Companies involved in bill payment, deferred payment, P2P, RFID transponders, and other new payment technologies |

In 2001 and 2004, it was determined 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 numbers into the aggregate totals would result in double-counting. However, these organizations are included 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 the study was consistent with the 2001 and 2004 EP studies. Organizations 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 focuses on payments made in the United States in 2006, 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 value data on a non-duplicative counting basis.

Outside the Scope

There are variations of payment instruments, as well as components of the payments value chain, that were considered to be outside the scope of the 2007 study.

The following transaction information was considered outside the scope of work for the 2007 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
- Loyalty-based accounts (e.g., airline frequent flier accounts)
- Phone cards
- 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 encouraged by the Federal Reserve through industry-wide communications, personalized letters and follow-up calls to large organizations as requested by Dove Consulting.

Data Collection

The primary data collection method was a set of questionnaires or survey forms that were provided in both paper and electronic formats. One or more senior executives at each organization on the potential participant list were mailed a personalized survey invitation, a letter from Vice Chairman of the Federal Reserve Board, Donald Kohn, and a data contact form with instructions to specify the type of transactions handled by the organization. Dove then distributed survey instructions and data collection forms to the designated data contact for each payment organization. Reminder calls were made to non-responding organizations. Personalized letters and emails were also sent 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 of the organizations surveyed, incentives or gratuities were not needed to obtain participation. It was 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 Federal Reserve.

Questionnaires with Definitions

The questionnaires used for the 2007 EP study were very similar to those used in 2001 and 2004. At a minimum, Dove collected data for 2006 and made every reasonable effort to gather historical annual data from participants for the years 2004 and 2005. 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. Experience with the 2001 and 2004 EP studies had shown 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, and this was confirmed with the present study as well.

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

Communications Plan

The team anticipated that most organizations would participate if appropriate and timely communications were used. The approach was similar to that used in the 2001 and 2004 EP studies, with specific actions to follow-up and escalate with non-respondents.

During the 2001 and 2004 EP studies, Dove had 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 last two studies generated in the industry. The goal was to exceed a participation rate of 75 percent for established payment organizations.

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 Federal Reserve announcing the study (January 16, 2007)
- Use of a key Federal Reserve point of contact to field potential questions
- A posting on the FRB Services 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 Federal Reserve and Dove Consulting. Communications with electronic payment processing 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 (Feb – Mar 2007)
2. Pre-survey follow-up letter (Mar – Apr 2007)
3. Survey administration (Apr – Aug 2007)
4. Survey follow-up (May – Sept 2007)
5. Thank you letter and a summary of results (Dec 2007)

Validation of Data Received from Participants

The data were 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 were reviewed.

If the numbers and values reported by study participants differed markedly, either through a significant decline or above market growth rate, they were identified and data were verified through direct communications (telephone or email) to ensure that reporting errors were avoided. This was very important for the private label credit card and EFT network organizations, where mergers have 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 and 2004 EP studies. In all cases, Dove contacted the non-participating organizations and asked the organization about the reasonableness of the estimates. On numerous occasions, non-responders at that point chose to provide actual data for the study. In other cases, organizations would give guidance regarding the accuracy of the estimates.

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

General Purpose Credit Card Research

Although this is one of the largest categories, in previous studies it had been one of the most efficient to survey, since all transactions are routed through one of seven national organizations. In 2007, however, the credit card networks proved much less willing to share detailed data than in previous years.

The general purpose credit card data totals are based on payments that are routed 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 EZPass or an automated toll system

The sources for these numbers are the major credit card associations, including Visa, Discover Network, MasterCard, American Express, and others. Since these organizations can provide aggregated data, there was no need to survey card issuers or transaction processors. Unlike in previous years, Diners' Club in 2006 is owned by CitiBank, and all Diners' Club volume is routed through MasterCard.

General Purpose Credit Card Data Summary for 2006 Transaction Number and Dollar Value by Source

| | Primary Source | Confirmed Estimate | Estimate | Total |
|------------------------|---------------------|--------------------|----------|---------------------|
| Transactions | 18,953,208,399 | -- | -- | 18,953,208,399 |
| -Share of Total | 100% | 0.0% | 0.0% | 100% |
| Dollar Value | \$1,870,299,604,801 | -- | -- | \$1,870,299,604,801 |
| -Share of Total | 100% | 0.0% | 0.0% | 100% |

Participants

Since every credit card transaction must be routed through the card association that owns the brand, the survey for the 2007 EP study focused on card associations to gather credit card transaction and sales value information. Data were provided by seven general purpose credit card companies.

General Purpose Credit Card Segment Participation

| | Number of Organizations | Participation Rate |
|---------------------------|-------------------------|--------------------|
| Primary Source | 7 | 100% |
| Confirmed Estimate | 0 | 0% |
| SUB-TOTAL | 7 | 100% |
| Unconfirmed Estimate | 0 | 0% |
| Duplicative/Disqualified* | 0 | |
| Total Contacted | 7 | |

* Includes organizations that were contacted that either forward (or outsource) their originated payment transactions to another study participant so that inclusion would double-count transactions

Private Label Credit Card Research

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 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 those 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, Kohl's, Neiman Marcus, etc.) to a number of financial institutions such as Citibank, JPM Chase, and HSBC, as well as to non-bank organizations like Alliance Data.

Dove Consulting was mindful of retailers who switched processors mid-year, or switched from processing in-house to outsourcing (or vice versa) mid-year such as Pier One and Kohl's. The survey form asked each retailer if its processing was done in-house or was outsourced to a third party. The form also asked if there was a change in processing arrangements 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 fleet card and third-party processor dollar values, all of the categories declined over the past three years. This is to be expected as card usage patterns have shifted away from private label card toward general purpose credit card and debit card payments.

**Private Label Credit Card Summary for 2006
Transaction Number and Dollar Value by Category**

| Category | Transactions (Millions) | Dollar Value (\$Millions) | Average Transaction Size |
|--------------------------------|----------------------------|------------------------------|-----------------------------|
| Retailers (in-house) | 264.9 | \$22,692 | \$85.67 |
| Oil Companies (in-house) | 191.3 | \$6,980 | \$36.49 |
| Third-Party Fleet Card Issuers | 559.1 | \$42,263 | \$75.59 |
| Third-Party Card Processors* | 1,753.6 | \$181,654 | \$103.59 |
| Total | 2,768.9 | \$253,589 | \$91.59 |

* 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 2006
Transaction Number and Dollar Value by Source**

| | Primary Source | Confirmed Estimate | Estimate | Total |
|------------------------|-------------------|-----------------------|------------------|-------------------|
| Transactions | 2,673,101,402 | -- | 95,771,311 | 2,768,872,713 |
| -Share of Total | 96.5% | 0.0% | 3.5% | 100% |
| Dollar Value | \$222,983,543,563 | -- | \$30,605,743,607 | \$253,589,287,170 |
| -Share of Total | 87.9% | 0.0% | 12.1% | 100% |

Participants

In the previous EP studies, private label credit cards were the most difficult payment instruments to measure. Although it again proved difficult to track down all of the participants, a substantially higher participation rate was achieved this time. For the 2007 EP study, 96.5 percent of transactions are 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 data from other respondents.

Private Label Credit Card Participants

| | Number of Organizations | Participation Rate |
|---------------------------|----------------------------|--------------------|
| Primary Source | 33 | 87% |
| Confirmed Estimate | 0 | 0% |
| Sub-Total | 33 | 87% |
| Unconfirmed Estimate | 5 | 13% |
| Duplicative/Disqualified* | 23 | |
| Total Contacted | 61 | |

* Includes organizations that were contacted that either forward (or outsource) their originated payment transactions to another study participant so that inclusion would double-count transactions

Signature Debit Card Research

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

Signature Debit Data Summary for 2006 Transaction Number and Dollar Value by Source

| | Primary Source | Confirmed Estimate | Estimate | Total |
|------------------------|-------------------|--------------------|----------|-------------------|
| Transactions | 15,956,234,753 | -- | -- | 15,956,234,753 |
| -Share of Total | 100% | 0.0% | 0.0% | 100% |
| Dollar Value | \$637,207,028,755 | -- | -- | \$637,207,028,755 |
| -Share of Total | 100% | 0.0% | 0.0% | 100% |

Participants

Since every signature debit card transaction must be routed through the card association that owns the brand, the survey for the 2007 EP study focused on the card associations to gather signature debit transaction and sales value information. Data was provided by three signature debit companies.

Signature Debit Participation

| | Number of Organizations | Participation Rate |
|--------------------------|-------------------------|--------------------|
| Primary Source | 3 | 100% |
| Confirmed Estimate | 0 | 0% |
| Sub-Total | 3 | 100% |
| Unconfirmed Estimate | 0 | 0% |
| Duplicative/Disqualified | 0 | |
| Total Contacted | 3 | |

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.

Sources for EFT transactions are the regional and national EFT networks that have a PIN point-of-sale (POS) program. In order to avoid double counting, the networks were asked 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) between networks.

PIN Debit Data Summary for 2006 Transaction Number and Dollar Value by Source

| | Primary Source | Confirmed Estimate | Estimate | Total |
|------------------------|-------------------|--------------------|---------------|-------------------|
| Transactions | 9,349,439,012 | -- | 22,700,000 | 9,372,139,012 |
| -Share of Total | 99.8% | 0.0% | 0.2% | 100% |
| Dollar Value | \$329,232,824,850 | \$18,574,771,352 | \$830,728,500 | \$348,638,324,702 |
| -Share of Total | 94.4% | 5.3% | 0.2% | 100% |

Participants

The data for the PIN debit payment statistics were gathered from regional and national EFT networks. All but one of the 14 PIN debit networks participated in the 2007 study.

PIN Debit Participation

| | Number of Organizations | Participation Rate |
|---------------------------|-------------------------|--------------------|
| Primary Source | 13 | 93% |
| Confirmed Estimate | 0 | 0% |
| Sub-Total | 13 | 93% |
| Unconfirmed Estimate | 1 | 7% |
| Duplicative/Disqualified* | 2 | |
| Total Contacted | 16 | |

* Includes organizations that were contacted that either forward (or outsource) their originated payment transactions to another study participant so that inclusion would double-count transactions

Payment Number

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

Cash Back

Cash back at the point of sale proved to be a very difficult element for several networks to track. Three large networks were able to provide information regarding cash back. Other smaller networks were able to give rough estimates regarding cash back amounts, although they were not able to track it on a consistent, accurate basis. Using this information, it was estimated that cash back at the point of sale accounted for 8.5 percent of the total reported dollar values for PIN debit in 2006. This suggests that PIN debit “POS Cash-Back” value was approximately \$32.4 billion in 2006.

Because cash back does not constitute an incremental transaction (i.e., it is part of a purchase transaction), the number of payments for PIN debit transactions remains unaffected by cash back. Cash back data was collected in the 2004 EP study but not 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, and government disbursements and payments
- Direct payments, such as insurance premiums, mortgage payments, loan payments, rents/leases, utility bills, subscription/membership dues, monthly pledges, and tuition payments
- Corporate payments, US Treasury's Electronic Federal Tax Payment System (EFTPS) federal and state tax, royalty payments, invoice payments, trade payments, and debt repayments
- Electronic bill presentment and payment (EBPP) transactions settled through the ACH such as those conducted by CheckFree and Princeton eCom
- Most check electrification methods (e.g., check truncation and conversion at the lockbox (ARC)); such payments are categorized separately to track conversions of one primary payment type to another
- ACH debit cards, such as those being developed by DebitMan/Tempo 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' 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 and 2004 EP studies. Modifications to definitions were necessary due to the addition of SEC codes related to check conversion (e.g., ARC, POP, WEB, and TEL) or for other changes to ACH payment options.

ACH Data Summary for 2006 Transaction Number and Dollar Value by Source (000's)

| | Primary Source | Estimated | | Total |
|------------------------|------------------|--------------------|------------------------------|------------------|
| | Network | On-Us ¹ | Direct Exchange ¹ | |
| Transactions | 12,281,445 | 2,280,587 | 31,525 | 14,593,557 |
| -Share of Total | 84.2% | 15.6% | 0.2% | 100% |
| Dollar Value | \$26,332,720,489 | \$4,578,125,703 | \$55,688,865 | \$30,966,535,057 |
| -Share of Total | 85.0% | 14.8% | 0.2% | 100% |

1. Percentages are a weighted average of ACH credits and debits. For the estimated on-us and direct percentages broken out by debits and credits, please see the tables on the following pages.

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. Both of these are 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 by an RDFI and also subsequently re-presented by the originating depository financial institution (ODFI). However, the reporting of returned transactions is more complex within the ACH system and each operator reported returns differently.

SEC Codes

All ACH transactions are routed using one of several Standard Entry Class (SEC) codes defined by the ACH operating rules. There were 24 such codes effective during the year 2006, though no data was reported for four of the SEC codes. Of these codes, 13 are for payments; others are for informational purposes (e.g., ENR, DNE, etc.). The SEC codes that have been included and excluded in the 2007 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 | Customer Initiated Entry |
| CTX | Corporate Trade Exchange |
| POS | Point of Sale Entry |
| PPD | Prearranged Payment and Deposit Entry |
| POP | Point-of-Purchase Entry |
| RCK | Re-presented Check Entry |
| SHR | Shared Network Transaction |
| TRC | Truncated Entry |
| TEL | Telephone e-check |
| XCK | Destroyed Check Entry |
| WEB | Web e-check |

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 (NOC) |
| 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 | |

2006 ACH Transaction Number by Standard Entry Class Codes

| | Network Debit Transactions | Network Credit Transactions | Total Transactions | Percent of Total Transactions |
|------------------------------------|----------------------------|-----------------------------|-----------------------|-------------------------------|
| ARC | 2,145,824,699 | 209,169 | 2,146,033,868 | 17.5% |
| CCD | 511,290,203 | 1,175,974,841 | 1,687,265,044 | 13.7% |
| CIE | 51,444 | 137,827,530 | 137,878,974 | 1.1% |
| CTX | 4,550,583 | 36,351,108 | 40,901,691 | 0.3% |
| POP | 269,345,520 | 25,800 | 269,371,320 | 2.2% |
| POS | 17,603,067 | 128,025 | 17,731,092 | 0.1% |
| PPD | 2,497,672,791 | 3,770,394,739 | 6,268,067,530 | 51.0% |
| RCK | 20,958,453 | 771 | 20,959,224 | 0.2% |
| SHR | 33,480,421 | 434,941 | 33,915,362 | 0.3% |
| TEL | 293,287,941 | 40,790 | 293,328,731 | 2.4% |
| TRC | 0 | 0 | 0 | 0.0% |
| WEB | 1,365,774,043 | 108,680 | 1,365,882,723 | 11.1% |
| XCK | 109,896 | 0 | 109,896 | 0.0% |
| Sub-Total | 7,159,949,061 | 5,121,496,394 | 12,281,445,455 | 100% |
| Estimated On-Ups | 1,459,768,231 | 820,818,593 | 2,280,586,824 | |
| Estimated Direct | 24,691,108 | 6,833,827 | 31,524,935 | |
| Total ACH | 8,644,408,400 | 5,949,148,814 | 14,593,557,215 | |
| <i>Estimated On-Ups Percentage</i> | <i>16.9%</i> | <i>13.8%</i> | | |
| <i>Estimated Direct Percentage</i> | <i>0.3%</i> | <i>0.1%</i> | | |

2006 ACH Dollar Value by Standard Entry Class Codes (\$000's)

| | Network Debit Value | Network Credit Value | Total Value | Percent of Total Value |
|------------------------------------|-------------------------|-------------------------|-------------------------|------------------------|
| ARC | 622,260,759 | 91,865 | 622,352,624 | 2.4% |
| CCD | 7,883,486,365 | 8,169,431,547 | 16,052,917,912 | 60.9% |
| CIE | 5,584 | 62,743,985 | 62,749,569 | 0.2% |
| CTX | 91,595,450 | 1,907,872,624 | 1,999,468,074 | 7.6% |
| POP | 21,796,868 | 3,652 | 21,800,520 | 0.1% |
| POS | 836,438 | 67,532 | 903,970 | 0.0% |
| PPD | 1,921,862,633 | 4,998,697,563 | 6,920,560,196 | 26.3% |
| RCK | 3,445,628 | 280 | 3,445,908 | 0.0% |
| SHR | 1,215,411 | 1,215,376 | 2,430,787 | 0.0% |
| TEL | 118,220,717 | 24,416 | 118,245,133 | 0.4% |
| TRC | 0 | 0 | 0 | 0.0% |
| WEB | 527,738,374 | 73,441 | 527,811,815 | 2.0% |
| XCK | 33,975 | 6 | 33,981 | 0.0% |
| Sub-Total | \$11,192,498,202 | \$15,140,222,287 | \$26,332,720,489 | 100% |
| Estimated On-Us | \$2,046,054,666 | \$2,532,071,037 | \$4,578,125,703 | |
| Estimated Direct | \$34,607,793 | \$21,081,072 | \$55,688,865 | |
| Total ACH | \$13,273,160,661 | \$17,693,374,396 | \$30,966,535,057 | |
| <i>Estimated On-Us Percentage</i> | <i>15.4%</i> | <i>14.3%</i> | | |
| <i>Estimated Direct Percentage</i> | <i>0.3%</i> | <i>0.1%</i> | | |

'On Us' and Direct Exchange ACH Payment Data:

On-us ACH payments are made between accountholders at the same depository institution and are cleared internally using the DP's ACH system. Direct exchange payments are sent directly from the originating depository institution (or its third-party processor) to the receiving depository institution (or its third-party processor). These entries are not sent to an ACH operator for processing. In both of these cases, it was necessary to collect the data from depository institutions rather than the ACH network operators. As a result, information from the 2007 DI study was used to estimate on-us and direct exchange volumes. For more information, please refer to the 2007 DI study.

The number of ACH payments grew 5.8 billion between 2003 and 2006, from 8.8 billion to 14.6 billion, for an annual growth rate of 18.6 percent. ACH debits grew faster than ACH credits. Debits made up 39 percent of all ACH payments in 2000 compared to 59 percent in 2006 (and up from 48 percent in 2003). The growth in the number of ACH debits is due, largely, to the growth of eChecks and the conversion of check payments to ACH payments. This is evident in the 27.5 percent CAGR in ACH debit volume and an 18.6 percent rate of decrease in the average value of ACH debit transactions.

Number and Dollar Value of ACH Transactions in 2000, 2003, and 2006

| | 2000 | 2003 | '00- '03 CAGR | 2006 | '03- '06 CAGR |
|--------------------------------------|---------|---------|------------------|---------|------------------|
| Total Transactions (billion) | 6.2 | 8.8 | 11.9% | 14.6 | 18.6% |
| ACH Credits | 3.8 | 4.6 | 6.5% | 5.9 | 9.1% |
| ACH Debits | 2.4 | 4.2 | 19.9% | 8.6 | 27.5% |
| Total Dollar Value (trillion) | \$18.7 | \$24.1 | 8.9% | \$31.0 | 8.7% |
| ACH Credits | \$9.0 | \$12.2 | 10.9% | \$17.7 | 13.1% |
| ACH Debits | \$9.6 | \$11.9 | 7.4% | \$13.3 | 3.8% |
| Average Value | \$2,990 | \$2,754 | -2.7% | \$2,122 | -8.3% |
| ACH Credits | \$2,365 | \$2,668 | 4.1% | \$2,974 | 3.7% |
| ACH Debits | \$3,967 | \$2,849 | -10.4% | \$1,535 | -18.6% |

EBT Research

Electronic Benefits Transfers (EBTs) include any purchase made with an EBT card, whether it uses a magnetic-stripe or a chip. EBT prime contractors contributed their data, although the primary source of EBT aggregate data is provided by the Food and Nutrition Service (FNS) of the U.S. Department of Agriculture.

EBT Data Summary for 2006 Transaction Number and Dollar Value by Source

| | Primary Source | Confirmed Estimate | Estimate | Total |
|------------------------|------------------|--------------------|----------|------------------|
| Transactions | 1,099,508,942 | -- | -- | 1,099,508,943 |
| -Share of Total | 100% | 0% | 0% | 100% |
| Dollar Value | \$29,578,914,449 | -- | -- | \$29,578,914,449 |
| -Share of Total | 100% | 0% | 0% | 100% |

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 number and value data on all “cash benefit” EBT programs in the United States for 2006.

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. Because of these complex relationships, and to ensure that no transactions were double counted, only the primary contractors were surveyed.

EBT Organizations by Response Category

| | Number of Organizations | Participation Rate |
|--------------------------|-------------------------|--------------------|
| Primary Source | 6 | 75% |
| Confirmed Estimate | 0 | 0% |
| Sub-Total | 6 | 75% |
| Unconfirmed Estimate | 2 | 25% |
| Duplicative/Disqualified | 0 | |
| Total Contacted | 8 | |

Emerging Payments Research

Several emerging payment products are 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 (e.g., PayPal)
- Deferred payment transactions (e.g., Bill Me Later)
- Other front-end mechanisms, including:
 - Transponders, which may charge payments to a credit card (e.g., EZPass)
 - ACH debit cards, which use the ACH network (e.g., Tempo/DebitMan) to withdraw funds from a consumer’s bank account

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

Prepaid cards, included in the emerging payments research in the previous EP studies, are being studied independently in the 2007 EP study. The results of the prepaid study are included later in this report.

Emerging Payment Summary for 2006 Transaction Number and Dollar Value by Type

| | Transactions | Dollar Value | Average Value |
|---------------------------|----------------------|----------------------------|---------------|
| Bill Payment | 3,446,721,532 | \$1,188,013,270,141 | \$345 |
| New Payment Types* | 532,064,840 | \$35,483,982,144 | \$67 |
| RFID Transponders | 2,059,864,595 | \$3,639,202,048 | \$2 |
| Total | 6,038,650,967 | \$1,227,136,454,333 | \$203 |

*Includes P2P, Proprietary ACH Cards, Mobile Payments, and Deferred Payments

Dove’s experience with the 2001 and 2004 EP studies 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. 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.

Discussions with emerging 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 or Credit Card) 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 payment entities were started in 2006, perhaps the most notable of which is Google Checkout, which seeks to offer a person-to-person alternative to industry leader PayPal.

Survey Results – Emerging Payments

| | Number of Organizations | Participation Rate |
|---------------------------|--------------------------------|---------------------------|
| Primary Source | 16 | 50% |
| Confirmed Estimate | 0 | 0% |
| Sub-Total | 16 | 50% |
| Did Not Participate | 16 | 50% |
| Duplicative/Disqualified* | 1 | |
| Total Contacted | 33 | |

* Includes organizations that were contacted that either forward (or outsource) their originated payment transactions to another study participant so that inclusion would double-count transactions

Bill Payment Companies

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.

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.

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.

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.

Banks’ in-house bill payment operations are processed through the ACH system and therefore are accounted for through their core processing systems.

P2P Payments

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, although this model has expanded into new areas as well. PayPal is the largest player in this market segment.

Deferred Payments

Deferred payment products, such as I4 Commerce's Bill Me Later, allow a customer to complete a transaction upfront with a merchant and then pay the balance later via a deferred payment program through the provider's product.

Radio Frequency Identification (RFID) Transponders

Transponders allow consumers to waive a small tag in front of a reader to pay for goods. One large example of this is the ExxonMobil SpeedPass, which was developed to allow motorists to quickly pay for gas at the pump. SpeedPass can also be used to pay for goods inside the convenience store and has expanded into other merchant locations as well. Transponders can also be used to pay tolls electronically, such as with an E-Z Pass toll transponder. Purchases paid for with a transponder are billed to the consumer's credit card or to a prepaid account.

Proprietary ACH Cards

ACH debit cards, which work similarly to a PIN debit card but route transactions through the ACH system rather than an EFT network, continue to exist with limited popularity. Tempo/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. However, other supermarkets such as Safeway and Stop & Shop offer ACH payment options today. Little volume growth is likely to have been generated over the past three years, although interest in adding them to retailers' loyalty programs continues to generate discussion.

Internet Currencies

Internet currencies are, as the name implies, currencies intended to be spent on the Web. The currencies are not widely accepted by Web merchants who must be set up to accept them. Some currencies can be 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 not achieved strong results, with most Internet currency businesses having either ceased operations or exited the Internet currency line of business.

3. Prepaid Card Study

Over the past decade, prepaid card adoption has grown and is emerging as a potentially important component of the electronic payments mix. Based on this trend, the Federal Reserve determined it was important to examine prepaid transactions in greater detail than in previous efforts. The 2007 Prepaid Card Study examines prepaid card volumes on open-loop and closed-loop systems as a stand-alone payment instrument category for the first time.

In the 2004 EP study Dove Consulting was able to collect the value and number of initial loads to prepaid cards by organizations that were processing a core (established) type of electronic payment. In 2007 this research effort has been significantly expanded to include a broad range of prepaid processing companies and EFT networks that have the ability to track unique prepaid card purchase transactions and the dollar value of those transactions. The research gathered about this large and increasingly important payment method and provides information that may be useful in forecasting substitution trends between credit, debit card usage, cash and checks.

The primary purpose of this research is to determine the number and value of both open-loop and closed-loop prepaid transactions originating in the United States for the year 2006. Dove used the same methodologies and employed the same census-style survey approach that was used to collect information for other electronic payments. Dove staff distributed surveys to entities involved in the origination, processing, and settlement of open loop and closed loop prepaid cards. Collectively, these organizations have a unique ability to “view” virtually all of the prepaid payments made in the United States.

O v e r v i e w

Prepaid cards have received much attention over the last few years. Originally introduced as a more efficient replacement for paper gift certificates, prepaid cards now represent a broad payment category that spans a wide range of applications, each providing a new growth opportunity.

Prepaid cards have expanded the number of card-based payment options available to consumers, and with the introduction of prepaid cards in the late 1990s, the spectrum of card-based payment options is now complete. Consumers can now choose to pay later (credit cards), pay now (debit cards), or pay before making a purchase (prepaid cards).

Although many different types of prepaid cards exist in the market today, the largest category is retailer gift cards. These ‘closed-loop’ cards have experienced widespread adoption, and today nearly all major merchants – from supermarkets to department stores to coffee shops – offer some form of gift card.

A number of financial institutions have also entered the prepaid card industry by issuing ‘open loop’ prepaid cards, which bear logos such as Visa, MasterCard, American Express, or EFT network logos. These cards are not limited to specific retailers or to the point of sale, and these open loop cards can be tailored to suit an increasing variety of purposes.

Background

Compared to credit and debit, the prepaid card industry is still in the early stages of development. Designed to replace paper gift certificates, gift cards were first introduced to the mass market by Blockbuster in 1995. Following the launch of the Kmart Cash Card in 1997, many other retailers quickly followed suit and today nearly all major retailers offer a gift card. Gift cards have rendered paper gift certificates almost obsolete – and have become as much a product as they have a payment method. Financial institutions took notice of the explosion of retailers' gift cards, and now promote bank-issued prepaid cards that can be used wherever credit and/or debit cards are accepted.

Market Size

Increases in company announcements, retailer promotions, and payment conference attendance indicate that the growth of prepaid cards has been strong over the last few years, albeit starting from a small base. Within the industry, various providers and analysts have published differing estimates both for current prepaid volumes and also for future projections of volume. Sometimes these estimates vary substantially from one source to the next, ranging from \$95.4 billion in spend for all prepaid in 2006 to \$50 billion for closed loop gift card sales in 2006 to \$106 billion in just open loop branded prepaid spend in 2007.

Separating out the hyperbole from documented results has proven to be a far greater challenge than anticipated. The reluctance by industry participants to share data suggests that there are some concerns about releasing information publicly.

Prepaid Data – Various Analyst Estimates

| Source | Prepaid Data |
|---|--|
| Mercator (September 2007) | Total load for all 33 prepaid segments in 2006 (open and closed) was \$197.9 billion (revised down from their initial amount of \$259.2 billion) In 2005, closed loop spend was \$150.9 billion and open loop spend was \$14.1 billion. |
| Aite Group (July 2007) | In 2006, 3.6 billion transactions worth \$95.4 billion. Estimates that the value of all prepaid card transaction in the U.S. will increase from 4.3 billion transactions worth \$113 billion in 2007 to 7.0 billion transactions worth \$178 billion in 2010. |
| Pelorus Group (August 2007) | “Sales made with open loop prepaid cards will total about \$106 billion in 2007; we see that growing to a shade over \$300 billion by 2011.” |
| Comdata (Citing TowerGroup, NRF, Accenture, and First Annapolis) (February 2007) | The closed loop gift card industry in 2006 was estimated to be \$50 - \$56 billion. Gift card retail sales for open loop and closed loop cards expected to be \$100 billion by 2008. |

These varying analyst estimates illustrate both the challenges of accurately determining prepaid volume in the U.S. as well as the need for a census-style study such as the core study in order to accurately ascertain prepaid card volumes being spent in the U.S.

Differences Between Industry Studies and This Study

The 2007 EP study focuses on purchase transaction made in the United States using electronic payment methods. For prepaid cards, there is an important distinction to be made between loading funds onto a card and using the card to conduct purchase transactions. Many of the prepaid studies that have been conducted within the industry have placed a large focus on the volumes loaded onto prepaid cards. In some of the studies, it may also be the case that both loads and purchases are being counted to come up with some of the larger estimates that have been floated in the industry.

As with the core study, extra care was taken in the prepaid study to ensure that each transaction is counted once and only once. These attempts to avoid double-counting mean that only those companies who actually process the purchase transaction have their numbers counted. Organizations who outsource their prepaid processing, only provide card distribution services, or who serve as some other type of middleman do not have their numbers counted in order to avoid double-counting transactions.

The 2007 prepaid study focuses on payments rather than loads to be consistent with the core study (i.e., credit cards, debit cards, etc.), which also focus on purchase transactions. Since a prepaid card must be loaded before it can be used, at any given time there will always be outstanding dollars on prepaid cards that have been loaded onto the cards but have not yet been used for purchase transactions. Additionally, many prepaid cards allow for ATM withdrawals in addition to purchasing capabilities, and therefore purchase volume will always be lower than load volume, and perhaps substantially so.

Although estimates vary, at any given point in time it is estimated that anywhere from 20-40% of prepaid card value is unspent. Also, lost cards are rarely ever replaced, and in other cases cards may go unused indefinitely or expire altogether, further widening the gap between loaded volumes and purchase volumes.

Prepaid Card Applications

One of the challenges in attempting to measure the size of the prepaid industry is the continual growth and proliferation of prepaid card applications. Different analysts segment and measure the prepaid market in different ways. A typical prepaid segmentation scheme is shown here.

Prepaid Card Application Segments

| Category | Segment | Description |
|------------------------|----------------|--|
| Consumer to Consumer | Gift | <ul style="list-style-type: none"> ▪ Closed system gift cards for specific retailers ▪ Open system gift cards (Visa, MasterCard, Amex, etc.) |
| | Teen | <ul style="list-style-type: none"> ▪ Funded by parents to control spending and educate teens (e.g., VisaBuxx) |
| | Money Transfer | <ul style="list-style-type: none"> ▪ Cross-border funds transfers |
| | Travel | <ul style="list-style-type: none"> ▪ More efficient replacement for travelers checks |
| Business to Consumer | Rebates | <ul style="list-style-type: none"> ▪ Retailer rebates and refunds for merchandise returned |
| | Incentives | <ul style="list-style-type: none"> ▪ Sales promotions and other purchase incentives |
| | Insurance | <ul style="list-style-type: none"> ▪ Insurance claims and workman's compensation payments |
| Employer to Employee | Payroll | <ul style="list-style-type: none"> ▪ Reloaded monthly in lieu of paper pay check |
| | Incentive | <ul style="list-style-type: none"> ▪ Incentive award payments and bonuses |
| | HealthCare | <ul style="list-style-type: none"> ▪ HSA and FSA benefit accounts; use restricted to approved merchant categories |
| Government to Consumer | EBT | <ul style="list-style-type: none"> ▪ Child support, assistance to un-banked and emergency relief |
| | Retirement | <ul style="list-style-type: none"> ▪ Retirement benefits to non-banked |
| | Compensation | <ul style="list-style-type: none"> ▪ Other government compensation payments |

Closed loop gift cards continue to dominate the overall prepaid card market. The majority of gift cards are closed loop retailer prepaid gift cards, which can be used only at a single merchant. Adoption by merchants has been rapid due to a very compelling business case. Closed loop prepaid cards provide incremental sales, reduce the need for post-holiday price discounting, speed up check-out lines, and provide both short-term working capital and long-term incremental profits due to breakage and expired cards.

Many of the newer prepaid applications, such as payroll and healthcare cards, are, however, open-loop cards that are not limited to specific merchants and therefore occupy a different niche in consumers' wallets than gift cards. Many open-loop cards are now reloadable and can be used on an ongoing basis. Open-loop reloadable networks (e.g., Green Dot) continue to make new reload locations available on almost a daily basis. These reload networks typically target and appeal to the underbanked and unbanked segment of the population. Pricing for open-loop cards, however, is more expensive than that for checking accounts with debit cards. For example, one organization charges a \$29.95 activation fee, per item transaction fees, and a \$6.95 monthly card fee.

One area that the 2007 prepaid study examines in greater detail is prepaid cards for state-run benefits programs (in addition to the EBT programs for TANF and the FNS benefits, which are covered in the core study). These open-loop prepaid card services are typically run by the states using a third-party processor to manage the program.

Government use of prepaid is gaining popularity as an increasing number of states are transitioning towards electronic disbursement of benefit funds. States are showing interest in the lower cost and higher efficiency of the prepaid card achieved from savings on postage and check printing. Furthermore, faster funds transaction adds value to the prepaid mechanism. In addition, fraud among government prepaid benefit programs is relatively low; prepaid cards are typically deemed lower risk than check payments.

The EBT (Electronic Benefit Transfer) program pioneered the first open-loop prepaid card use for government assistance. EBT transactions include all purchases made with an EBT card, magnetic-stripe or a chip. Currently all states use EBT cards to distribute food stamp and TANF program benefits. These programs are captured in the EBT section of the core study. The prepaid study examines state programs beyond TANF and food stamps. These programs include child support payments, WIC, unemployment, and other state programs that typically involve the issuance of open-loop prepaid cards. Many of these state programs are managed by third-party financial institutions such as JP Morgan Chase, US Bank, and Bank of America. Unlike EBT cards, these prepaid cards are branded by a major credit card association and utilize those networks for transaction authorization, clearing and settlement with merchants.

Research Objectives

The objective of the 2007 prepaid card study was to determine the aggregate number and dollar values of payments for the following payment instruments in the United States during the year 2006:

- Open-Loop Prepaid Cards
- State Benefit Prepaid Cards (as a subset of open-loop prepaid cards)
- Closed-Loop Prepaid Cards

The primary sources for this information were the major card industry associations and prepaid card processors. This included the credit card associations, signature debit networks, EFT networks, state government agencies, and third-party processors that could provide accurate and reliable data on prepaid card payments originated in the United States.

Participation Rate

The following table shows the results of the compilation of data from prepaid study participants. The 73.1 percent participation rate for organizations involved in the processing of open and closed loop payments in the 2007 prepaid study is indicative of the interest that many prepaid card companies have in providing reliable number and value data to the Federal Reserve System and the payments industry. Unfortunately, it was not possible to obtain data from some of the largest prepaid organizations.

Many prepaid card companies do not process their own transactions. They generally use one of the larger prepaid card processors who typically have a strong credit or debit network business, which provides them the economies of scale required to support card payments.

Collectively, the 38 participating card associations, EFT networks, and payments processors accounted for approximately 42 percent of the payment transactions and 42 percent of the dollar value of prepaid card purchases originated in the United States during the year 2006.

Summary of Prepaid Study Participation Rates

| Payment Instrument | Potential Participants | Participants | Participation Rate By | | |
|--|------------------------|--------------|-----------------------|--------------------|--------------|
| | | | Organization | Transaction Number | Dollar Value |
| Open Loop Prepaid Cards | 22 | 18 | 81.8% | 31.0% | 30.3% |
| Closed Loop Prepaid Cards | 30 | 20 | 66.7% | 42.8% | 46.2% |
| Subtotal Prepaid Payments | 52 | 38 | 73.1% | 41.7% | 41.9% |
| State Benefit Prepaid Cards (subset of open loop txns) ¹ | 51 | 37 | 72.5% | n/a | n/a |
| Total | 103 | 75 | 72.8% | n/a | n/a |

¹ Based on number of states included; does not count individual third-party processors

Research Methodology

The prepaid study component of the 2007 EP study was a census-style survey of prepaid organizations that originated electronic prepaid payments and routed them through card associations, EFT networks, or processors for the calendar year 2006. Data was collected from May through September 2007. As noted above, the data collection and estimation methods are consistent with those used in the 2007 core study.

The primary focus of the prepaid study is the number and dollar value of purchase transactions made with a prepaid card in 2006. In addition to these data, the research also gathered periodic data (i.e., annual statistics) for 2004 and 2005, information on the number of card loads and re-loads, and breakdowns of volumes by prepaid segment type (i.e., gift, payroll, etc.).

Open-loop card loads are performed by financial institutions that issue the cards. Processors track and authorize card activity but do not necessarily have data on the aggregate value loaded on the cards that they process. Therefore initial card loads and subsequent reloads are not included in the totals reported here, although those amounts were also asked about as part of the study in order to better understand the overall dynamics of the industry.

Sample Frame/Select Organizations

Based on the transactions examined in the prepaid study, the sample frame included national and regional electronic payment organizations that provide electronic prepaid card processing or transaction switching services in the United States. The types of electronic payments included in the prepaid study and organizations surveyed are summarized in the following table:

| Payment Instruments | Types of Organizations Receiving Surveys |
|--|---|
| Open loop prepaid cards | Credit card and debit card networks that also offer prepaid card functionality, such as Visa, MasterCard, American Express, and the larger PIN debit networks |
| State benefit prepaid cards (a subset of open loop prepaid cards) | The fifty states, as well as the third-party processors providing prepaid card program processing for the states |
| Closed loop prepaid cards | Organizations provided the processing of closed loop prepaid cards, such as First Data, Comdata/SVS, and Givex |

The state benefit prepaid cards – which include non-EBT programs beyond the scope of TANF and FNS – are counted as a subset of open-loop prepaid cards because they are typically branded and processed through either Visa or MasterCard, and therefore they are already included in the overall open-loop prepaid volumes.

Methodology for Selecting Organizations to be Contacted

The methodology for identifying organizations contacted for the prepaid study is consistent with the core study. Please refer to the core study section for more information if needed. Organizations that are engaged in the business of originating, switching and/or processing electronic payment instruments and remittances were identified based on industry directories, conference participation, and Dove Consulting's knowledge.

As this study focuses on payments made in the United States in 2006, 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 value data on a non-duplicative counting basis.

Data Collection and Validation

Processes for Collection and Validation of Data

Participation in the study was voluntary, but was encouraged by the Federal Reserve through industry-wide communications, personalized letters and follow-up calls to large organizations as requested by Dove Consulting. The processes for collecting and validating data for the prepaid study were very similar to those used for the core study. Please refer to the core study section for more information if needed.

Data Collection

The primary data collection method was a set of Microsoft Excel survey forms that were provided in both paper and electronic formats. Dove distributed survey instructions and data collection forms to the designated data contact for each payment organization. Reminder calls and emails were placed to non-responding organizations.

Questionnaires with Definitions

The questionnaires used for the 2007 EP study (both core and prepaid studies) were very similar to those used in 2001 and 2004, with modifications to accommodate the collection of detailed transaction data and annual data and to distinguish between open-loop and closed-loop prepaid cards.

Communications Plan

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.

Communications with EFT Payment Organizations

Gaining the participation of EFT payment organizations was achieved through the joint efforts of the Federal Reserve and Dove Consulting. Communications with electronic payment processing 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 (April 2007)
2. Pre-survey follow-up letter (April – May 2007)
3. Survey administration (May – August 2007)
4. Survey follow-up (June – October 2007)
5. Thank you letter and a summary of results (Forthcoming)

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 were reviewed.

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 and 2004 EP studies.

In each section, information has been provided on the participation rate and the extent to which primary sources vs. estimates were used for the aggregate totals for the number and value of payments.

Open Loop Prepaid Card Research

A key component of the prepaid study is open-loop (i.e., network-branded) prepaid cards and transactions. The open-loop prepaid companies, by definition, are the same as the networks participating in the credit card and debit card portions of the core study. Each of those companies was asked to report its prepaid data along with its core payment response.

The large credit card and debit card companies are the most important sources for open-loop prepaid data. Similar to the credit and debit categories, these networks serve as the pass-through point for open-loop prepaid transactions and therefore are the primary source for determining the total number and dollar value of open-loop prepaid transactions in the U.S.

The open-loop prepaid data totals are based on prepaid payments that route transactions through the branded card networks, including:

- General purpose prepaid cards, both reloadable and non-reloadable
- Network branded gift cards, incentive cards, and bonus payments made on prepaid cards
- Payroll cards
- Health Savings Account and Flexible Savings Account cards

In addition to the networks, other large prepaid organizations such as EFD/Wildcard, FNIS, Green Dot, ACS, JPM Chase, and US Bank have provided their open-loop prepaid data. This is useful for analyzing the market and serving as a double-checking measure, although their numbers have been netted out of the total open-loop amounts in order to avoid double-counting.

As only 31 percent of the number of open-loop transactions is from primary source data, the confidence level is much lower than for the data in the core study. Two of the largest providers elected not to provide prepaid data, even though they provided data for the core study. Both organizations did, however, provide some helpful indicators for calculating an estimate and their prepaid numbers are included in the 'Estimate' column below.

Open Loop Prepaid Data Summary for 2006 Transaction Number and Dollar Value by Source

| | Primary Source | Confirmed Estimate | Estimate | Total |
|------------------------|-----------------|--------------------|-----------------|------------------|
| Transactions | 99,602,515 | -- | 222,153,808 | 321,756,323 |
| -Share of Total | 31.0% | 0% | 69.0% | 100% |
| Dollar Value | \$4,032,766,460 | -- | \$9,255,994,582 | \$13,288,761,042 |
| -Share of Total | 30.3% | 0% | 69.7% | 100% |

Open-Loop Participants

Since every open-loop prepaid card transaction must be routed through the association or network that owns the brand, the survey for the 2007 prepaid study focused on card networks to gather open-loop prepaid card transaction and sales value information. Data were provided by 18 of the 23 organizations surveyed

Open Loop Prepaid Card Segment Participation

| | Number of Organizations | Participation Rate |
|---------------------------|--------------------------------|---------------------------|
| Primary Source | 18 | 81.8% |
| Confirmed Estimate | 0 | 0% |
| SUB-TOTAL | 18 | 81.8% |
| Unconfirmed Estimate | 4 | 18.2% |
| Duplicative/Disqualified* | 1 | |
| Total Contacted | 23 | |

* Includes organizations that were contacted that either forward (or outsource) their originated payment transactions to another study participant so that inclusion would double-count transactions

State Benefit Prepaid Card Research

Electronic Funds Transfer, especially in the form of EBT and prepaid cards, is being used increasingly by state governments to streamline financial transactions, reduce costs, and increase consumer convenience. The core study covers EBT cards (TANF and food stamp programs), but additional state benefit programs that involve a branded prepaid card are included here as part of the prepaid study for completeness.

For the 2007 prepaid study, Dove Consulting contacted each of the 50 states and the District of Columbia to determine whether they were using prepaid cards for state benefit programs beyond food stamps and TANF. Survey invitation emails and forms were sent to State Treasurers' offices in all 50 states and the District of Columbia. Numerous follow-up calls and emails were then placed to non-responding states.

Calls were placed to each of the 50 states and the District of Columbia. During initial efforts, five states submitted completed forms, and another 16 states 'disqualified' themselves by claiming that they did not have any prepaid card benefit programs (beyond food stamps and TANF). Two states declined to participate.

During this process Dove learned that in many states the state treasurers' offices were not the right contact. The first wave of responses that were received from the states was inconsistent with aggregate totals in the public domain. In many states, treasurers are not responsible for disbursements; disbursements are conducted by various agencies in different states and are often run independently from the treasurer's department. As more and more conversations with state treasurers' offices were conducted, it became clear that a different approach was required.

It was found that the state agencies that had responded depended upon the processor for data reports. The processors, in turn, reported that it would be easier to provide a single report for all of their states. Therefore the focus shifted to the third-party providers of state prepaid benefits programs. Many of these third-party providers, such as JPM Chase, ACS, US Bank, and Bank of America, process the prepaid transactions for multiple states. They are also able to more accurately manage and track the prepaid number and dollar value data.

JPM Chase, US Bank, ACS, and BB&T provided data for the prepaid study. Those responses, combined with the individual state responses that were received, account for 36 states and the District of Columbia, which is likely a majority of the states offering prepaid card benefit programs in 2006. The 36 states and the District of Columbia account for approximately 88.4 million transactions and \$3.2 billion of open loop prepaid volume.

Based on the total open-loop prepaid purchase transaction dollar value of \$13.3 billion, the \$3.2 billion generated from state benefit prepaid programs accounts for approximately 24 percent of total open-loop purchase volume.

State Benefit Prepaid Data Summary for 2006 (This data is a subset of open-loop)

| | Transactions | Dollar Value | Average Value |
|--------------------|--------------|-----------------|---------------|
| State Prepaid Data | 88,369,156 | \$3,183,302,325 | \$36 |

State Participants

State responses varied depending on the source of the information. JPM Chase reported data for 16 states and the District of Columbia. ACS reported the aggregate data covering 12 states, US Bank reported aggregate data covering 12 states, and BB&T reported data on one state. Additionally, four states reported data on their own. In some cases states may use multiple providers, typically to support multiple program types.

Additionally, many states are also in the process of rolling out incremental programs. For example, North Dakota, South Dakota, and Pennsylvania announced they were rolling out unemployment programs in 2007; other states such as North Carolina and Wisconsin are rolling out child support programs in 2007/2008.

Closed Loop Prepaid Card Research

Closed-loop prepaid card transactions are typically limited to a single merchant brand (or group of brands under a single merchant organization). Similar to private label cards in the core study, because there is no central clearing network or switch involved, Dove needed to contact processors that acquire these transactions. As there are several processors who process for hundreds of retailers, it was most efficient to gather data from the processors and add that data to the smaller processors and those few retailers that process in-house.

In addition, Dove Consulting reached out to numerous small prepaid organizations to ascertain whether or not they provided processing of closed loop prepaid transactions. Many of these do not provide closed-loop processing, and therefore were disqualified from the study (this list is provided later in this section).

Again, the closed-loop primary source data is relatively low due to non-participation from one of the largest providers.

Closed Loop Prepaid Data Summary for 2006 Transaction Number and Dollar Value by Source

| | Primary Source | Confirmed Estimate | Estimate | Total |
|------------------------|-----------------------|---------------------------|------------------|------------------|
| Transactions | 891,270,190 | 425,853,998 | 1,759,422,282 | 3,076,546,470 |
| -Share of Total | 29.0% | 13.8% | 57.2% | 100% |
| Dollar Value | \$15,980,477,147 | \$917,893,370 | \$19,702,371,248 | \$36,600,741,764 |
| -Share of Total | 43.7% | 2.5% | 53.8% | 100% |

Closed-Loop Participants

There is no central clearing network or switch for closed-loop prepaid card payments. Dove targeted in-house and third-party processors to gather the closed loop prepaid data because every closed-loop prepaid card transaction must be authorized by these entities. Much like the private label credit card category, there are about a dozen processors working for hundreds of retailers. Therefore it was most efficient to gather data from the processors where possible and gather the remaining data from the small number of large retailers that process in-house.

Closed Loop Prepaid Card Segment Participation

| | Number of Organizations | Participation Rate |
|---------------------------|--------------------------------|---------------------------|
| Primary Source | 18 | 60.0% |
| Confirmed Estimate | 2 | 6.7% |
| SUB-TOTAL | 20 | 66.7% |
| Unconfirmed Estimate | 10 | 33.3% |
| Duplicative/Disqualified* | 35 | |
| Total Contacted | 65 | |

* Includes organizations that were contacted that either forward (or outsource) their originated payment transactions to another study participant so that inclusion would double-count transactions

Progress was slow and difficult in this category – 20 responses were received from this group. In addition, several dozen more entities were contacted to ascertain whether or not their volumes needed to be included in the prepaid study. Many of these companies were eventually disqualified because, although they run prepaid programs (either closed-loop or open-loop), they either outsource processing to a third-party provider or serve in some intermediate capacity such as a card distributor. These companies have been classified as duplicative/disqualified in the table above because their transactions are processed by another provider.

4. Combined Results: Core and Prepaid Studies

Core electronic payments grew from 44.1 billion transactions in 2003 to 62.7 billion transactions in 2006, a double-digit annual growth rate of 12.4 percent. When incremental closed loop prepaid transactions are also included, total electronic payments in 2006 rises to 65.8 billion transactions.

Combined Results: Number of Transactions

| Payment Instrument | 2003 | 2006 | CAGR 2003-2006 |
|--------------------------------------|-----------------------|-----------------------|-------------------|
| General Purpose Credit Cards | 15,212,131,239 | 18,953,208,399 | 7.6% |
| Private Label Credit Cards | 3,753,231,873 | 2,768,872,713 | -9.6% |
| Signature Debit | 10,262,867,875 | 15,956,234,753 | 15.8% |
| PIN Debit | 5,337,850,169 | 9,372,139,012 | 20.6% |
| ACH | 8,752,822,063 | 14,593,557,214 | 18.6% |
| EBT | 826,839,678 | 1,099,508,942 | 10.0% |
| Core Study Total | 44,145,742,897 | 62,743,521,033 | 12.4% |
| | | | |
| Closed-Loop Prepaid | N/A | 3,076,546,470 | N/A |
| Core Study Plus Prepaid Total | N/A | 65,820,067,504 | N/A |
| | | | |
| Memo: Emerging Payments* | 1,383,325,074 | 6,038,650,967 | |
| Memo: Open-Loop Prepaid** | N/A | 321,756,323 | |
| Memo: State Prepaid Volume*** | N/A | 88,369,156 | |

*Represents new front-end payment methods that still process/settle through established payment methods (i.e., electronic bill payment that settles through the ACH)

**Open-loop prepaid transactions are typically already accounted for in the debit and credit volumes

***State prepaid volume is a subset of open-loop prepaid volumes

For dollar value, core electronic payments grew from \$26.44 trillion in 2003 to \$34.11 trillion in 2006, an annual growth rate of 8.9 percent. When incremental closed loop prepaid volume is also included, total electronic payments dollar value in 2006 rises to \$34.14 trillion.

Combined Results: Dollar Value

| Payment Instrument | 2003 | 2006 | CAGR 2003-2006 |
|--------------------------------------|-----------------------------|-----------------------------|---------------------------|
| General Purpose Credit Cards | \$1,409,743,545,641 | \$1,870,299,604,801 | 9.9% |
| Private Label Credit Cards | \$269,075,172,288 | \$253,589,287,170 | -2.0% |
| Signature Debit | \$426,671,443,053 | \$637,207,028,755 | 14.3% |
| PIN Debit | \$204,250,849,370 | \$348,638,324,702 | 19.5% |
| ACH | \$24,105,240,726,443 | \$30,966,535,057,375 | 8.7% |
| EBT | \$21,566,807,386 | \$29,578,914,449 | 11.1% |
| Core Study Total | \$26,436,548,544,181 | \$34,105,848,217,251 | 8.9% |
| | | | |
| Closed-Loop Prepaid | N/A | \$36,600,741,764 | N/A |
| Core Study Plus Prepaid Total | N/A | \$34,142,448,959,016 | N/A |
| | | | |
| Memo: Emerging Payments* | \$1,055,292,672,218 | \$1,227,136,454,333 | |
| Memo: Open-Loop Prepaid** | N/A | \$13,288,761,042 | |
| Memo: State Prepaid Volume*** | N/A | \$3,183,302,325 | |

*Represents new front-end payment methods that still process/settle through established payment methods (i.e., electronic bill payment that settles through the ACH)

**Open-loop prepaid transactions are typically already accounted for in the debit and credit volumes

***State prepaid volume is a subset of open loop prepaid volumes