The Depository Institutions Payments Study

A Survey of Depository Institutions for the 2004 Federal Reserve Payments Study

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1 Introduction

This report details the methodology and findings of the *2004 Depository Institutions Payments Study* (2004 DI study). The 2004 DI study estimated the annual number and value of payments and ATM cash withdrawals from demand deposit accounts (DDAs) in the United States. The payments estimates include payments made by checks, debit cards, and Automated Clearinghouse (ACH). This study's estimates are based on data reported by a national, representative sample of depository institutions (commercial banks, credit unions, and savings institutions).

The 2004 DI study also includes new estimates for the annual number and value of checks paid in 2000 based on revisions received from a number of depository institutions that participated in both the 2004 DI study and a similar study in 2001.

The 2004 DI 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] Two studies were performed that year: the *Depository Financial Institution Check Study* (2001 DI study) and the *Electronic Payment Instruments Study* (2001 EP study).

The 2004 *Federal Reserve Payments Study* repeats core aspects of both of the 2001 studies to allow for estimation of the rates of change for individual payment instruments and noncash payments overall.[2] Two studies were performed in 2004: the *Depository Institutions Payments Study* (2004 DI study) and the *Electronic Payment Instruments Study* (2004 EP study).[3]

[1] The Federal Reserve uses the term "retail" payments to describe any noncash payment besides wire transfer and certain high-value ACH transactions.
[2] A third study performed in 2001, the *Check Sample Study*, was not repeated in 2004. That study estimated the distribution of checks by purpose and counterparty. A random sample of 28,877 checks was selected and surveyed to determine the type of payer (consumer, business or government), the type of payee (consumer, business government) and the purpose of the payment (casual, income, remittance, or POS purchase).
[3] Global Concepts performed the DI study in 2001 and 2004. Dove Consulting performed the EP study in 2001 and 2004. The 2004 EP study results are available in a separate report.

Exhibit 1 below highlights key attributes of the four studies noted above:

Exhibit 1: Snapshot of Studies (2004 and 2001)

		2001	2004
DI Study	*Scope*	Check	Check, Debit Card, ACH, ATM Withdrawals
	Method	National survey of depository institutions (March-April, 2001)	National survey of depository institutions (March-April, 2004)
EP Study	*Scope*	ACH, Debit Card, EBT, Credit Card	ACH, Debit Card, EBT, Credit Card
	Method	Census-style survey of payments network operators and card issuers (YE 2000)	Census-style survey of payments network operators and card issuers (YE 2003)

The addition of electronic payments to the 2004 DI study provided a number of benefits to our understanding of the payments industry. It improved the accuracy of ACH estimates from the *Electronic Payment Instruments Study* by providing an estimate of the number and value of on-us ACH payments from a representative stratified random sample of DIs.[4] It also helped to increase the detail available for the estimation of payments by industry segment. Because the 2004 studies captured data from two different reference periods, the additional information also sheds light on short-term growth of payment instruments that were measured by both studies. Finally, it provided a baseline for more detailed analysis in the future. Periodic collection of data on the number and value of different types of payments initiated from DDAs could provide information necessary to analyze and explain changes in payment mix over time.

The purpose of collecting information on electronic payments from DIs was not to replace the sources of information-used to estimate the number and value of electronic payments in the 2003 EP study, but to compliment them and provide a richer set of information about payment patterns.

[4] On-us ACH payments are ACH formatted payments made between accounts at the same DI and processed entirely in-house without being cleared through a network operator. Previous estimates were based on limited DI sampling, which was not reflective of the industry overall.

The following estimates from the 2004 DI study were used in the final estimates for the *2004 Federal Reserve Payments Study*:

1. Number and value of check payments
2. Number and value of ATM cash withdrawals
3. The percentage of ACH payments (both number and value) that are on-us (internal, account-to-account payments).[5]
4. The distribution of DDA debits made by check, ACH, debit card, and ATM withdrawal in each market segment (commercial banks, credit unions, and savings institutions).

The final estimates for debit card transactions in the *2004 Federal Reserve Payments Study* were derived entirely from the 2004 EP study.

2 Methodology

National estimates from the 2004 DI study were based on data reported by a stratified random sample of depository institutions. For sampling and estimation, DIs were stratified by both type and size. The samples were used to create population estimates of the number and value of payments for the size-type strata using a statistical technique called ratio estimation.

2.1 Sampling

Respondents selected for the study were sampled from the population of insured DIs in the United States. The population includes commercial banks, state-chartered and federally-chartered savings institutions, credit unions and domestic branches of foreign-owned banks. Most checkable deposits are held by a relatively small number of very large DIs. The most efficient sampling method is to assign a higher sampling probability to the largest DIs.

The largest institutions were sampled with 100 percent probability. That approach resulted in a census of the largest DIs and random samples of the remaining ones, with the probability of being sampled decreasing with size. The largest DIs within each type were also designated "high-priority" respondents. The extra effort devoted to collecting data from this group improved the estimates in two ways, 1) it increased the chances that a large institution would provide data, and 2) it ensured that the data provided by the institutions with the most potential to affect the precision of the estimates would be of the

[5] The proportion of on-us ACH was estimated separately for debits and credits. Those proportions were also used to revise the on-us portion of the 2000 estimate for total ACH payments.

highest quality possible. Despite the large expenditure of effort on the largest institutions, enough high quality responses from DIs of all sizes and types were obtained to ensure that the results would represent the entire population of DIs.

2.1.1 Sample Design

The population of depository institutions (the sample frame) was stratified before sampling, first by type of DI and then by size. There were five primary strata (by type of institution) in the original design:

1. Commercial banks (CMB)
2. State-chartered savings banks (SSB)
3. Branches of foreign-owned banks (BRN)
4. Federally-chartered savings banks (FSB)
5. Credit unions (CUS)

These categories were chosen because members of each type classification tend to share similar characteristics. Grouping them in this way improves the precision of the estimates.

Stratification of DIs within types was carried out on the basis of a measure of size called public checkable deposits (PCD), which is available for all insured DIs in the United States. In general, PCD is transaction deposits of individuals, partnerships, and corporations, but does not include deposits of the federal government or other DIs.

2.1.2 Sample Frame

The frame was constructed from reports filed with the Federal Reserve by DIs and holding companies. The frame represented the entire population of insured depository institutions in the United States. Prior to stratification, DIs were grouped with their holding company, if applicable, using the most current ownership information, and PCD for the holding company was defined as the sum of the PCD for the DIs it owned. The sampling unit, therefore, was the DI at its highest institutional level (e.g., holding company).[6]

For estimation, the frame was defined as the entire population of DIs with PCD greater than zero.[7] For sampling, however, the smallest DIs were not sampled, as their reports would not contribute significantly to the total estimates. The DIs excluded from sampling

[6] Data were collected for all the institutions owned by the sampled DI.
[7] Banks with no transaction deposits do not account for a significant number of payments.

represented a negligible share of PCD (less than one tenth of one percent of PCD for each of the five DI types). Estimates for DIs excluded from sampling were produced using the ratios from the smallest stratum of DIs within each type for which a sample was obtained. The preliminary frame consisted of 14,117 depository institutions. These institutions were stratified by type and then by size within each type, for a total of 30 strata.

2.1.3 Sample Size and Allocation

Based on experience from the 2001 DI survey, the sample size was increased to 2,700. The sample size was based on the following assumptions about each primary stratum and for the sample as a whole:

1. Expected response rate of 54 percent
2. Desired precision of at least +/-5 percent for a 95 percent level of confidence for the estimate of the total number of checks.

Allocation of the sample to strata was based on a version of Neyman allocation, which approximates the allocation that minimizes the standard error of the total estimate. Exhibit 2 shows the number of institutions in each stratum of the frame and the sample.

2.1.4 High-Priority Respondents

The largest DIs within each type stratum were designated high-priority respondents. The largest depository institutions were expected to account for a high percentage of the figures being estimated. The need to produce estimates for larger DIs, if they did not report, would disproportionately increase the estimation error. The project team made extraordinary efforts to ensure the participation of high-priority institutions.

A number of "anomalous" DIs were also identified in advance and designated high priority because they were known to have unusually high or low transaction volumes relative to their size. They are not representative of other DIs of similar size. Many of these DIs are small commercial banks (low PCD value) that process a large number of low value rebate checks. Some respondents were designated anomalous after their data were received. Anomalous banks were not used to produce estimates for other DIs, but their responses were included in the totals. The estimates for the 2004 DI study include data from 20 DIs deemed anomalous.

Exhibit 2: Original Sample Frame Detail

Type Stratum	Size Stratum	PCD upper bound (thousands)	PCD lower bound (thousands)	In Frame (N)	Sampled (n)
Commercial Banks	0	$2,990	$2	210	0
	1	$16,039	$3,014	2,200	134
	2	$33,966	$16,052	1,687	220
	3	$62,711	$33,975	1,082	279
	4	$111,557	$62,779	668	373
	5	$274,583	$112,060	337	337
	6	$976,254	$281,227	96	96
	9	$58,655,237	$1,028,971	91	91
	Subtotal:			*6,371*	*1,530*
State-Chartered Savings Banks	0	$1,720	$15	20	0
	1	$36,815	$2,064	181	60
	2	$120,643	$37,258	160	84
	3	$755,688	$121,953	26	26
	9	$1,234,879	$806,326	2	2
	Subtotal:			*389*	*172*
Foreign Bank Branches	0	$589	$2	56	0
	1	$10,730	$600	63	5
	2	$67,206	$11,322	51	3
	3	$391,000	$70,002	29	29
	9	$1,037,766	$593,801	5	5
	Subtotal:			*204*	*42*
Federal Savings Banks	0	$986	$11	49	0
	1	$18,401	$1,043	406	12
	2	$94,259	$18,629	225	74
	3	$625,826	$96,985	57	57
	9	$52,790,620	$860,238	13	13
	Subtotal:			*750*	*156*
Credit Unions	0	$199	$1	715	0
	1	$3,048	$200	3,138	154
	2	$10,054	$3,057	1,385	185
	3	$25,980	$10,067	612	125
	4	$65,044	$26,062	371	154
	5	$452,067	$65,234	179	179
	9	$2,440,058	$628,410	3	3
	Subtotal:			*6,403*	*800*
Overall Total:				**14,117**	**2,700**

2.2 Estimation (and Imputation)

Data were collected for March and April, 2004. For estimation purposes, new frame concurrent with that period was constructed using PCD from reports filed with the Federal Reserve for March 31, 2004, and information on the ownership structure of depository institutions as of April 30, 2004. As with the sample frame, allocation of the population and sample to strata was based on a version of Neyman allocation. Exhibit 3 illustrates the final sample frame. Note that stratum 9 within each type stratum was reserved for anomalous DIs only in the final frame.

Some of the analysis required a completed questionnaire for every respondent. As some responses contained missing data, values were imputed using a linear regression technique that provided estimated values for all missing data, based on related data from other members of a DI's stratum. Estimates of totals and of standard errors were constructed using a technique called multiple imputation.[8] This technique allows the standard errors to account for the uncertainty inherent in the imputation process, by adding a random error to the imputations that simulates the amount of uncertainty in the regressions used for imputation. Thus the standard errors (and the implied confidence intervals used in this report) reflect the uncertainty caused by sampling rather than conducting a census of all 14,120 depository institutions, and the uncertainty induced the need to impute missing data.

[8] Five sets of imputations were generated. For an overview of the technique, see Donald B. Rubin, Multiple Imputation for Nonresponse in Surveys," John Wiley and Sons, 1987.

Exhibit 3: Final Sample Frame Detail

Type Stratum	Size Stratum	PCD Upper Bound (thousands)	PCD Lower Bound (thousands)	In Frame (N)	Sampled (n)
Commercial Banks	0	$2,998	$1	185	0
	1	$20,698	$3,008	2,675	184
	2	$48,992	$20,715	1,866	337
	3	$105,595	$49,068	1,064	451
	4	$260,180	$106,038	386	334
	5	$1,773,681	$262,366	149	147
	6	$55,970,980	$1,777,405	44	44
	9	$4,701,003	$4,738	16	16
	Subtotal:			*6,385*	*1,513*
State-Chartered Savings Banks	0	$793	$9	10	0
	1	$47,982	$1,045	226	76
	2	$1,139,314	$48,808	140	86
	9	$26,592	$26,592	1	1
	Subtotal:			*377*	*163*
Foreign Bank Branches	0	$143	$2	27	0
	1	$510,110	$149	164	36
	2	$1,210,446	$656,960	2	2
	9	$67,831	$150	2	2
	Subtotal:			*195*	*40*
Federal Savings Banks	0	$991	$3	47	0
	1	$46,257	$1,017	559	61
	2	$1,334,705	$46,376	138	81
	3	$57,998,802	$2,182,921	7	7
	9	$78,182	$78,182	1	1
	Subtotal:			*752*	*150*
Credit Unions	0	$189	$1	650	2
	1	$5,363	$190	3,888	244
	2	$21,620	$5,394	1,185	188
	3	$64,394	$21,641	478	174
	4	$369,980	$64,609	203	185
	5	$2,642,145	$421,563	7	7
	Subtotal:			*6,411*	*800*
Overall Total:				**14,120**	**2,666**

2.3 Reference Period

The reference period was March and April, 2004. The project team chose a two-month survey period to mitigate any effect of an aberration in transaction volume or value for any given month. March and April were chosen, because they are believed to be sufficiently representative and do not have unusual number of processing days.[9] The reference period for the 2001 DI study was also March and April. This significantly influenced the decision to use March and April, 2004, for the current study.

The research plan called for annual estimates. Because March and April are representative, a multiplication factor of six (6) was used to annualize the two-month data for all transaction types. The same factor was used in the 2001 DI study. This factor is also consistent with historical Federal Reserve check processing volume.

The study estimates an annualized number of transactions based on two months of data. When discussing the 2004 DI study's results relative to the 2004 EP study, which collected electronic payments data for calendar year 2003, the 2004 DI study's estimates are referred to as 2003 estimates.

2.4 The Survey Instrument

A copy of the final survey instrument can be found in Appendix A: Survey Instrument (*Long Form*) The survey measured the number and value of the following types of payment and cash withdrawal transactions during March and April, 2004:

1. Total Payor Bank Checks (i.e., paid checks)
    a. On-Us Payor Bank Checks (sometimes called "On-Us POD")
2. Total Payor Bank Checks Returned
    a. On-Us Payor Bank Checks Returned
3. Total ACH Credits Originated
    a. In-House On-Us ACH Credits

[9] While April is the end of the annual filing period for most personal income tax returns, tax payments do not have a significant effect on the overall estimates. The research team does not believe April's tax payment and refund volume would have a significant impact on the overall estimates for either check or ACH. Federal refund checks and ACH disbursements are paid by the Federal Reserve Banks on behalf of the U.S. Treasury. The number and value of these payments are known to the Federal Reserve and not measured by the survey of depository institutions. The number and value of Treasury payments by check for 2003 were added to the national estimates after survey results were extrapolated to the industry and annualized (See Exhibit 6). ACH payments by U.S. Treasury have not been added to the DI study's estimates, as this study is not intended to be the source for national estimates of the number and value of ACH payments in the United States. (Refer to the 2004 EP study's results for national ACH estimates.)

   b. Network On-Us ACH Credits
4. Total ACH Debits Received
   a. In-House On-Us ACH Debits
   b. Network On-Us ACH Debits
5. Offline (Signature-Based) Debit Transactions
6. Online (PIN-Based) Debit Transactions
7. Total ATM Withdrawals
   a. On-Us ATM Withdrawals

In addition to these items, the survey included a section that listed all affiliates (if any) held by the sampled DI, called the Institution Profile. The purpose of the Institution Profile section was to allow respondents to indicate if any particular affiliate had been excluded from the institution's response. Because the design variable of the study, PCD, was a measure of each institution's size, it was important that the size of each institution in the sample correspond to the number of transactions reported. If data reported reflected activity from only half of a bank holding company's subsidiaries, for example, the PCD would need to be adjusted accordingly. Otherwise, the DI would appear to have a relatively low number of transactions for an institution its size.

The survey was mailed to respondents in hardcopy with a postage-paid business reply envelop enclosed. Respondents were encouraged to respond either by returning the survey in the business reply envelope, by faxing the survey to a designated toll-free number, or by entering totals securely online at www.paymentsstudy.com.

Most responses (72 percent) were received electronically.[10] In all correspondence, respondents were encouraged to respond online at www.paymentsstudy.com. Site access was secured by a unique ID and password for each institution. The ID and password were printed on each letter the institution received and in the header of each page of the hardcopy survey. The web site included an online version of the survey as well as a downloadable version formatted in Microsoft Excel and PDF (portable document format).

[10] Sixty-seven percent were received through the study's web site. Five percent were emailed copies of the Excel version of the survey.

2.5 Survey Recruitment and Participation

Sampled DIs were asked to confirm their participation (during a recruitment phase) and then to report transaction totals for the two-month reference period. The recruitment phase served to identify the individual(s) who would report data for the survey and encouraged organizational buy-in. The process of recruitment and participation unfolded over many months through multiple mailings, follow-up calls and emails as needed, and ultimately receipt of data from the respondent.

2.5.1 Contact List Development and Recruitment

After generating the sample, the project team identified two contacts at each institution. Thomson Media's *Databank* served as the default list for contact names, addresses, phone numbers, etc. Global Concepts supplemented the default list with information from the firm's own database of industry contacts. This was done for high-priority respondents. In cases where Global Concepts did not have contact information for a high-priority respondent, the institution was called and the appropriate contacts identified.

The two contacts were designated as primary and secondary. The primary contact was typically more senior in title than the secondary contact.

2.5.2 Registration

The project plan called for the initial mailing about the study to be sent to the primary contact. The mailing included a "preview copy" of the survey and requested that the primary contact return a *Respondent Registration Form* to indicate who within his organization would coordinate the DI's response to the study. A copy of the form can be found in Appendix C: Registration Form. The *Registration Form* encouraged a DI to select a single individual who would coordinate the institution's response. Alternatively, a DI could indicate a different individual for each section of the survey. The vast majority of respondents (95 percent of DIs providing data across all topics) relied on a single study coordinator to respond to the survey.

If the primary contact did not respond within 12 business days, a second mailing was sent, this time to the secondary contact. If the secondary contact did not reply within 10 business days, Global Concepts or its subcontractor, ICR, followed up by calling each contact to confirm receipt of the mailing and to encourage the institution to register a study coordinator. If an institution never responded to the recruitment effort, the project team

proceeded under the assumption that the secondary contact was the survey coordinator and mailed all materials to him until advised otherwise.

Exhibit 4 indicates the number of institutions that registered for the study by mode of registration.

Exhibit 4: Distribution of Registrations by Mode

	Web Site	Call to DI	Fax	Mail	Call From DI	Other	N/A	Total
Commercial Banks	569	385	132	44	2	6	1	1,139
State-Chartered Savings Banks	69	47	12	4				132
Foreign Bank Branches	18	7	1	1				27
Federal Savings Banks	55	36	16	3	2			112
Credit Unions	291	207	74	18	1	1		592
Total	1,002	682	235	70	5	7	1	2,002

2.5.3 Survey Response

In total 1,501 DIs responded to the survey, a 56 percent rate of response.[11] Exhibit 5 illustrates the number of responses received from DIs in each stratum. All strata were well represented. The lowest response rates were for the smallest federal savings institutions and credit unions; 46 percent and 48 percent of DIs in those strata provided data respectively. Participation of the largest DIs was excellent. All of the 44 largest commercial banks participated.[12] The high concentration of payments among the largest commercial banks allowed the 2004 DI study to count a large number of payments rather than estimate their totals through statistical estimation.

[11] The 2001 DI study's response rate was 54 percent.
[12] Considering all DIs irrespective of type stratum 93 of the 100 largest DIs sampled for the study participated, including the 53 largest DIs in the study.

Exhibit 5: Response Rate per Stratum

Type Stratum	Size Stratum	In Frame (N)	Sampled (n)	Responses	Rate of Response
Commercial Banks	0	185	0	0	
	1	2,675	184	97	53%
	2	1,866	337	172	51%
	3	1,064	451	248	55%
	4	386	334	174	52%
	5	149	147	97	66%
	6	44	44	44	100%
	9	16	16	16	100%
	Subtotal:	*6,385*	*1,513*	*848*	*56%*
State-Chartered Savings Banks	0	10	0	0	
	1	226	76	50	66%
	2	140	86	55	64%
	9	1	1	1	100%
	Subtotal:	*377*	*163*	*106*	*65%*
Foreign Bank Branches	0	27	0	0	
	1	164	36	18	50%
	2	2	2	2	100%
	9	2	2	2	100%
	Subtotal:	*195*	*40*	*22*	*55%*
Federal Savings Banks	0	47	0	0	
	1	559	61	28	46%
	2	138	81	51	63%
	3	7	7	7	100%
	9	1	1	1	100%
	Subtotal:	*752*	*150*	*87*	*58%*
Credit Unions	0	650	2	0	0%
	1	3,888	244	117	48%
	2	1,185	188	94	50%
	3	478	174	102	59%
	4	203	185	118	64%
	5	7	7	7	100%
	Subtotal:	*6,411*	*800*	*438*	*55%*
Overall Total:		**14,120**	**2,666**	**1,501**	**56%**

2.6 Data Collection and Data Management

Responses were received through any of four modes: mail, fax, email or online. Mail and fax surveys were logged and processed through a manual data entry system by ICR. Emailed copies of the Excel survey were logged and uploaded directly into the master database. Responses received online were input into a mirror copy of the master database

as respondents saved data they entered online. Data from all modes were integrated in a master database maintained by ICR.

ICR distributed the current copy of the master dataset on a weekly basis to team members from the Federal Reserve and Global Concepts. In this way team members synchronized their copies of the data while maintaining a central, master copy of the database. ICR backed up the database daily to provide redundancy and as an ongoing record of point-in-time data.

ICR also implemented a software program to track changes and edits to the database, including the source of the change, the content of the record before the change, and the data and time of the change.

2.7 Data Editing

In collaboration with Federal Reserve team members, Global Concepts worked from June to September to improve the quality of survey data. Data editing, as this process was called, involved testing the reasonableness of each respondent's data to identify potential errors, following up with respondents as necessary, and either revising or confirming the accuracy of submitted data.

2.7.1 Outlier Identification

Outliers – data outside the expected range of responses – were identified in numerous ways. Some outliers were identified with respect to the sample as a whole. Others were identified within a particular stratum.

Global Concepts focused on identifying outliers in distributions that included the entire sample. The firm calculated, for example, each respondent's average daily Payor Bank Check volume. If the ratio was at or below the 2.5^{th} percentile or above the 97.5^{th} percentile it was flagged as an outlier. This means the ratio was more than two standard deviations from the mean (assuming a normal distribution). This process was repeated hundreds of times for a wide range of statistics. Example statistics include the following:

1. Average daily number of transactions
2. Transaction volume per PCD (i.e., size of the institution)
3. Percentage of total transactions that are on-us (i.e., intra-DI payments)
4. Ratio of returned checks to total checks
5. Ratio of one month's volume to the other month's volume

Federal Reserve team members focused on identifying outliers within each stratum. Global Concepts maintained a central database for identifying outlier responses and tracking data edits and confirmations.

2.7.2 Tracking Outliers and Revisions

Managing the data editing process required the project team to coordinate a regularly updated list of outlier responses and the status of revisions to those outliers. This included tracking current outliers as well as those already "resolved." An outlier response might be resolved in a number of ways based on follow-up dialogue with respondents. A relational database was used to track the status of individual outlier responses throughout the data editing process. Additional details about outlier responses were tracked through detailed annotations. If an outlier response had not been revised before the estimation process began, the project team could review the disposition and any annotations about the outlier to determine whether to use the data or not in the estimation.

3 Survey Results and National Estimates

Using the estimation techniques outlined in section 2.2, Federal Reserve team members produced annualized national estimates for the number and value of all transaction types measured by the study.

Sample data were collected across five primary strata, but data from some strata were merged to report final estimates for three primary strata:

1. Commercial banks (combines commercial banks and branches of foreign-owned institutions);
2. Credit unions, and;
3. Savings institutions (combines state- and federally-chartered savings institutions).

3.1 Estimates from Multiple Sources

The results of the 2004 DI study are discussed in the sections that follow. This includes estimates for the number and value of check, ACH, and debit card payments as well as the number and value of ATM withdrawals. The estimates for electronic payments are compared and contrasted with the findings of the 2004 EP study. Both studies provide estimates for the number of electronic payments transacted during the time periods they represent. The 2004 EP study estimates the number and value of electronic payments for calendar year 2003. The present study estimates the annual number and dollar value of payments based on data from March and April, 2004. Some of the differences in the

number or value of electronic payments reported from the two sources are likely due to differences in the reference periods. Payment instruments measured by both studies – ACH and debit cards – have experienced significant growth. By estimating the number of transactions from two separate reference periods, additional inferences can be made about the rate of change in noncash payments.

3.2 Check Payments

The 2004 DI study estimated that 36.7 billion checks were paid in the United States in 2003 for a total dollar value of $39.3 trillion. This estimate excludes checks that are written and subsequently converted to electronic transactions for clearing.[13] Exhibit 6 and Exhibit 7 below illustrate the estimated number and dollar value of checks paid annually in the United States and the margin of error of each estimate. The data include national totals and estimates for each of the primary strata in the sample. The exhibits also include postal money orders and checks written by the U.S. Treasury Department, neither of which were estimated by the survey of DIs. They are also not estimates, but actual counts for calendar year 2003. They have been added to the survey's final estimates.

Exhibit 6: Number of Checks Paid in 2003

	Total Checks (billion)		95% Confidence Interval
U.S. Market	**36.7**	**(+/-)**	**0.7**
Commercial Banks	29.1	(+/-)	0.6
Credit Unions	4.2	(+/-)	0.2
Savings Institutions	2.9	(+/-)	0.3
U.S. Treasury Checks	0.3		
Postal Money Orders	0.2		

[13] The number of checks paid differs from the number of checks written. By agreement between the payer and the payee, consumer checks can be converted into electronic payments by merchants at the point of sale and by billers that receive check remittances. These ACH entries are identified by their three-letter "standard entry class code": "POP" entries are created by the conversion of checks presented at the point of sale; "ARC" entries are created by the conversion of remittance checks. They are subsets of "eCheck" ACH payments, single-entry debits to consumer accounts.

Exhibit 7: Value of Checks Paid in 2003

	Total Checks Value (trillion)		95% Confidence Interval
U.S. Market	**$39.3**	**(+/-)**	**$0.9**
Commercial Banks	$36.5	(+/-)	$0.9
Credit Unions	$0.9	(+/-)	$0.0
Savings Institutions	$1.5	(+/-)	$0.2
U.S. Treasury Checks	$0.3		
Postal Money Orders	*		

*The value of postal money orders in 2003 w as $29 million.

Exhibit 8: Average Value of Checks Paid in 2003

	Total Checks Avg. Value		95% Confidence Interval
U.S. Market	**$1,070**	**(+/-)**	**$24**
Commercial Banks	$1,255	(+/-)	$30
Credit Unions	$218	(+/-)	$7
Savings Institutions	$505	(+/-)	$55

3.2.1 The Decline in Check Payments

The number of checks paid in the U.S. declined at an annual rate of 4.3 percent between 2000 and 2003.[14] This estimate is based on a revised estimate of 41.9 billion checks paid in 2000. See section 3.2.7 for a discussion of the revised 2000 national estimate. Exhibit 9 below compares the national estimates for paid checks from 2000 and 2003.

[14] All growth rates are reported as compound annual growth rates (CAGRs).

Exhibit 9: Number, Value and Average Value of Checks Paid in 2000 and 2003

	2000 Estimate		2003 Estimate		CAGR
Payor Bank Checks (billion)	41.9	+/- 1.6	36.7	+/- 0.7	-4.3%
Value of Payor Bank Checks (trillion)	$39.8	+/- $1.1	$39.3	+/- $0.9	-0.4%
Average Value	$950	+/- $29	$1,070	+/- $24	4.1%

It appears that, in addition to the decline in the number of checks paid, the number of checks written has declined. Assuming that checks were being converted to electronic payments at an annual rate of 1.1 billion at the timeframe of the 2004 DI study – an upper bound – check writing in the United States would have declined 3.4 percent, from 41.9 billion checks written in 2000, to 37.8 billion checks written in 2003.[15] If fewer checks were converted, check writing would have declined even more rapidly.

As illustrated in Exhibit 9 above, the average value per check increased from 2000 to 2003. The focus of the industry on converting consumer checks suggests that consumer checks have been displaced or converted to electronic transactions at a greater rate than business checks. The adoption of "eCheck" ACH transactions to replace or convert checks written at the point of sale or for remittance payments, which does not apply to business checks, is one example.[16] The rapid growth of debit card usage also appears to be due, in part, to the replacement of some consumer checks. Consumer checks in general tend to be lower value checks than business or government checks. As these checks are displaced, the proportion of business and government checks increases, and thus the average value per check may increase. Other factors may also have contributed to the increased average value per check.

Note: Precise inferences about the migration from checks to electronic payment instruments are complicated by the uncertainty about cash payments trends. It is not known to what extent checks have been displaced by electronic payments rather than by

[15] NACHA, the National Automated Clearinghouse Association, reported that 854 million point-of-sale and remittance checks were converted to network ACH payments between Q4 2003 and Q3 2004 (the period centered on the 2004 DI study's reference period of March and April, 2004). Source: www.nacha.org/. This figure excludes on-us payments. The 2004 DI study estimated that 21 percent of ACH debits were on-us; therefore, 1.1 billion checks were converted to ACH payments between Q4 2003 and Q3 2004.

[16] ACH "eCheck" entries (identified by their three-letter "standard entry class code") are initiated from checks written at the point of sale (POP) and for bill payment (ARC). In addition, ACH eChecks include transactions manually initiated over the phone (TEL) or online (WEB) by the accountholder.

cash transactions; nor is it known to what extent cash payments have been displaced by electronic payments.

3.2.2 "On-Us" Paid Checks

The 2004 DI study estimated that 24 percent of paid checks were on-us (checks deposited directly with the paying bank). This implies that 76 percent of checks were interbank checks. Exhibit 10 and Exhibit 11 illustrate the estimated annual number and dollar value of on-us paid checks in the United States.

Exhibit 10: Number of "On-Us" Checks Paid in 2003

	On-Us Checks (billion)		95% Confidence Interval
U.S. Market	**8.7**	**(+/-)**	**0.3**
Commercial Banks	8.1	(+/-)	0.3
Credit Unions	0.2	(+/-)	0.1
Savings Institutions	0.4	(+/-)	0.1

Exhibit 11: Estimated Annual "On-Us" Checks Value in 2003

	On-Us Checks Value (trillion)		95% Confidence Interval
U.S. Market	**$12.8**	**(+/-)**	**$0.6**
Commercial Banks	$12.3	(+/-)	$0.6
Credit Unions	$0.1	(+/-)	$0.0
Savings Institutions	$0.4	(+/-)	$0.0

Exhibit 12: Average Value of "On-Us" Checks in 2003

	On-Us Checks Avg. Value		95% Confidence Interval
U.S. Market	**$1,478**	**(+/-)**	**$78**
Commercial Banks	$1,509	(+/-)	$83
Credit Unions	$475	(+/-)	$77
Savings Institutions	$1,238	(+/-)	$131

3.2.3 The Decline in "On-Us" Checks

The number of on-us checks declined 8.7 percent annually between 2000 and 2003. There were 11.4 billion on-us checks for $15.9 trillion in 2000 compared to 8.7 billion on-us checks for $12.8 trillion in 2003.

Exhibit 13: Number, Value and Average Value of On-Us Checks in 2000 and 2003

	2000 Estimate		2003 Estimate		CAGR
Number of On-Us Checks (billion)	11.4	+/- 0.7	8.7	+/- 0.3	-8.7%
Value of On-Us Checks (trillion)	$15.9	+/- $0.5	$12.8	+/- $0.6	-7.0%
Average Value	$1,398	+/- $61	$1,478	+/- $78	1.9%

If all other factors had remained constant, the ongoing consolidation in the banking industry would have resulted in an increase in the proportion of on-us checks. Instead, the proportion of on-us checks declined from 27 percent in 2000 to 24 percent in 2003. The estimates indicate that checks written between account holders at the same institution are being displaced more rapidly than interbank checks. Based on discussions of this finding with depository institutions, no one factor explains the trend. Contributing factors may include the following:

1. Improvements in the quality of reporting;
2. A greater increase in the use of electronic instruments by deposit account holders to pay loan balances or transfer funds between accounts at the same institution than between accounts at different institutions;
3. A more rapid adoption of check-to-ACH conversion for loan payments made between accounts at the same institution than between accounts at different institutions, and;
4. A shift away from check-cashing in branches due to a) increased use of ATMs for cash withdrawals and b) adoption of electronic payroll disbursement.

3.2.4 Checks Returned

The 2004 DI study estimated that 189 million checks were returned unpaid in 2003, totaling $142 billion. That estimate is 0.5 percent of the estimated total number of checks. Exhibit 14 and Exhibit 15 illustrate the number and dollar value respectively of returned checks and the margin of error for each estimate.

Exhibit 14: Number of Checks Returned Unpaid in 2003

	Returned Checks (million)		95% Confidence Interval
U.S. Market	**188.6**	**(+/-)**	**5.9**
Commercial Banks	136.7	(+/-)	3.9
Credit Unions	33.8	(+/-)	2.0
Savings Institutions	18.1	(+/-)	2.0

Exhibit 15: Value of Checks Returned Unpaid in 2003

	Returned Checks Value (billion)		95% Confidence Interval
U.S. Market	**$142.5**	**(+/-)**	**$4.5**
Commercial Banks	$120.9	(+/-)	$4.2
Credit Unions	$9.9	(+/-)	$0.6
Savings Institutions	$11.7	(+/-)	$1.4

Exhibit 16: Average Value of Checks Returned Unpaid in 2003

	Returned Checks Avg. Value		95% Confidence Interval
U.S. Market	**$756**	**(+/-)**	**$25**
Commercial Banks	$884	(+/-)	$34
Credit Unions	$293	(+/-)	$18
Savings Institutions	$647	(+/-)	$73

3.2.5 Changes in Returned Check Volumes

The estimated number of checks returned declined 7.7 percent annually from 2000 to 2003, a sharper decline than for total check payments. The faster decline in the number of checks returned unpaid may reflect better money management by check writers, changes in DIs' practices for posting payments, or greater use of overdraft protection programs.

The average value per returned check has remained relatively constant: $756 compared to $747 three years ago. Exhibit 17 below summarizes differences between the 2000 and 2003 estimates for returned checks.

Exhibit 17: Number, Value and Average Value of Checks Returns in 2000 and 2003

	2000 Estimate	2003 Estimate	CAGR
Number of Returned Checks (million)	240.0 +/- 11.8	188.6 +/- 5.9	-7.7%
Value of Returned Checks (billion)	$179.0 +/- $9.8	$142.5 +/- $4.5	-7.3%
Average Value	$747 +/- $41	$756 +/- $25	0.4%
Returns % of Total Checks	0.6%	0.5%	-3.6%

3.2.6 "On-Us" Returned Checks

A subset of returned checks was not cleared between depository institutions. On-us returned checks represent the subset of on-us checks returned unpaid to the depositing customer.[17] The 2004 DI study estimated an annual total of 23 million on-us returned checks for $18 billion. See Exhibit 18 and Exhibit 19 below. On-us returned checks were not estimated in the 2001 DI study.

Exhibit 18: Number of "On-Us" Checks Returned Unpaid in 2003

	On-Us Returned Checks (million)		95% Confidence Interval
U.S. Market	**22.7**	**(+/-)**	**2.0**
Commercial Banks	21.1	(+/-)	0.0
Credit Unions	0.6	(+/-)	0.0
Savings Institutions	1.0	(+/-)	0.0

Exhibit 19: Value of "On-Us" Checks Returned Unpaid in 2003

	On-Us Returned Checks Value (billion)		95% Confidence Interval
U.S. Market	**$17.7**	**(+/-)**	**$1.2**
Commercial Banks	$16.5	(+/-)	$1.1
Credit Unions	$0.3	(+/-)	$0.1
Savings Institutions	$1.0	(+/-)	$0.6

[17] These are checks drawn on the DI of first deposit that are returned unpaid.

Exhibit 20: Average Value of "On-Us" Checks Returned Unpaid in 2003

	On-Us Returned Checks Avg. Value		95% Confidence Interval
U.S. Market	**$782**	**(+/-)**	**$55**
Commercial Banks	$780	(+/-)	$59
Credit Unions	$450	(+/-)	$107
Savings Institutions	$1,024	(+/-)	$429

3.2.7 Revision to Previous Check Payments Estimates

The estimate for the number of checks paid in 2000 was revised downward to 41.9 billion from 42.5 billion, and the value was revised upward to $39.8 trillion from $39.3 trillion. Revisions to paid check estimates came about through follow-up discussions with financial institutions that reported significant changes in check totals measured by the 2001 and 2004 DI studies. These revisions were also informed by research conducted by Global Concepts during the intervening years to measure noncash transaction volumes at the largest depository institutions. Exhibit 21 illustrates the current and previous estimates for three 2000 check volume statistics that have been revised.

Exhibit 21: Revisions to Estimated 2000 Check Totals

	Previous 2000 Estimates			Current 2000 Estimates		
	Number (billion)	Value (trillion)	Avg Value	Number (billion)	Value (trillion)	Avg Value
Paid Checks	42.5	$39.3	$925	41.9	$39.8	$950
On-Us Checks	12.4	$14.3	$1,153	11.4	$15.9	$1,398
Checks Returned	0.251	$0.176	$701	0.240	$0.179	$747

3.3 ACH

One objective for including ACH in the 2004 DI study was to estimate the share of total ACH payments that are on-us payments, internal account-to-account payments that are not otherwise accounted for by available industry statistics. Industry estimates for the number and value of ACH payments have historically included the sum of payments processed by the ACH network operators plus an estimate of on-us ACH payments (i.e. those cleared internally by depository institutions and not processed by ACH network operators). On-us

ACH transactions have been estimated historically to be 25 percent of all ACH activity in the United States.

The project team designed the 2004 DI study to provide a national estimate of the number and value of total ACH payments as well as on-us ACH payments by depository institutions. DIs reported for credits originated and debits received as these reflect debits from DDA accounts, consistent with check payments.

The findings of the study indicate that the number of ACH entries can be estimated with reasonable accuracy through a survey of depository institutions. Dollar value data proved more difficult to estimate, due in part to depository institutions' use of ACH for high-value internal transfers, which inflate total value estimates.

3.3.1 Total ACH Payments

The 2004 DI study estimated 10.7 billion ACH payments are made annually from demand deposit accounts.

Important Note: The estimates in this section are not the final estimates in Exhibit 1 and Exhibit 2 for the *2004 Federal Reserve Payments Study.* The estimates in this section are based on survey data from March and April 2004. They are the 2004 DI study estimates and exclude payments by U.S. Treasury.

Exhibit 22: Number of ACH Payments in 2003

	ACH Payments (billion)		95% Confidence Interval
DI Market	**10.7**	**(+/-)**	**0.3**
Commercial Banks	9.2	(+/-)	0.2
Credit Unions	0.9	(+/-)	0.1
Savings Institutions	0.6	(+/-)	0.1

The 2004 DI study estimated that the 10.7 billion ACH entries represented a total of $91.4 trillion, an average value of $8,542. See Exhibit 23 and Exhibit 24 below. The total dollar value estimate is much higher than the estimate from the 2004 EP study. The difference is due largely to the high value of on-us ACH entries reported by respondents. The use of

ACH by DIs for high-dollar internal transfers – which may not actually be payments – inflated the total dollar value of ACH estimated by the 2004 DI study.

Exhibit 23: Value of ACH Payments in 2003

	ACH Payments Value (trillion)		95% Confidence Interval
DI Market	**$91.4**	**(+/-)**	**$3.4**
Commercial Banks	$88.9	(+/-)	$3.5
Credit Unions	$0.3	(+/-)	$0.0
Savings Institutions	$2.2	(+/-)	$0.3

Exhibit 24: Average Value of ACH Payments in 2003

	ACH Payments Avg. Value		95% Confidence Interval
DI Market	**$8,542**	**(+/-)**	**$409**
Commercial Banks	$9,641	(+/-)	$478
Credit Unions	$336	(+/-)	$21
Savings Institutions	$3,809	(+/-)	$923

3.3.2 ACH Credits and Debits

The 2004 DI study estimated that there were 4.9 billion ACH credits and 5.8 billion ACH debits paid annually from demand deposit accounts. (See Exhibit 25 and Exhibit 26 below.) The value of credit payments, however, was nearly twice that of debits. The average values of ACH credits and debits were $11,880 and $5,725 respectively. (See Exhibit 29 and Exhibit 30.) The disparity in average values reflects the different uses of ACH for credit origination and debit origination. Whereas credit payments are often used for business-to-business remittance and payroll disbursements, debits are used more frequently for consumer bill payment purposes.

Exhibit 25: Number of ACH Credits in 2003

	ACH Credits Originated (billion)		95% Confidence Interval
DI Market	**4.9**	**(+/-)**	**0.2**
Commercial Banks	4.8	(+/-)	0.2
Credit Unions	0.0	(+/-)	0.0
Savings Institutions	0.1	(+/-)	0.0

Exhibit 26: Number of ACH Debits in 2003

	ACH Debits Received (billion)		95% Confidence Interval
DI Market	**5.8**	**(+/-)**	**0.2**
Commercial Banks	4.4	(+/-)	0.1
Credit Unions	0.9	(+/-)	0.1
Savings Institutions	0.5	(+/-)	0.1

Exhibit 27: Value of ACH Credits in 2003

	ACH Credits Originated Value (trillion)		95% Confidence Interval
DI Market	**$58.2**	**(+/-)**	**$3.9**
Commercial Banks	$57.2	(+/-)	$4.0
Credit Unions	$0.0	(+/-)	$0.0
Savings Institutions	$0.9	(+/-)	$0.2

Exhibit 28: Value of ACH Debits in 2003

	ACH Debits Received Value (trillion)		95% Confidence Interval
DI Market	**$33.2**	**(+/-)**	**$1.3**
Commercial Banks	$31.7	(+/-)	$1.3
Credit Unions	$0.3	(+/-)	$0.0
Savings Institutions	$1.2	(+/-)	$0.1

Exhibit 29: Average Value of ACH Credits in 2003

	ACH Credits Originated Avg. Value		95% Confidence Interval
DI Market	**$11,880**	**(+/-)**	**$973**
Commercial Banks	$11,941	(+/-)	$998
Credit Unions	$1,204	(+/-)	$204
Savings Institutions	$11,795	(+/-)	$3,522

Exhibit 30: Average Value of ACH Debits in 2003

	ACH Debits Received Avg. Value		95% Confidence Interval
DI Market	**$5,725**	**(+/-)**	**$266**
Commercial Banks	$7,155	(+/-)	$336
Credit Unions	$309	(+/-)	$19
Savings Institutions	$2,515	(+/-)	$673

The 2004 EP study estimated ACH debits comprised 47 percent of all ACH payments in 2003 compared to the 54 percent estimated by the 2004 DI study. The EP study estimate includes payments made by the U.S. Treasury, which are all credits. Additional differences in the estimates between the two studies may be due in part to the difference in reference periods and the more rapid growth of ACH debits than credits. The 2004 EP study measured calendar year 2003 data; whereas, the estimates from the 2004 DI study are based on survey data from March and April, 2004. By estimating ACH payments from a later reference period, the 2004 DI study reflects a more recent distribution between debits and credits by DIs. The change in the distribution of network ACH payments has been documented by NACHA in recent years.[18] The ACH is no longer a credit-dominated instrument. Recent shifts are due largely to the rapid growth of "eCheck" entries (single-entry debits to consumer accounts).[19]

[18] NACHA is the National Automated Clearinghouse Association.
[19] Current NACHA rules limit "eCheck" entries to debits from consumer accounts. In Q1 2001 "eCheck" payments accounted for approximately 4% of network volume. In Q3 2004 they accounted for 23% all network volume. Third-quarter 2004 statistics from NACHA indicate that the number of ACH debits exceeded the number of ACH credits.

3.3.3 "On-Us" ACH Payments

One of the principal new findings of the 2004 DI study is that on-us ACH payments are estimated to have constituted almost 18 percent of ACH payments by DIs. According to the estimates, DIs processed slightly less than 21 percent of ACH debits and slightly more than 14 percent of ACH credits in house.[20] The payments industry previously had estimated that the share of ACH processed in house was about 25 percent. The 25 percent estimate had been used to estimate in house on-us ACH for the 2001 EP study. The estimate from the 2004 DI study appears to be more robust than previous industry estimates. Thus, in the 2004 EP study, the number of in-house on-us ACH payments for calendar year 2003 was estimated using the new proportions from the 2004 DI study. These proportions were applied to the number of network debits and credits reported by the ACH network operators.[21] The resulting total ACH estimates in the 2004 EP study are also reported in the *2004 Federal Reserve Payments Study*.

Estimating the proportion of ACH payments that are on-us was complicated by the fact that some DIs could not exclude non-payment transfers from their reported totals for on-us ACH payments. Offset funding entries in particular posed challenges, because some DIs cannot report on-us volume figures net of offsets. Offset entries are internal transfers between accounts for the purpose of consolidating funds that have been received or are about to be disbursed through a larger number of other transactions. They are not truly payments. Offset entries inflated on-us ACH payments estimates and total ACH payments estimates, because on-us ACH entries are a subset of total ACH. The inclusion of offset entries negligibly increased the number of ACH transactions but significantly increased the value. The number of on-us ACH payments in Exhibit 31 are, therefore, a reasonably accurate estimate of ACH payments. The ACH value estimates in Exhibit 32, however, include an unknown amount of offset entries.

Exhibit 31 and Exhibit 32 show the estimated number and value of on-us ACH payments. These payments are labeled in-house on-us ACH in the table to emphasize that they are not cleared through an ACH operator. Some DIs clear on-us payments between accountholders

[20] A small number of on-us payments were actually sent over a network.
[21] The same proportions were used to derive the number and value of on-us ACH payments in the United States. This assumes that the average value per on-us ACH payment is equal to the average value per network ACH payment. The network ACH reported in the 2004 EP study included ACH credits originated by the U.S. Treasury through the Federal Reserve Banks. Such payments were not included in the ACH estimates in the 2004 DI study. As DI study in house on-us proportions were also applied to Treasury payments, total ACH in the 2004 EP study could be overstated by a small amount.

through an ACH operator. These "network on-us" ACH payments are estimated to account for approximately 4 percent of all ACH payments.

Exhibit 31: Number of In-House On-Us ACH Payments in 2003

	On-Us ACH Payments (billion)		95% Confidence Interval
DI Market	**1.9**	**(+/-)**	**0.1**
Commercial Banks	1.9	(+/-)	0.1
Credit Unions	0.0	(+/-)	0.0
Savings Institutions	0.0	(+/-)	0.0

Exhibit 32: Value of In-House On-Us ACH Payments in 2003

	On-Us ACH Payments Value (trillion)		95% Confidence Interval
DI Market	**$62.7**	**(+/-)**	**$2.9**
Commercial Banks	$60.9	(+/-)	$2.8
Credit Unions	$0.0	(+/-)	$0.0
Savings Institutions	$1.7	(+/-)	$0.3

Exhibit 33: Average Value of In-House On-Us ACH Payments in 2003

	On-Us ACH Payments Avg. Value		95% Confidence Interval
DI Market	**$32,964**	**(+/-)**	**$1,716**
Commercial Banks	$32,835	(+/-)	$1,754
Credit Unions	$2,015	(+/-)	$626
Savings Institutions	$44,897	(+/-)	$11,274

3.3.4 Network ACH Payments

Assuming that on-us ACH payments accounted for $62.7 trillion, the 2004 DI study estimated that $28.7 trillion in ACH payments were network entries cleared through an ACH operator. (See Exhibit 35 below.) This estimate is 39 percent higher than the dollar value of network ACH payments ($20.7 trillion) estimated by the 2004 EP study, which included payments by U.S. Treasury. The difference may be due to over-reporting by 2004 DI study

respondents, the difference in the survey reference periods, or most likely a combination of the two.[22]

The number of network ACH payments estimated by the 2004 DI study is similar to findings from the 2004 EP study and recent statistics from NACHA. The 2004 DI study estimated that 8.8 billion ACH payments occur annually over the ACH network. (See Exhibit 34.) NACHA reported 8.6 billion network ACH payments between Q4 2003 to Q3 2004, the 12-month period centered on the 2004 DI study reference period. This included U.S. Treasury payments.

Exhibit 34: Number of Network ACH Payments in 2003

	Network ACH Payments (billion)		95% Confidence Interval
DI Market	**8.8**	**(+/-)**	**0.3**
Commercial Banks	7.4	(+/-)	0.2
Credit Unions	0.9	(+/-)	0.1
Savings Institutions	0.5	(+/-)	0.1

Exhibit 35: Value of Network ACH Payments in 2003

	Network ACH Payments Value (trillion)		95% Confidence Interval
DI Market	**$28.7**	**(+/-)**	**$1.4**
Commercial Banks	$28.0	(+/-)	$1.5
Credit Unions	$0.3	(+/-)	$0.0
Savings Institutions	$0.4	(+/-)	$0.5

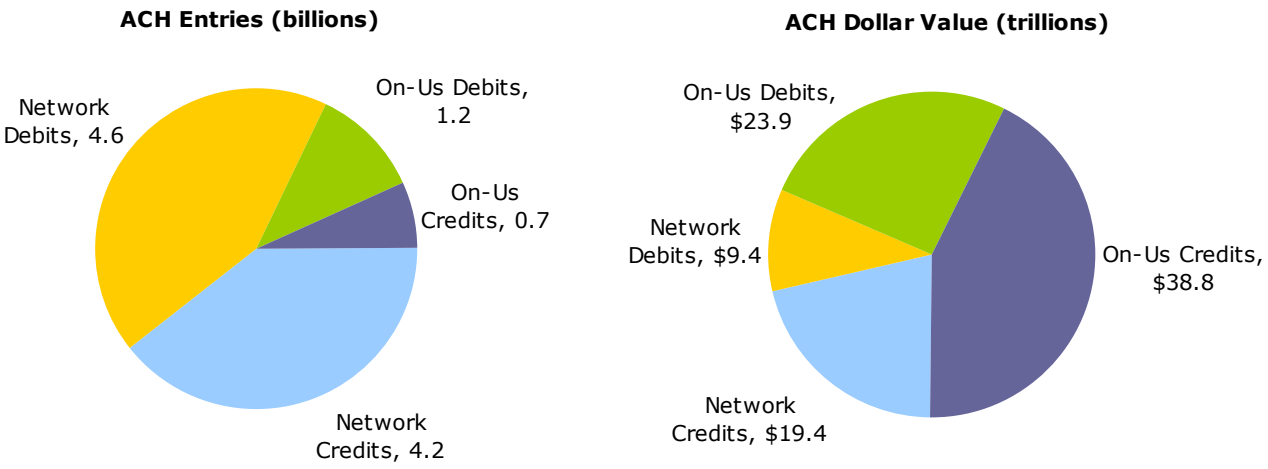
[22] Anecdotal evidence during the execution of the study suggested that the dollar value of ACH payments was more challenging for DIs to report than the number of ACH payments.

Exhibit 36: Average Value of Network ACH Payments in 2003

	Network ACH Payments Avg. Value		95% Confidence Interval
DI Market	**$3,266**	**(+/-)**	**$228**
Commercial Banks	$3,802	(+/-)	$281
Credit Unions	$322	(+/-)	$20
Savings Institutions	$805	(+/-)	$831

Exhibit 37 below summarizes the ACH volume estimates of debits and credits, both network and on-us. The chart shows that on-us ACH entries make up a much greater percentage of the value of ACH entries (69 percent) than of the number of ACH entries (18 percent).

Exhibit 37: Number and Value Distribution of ACH Payments in 2003



3.4 Debit Card

The 2004 DI study estimated that 19.1 billion debit card transactions were made in 2003 for a value of $745 billion. This estimate combines offline (signature-based) debit transactions and online (PIN-based) debit transactions.[23] Exhibit 38 details the estimated annual number of debit transactions of each type.

[23] Online (PIN-based) debit transactions include purchases made with debit or ATM cards at the point of sale.

Important Note: The estimates in this section are not the final estimates in Exhibit 1 and Exhibit 2 for the *2004 Federal Reserve Payments Study.* The estimates in this section are based on survey data from March and April 2004. They are the 2004 DI study estimates.

Exhibit 38: Number of Debit Card Transactions in 2003

	Offline Debit (billion)		95% Confid. Interval	Online Debit (billion)		95% Confid. Interval
U.S. Market	**12.4**	**(+/-)**	**0.6**	**6.7**	**(+/-)**	**0.3**
Commercial Banks	8.7	(+/-)	0.6	4.6	(+/-)	0.3
Credit Unions	2.2	(+/-)	0.1	1.3	(+/-)	0.1
Savings Institutions	1.4	(+/-)	0.1	0.8	(+/-)	0.1

Exhibit 39 shows the estimated value of debit card transactions.

Exhibit 39: Value of Debit Card Transactions in 2003

	Offline Debit Val. (billion)		95% Confid. Interval	Online Debit Value (billion)		95% Confid. Interval
U.S. Market	**$476**	**(+/-)**	**$11**	**$269**	**(+/-)**	**$8**
Commercial Banks	$340	(+/-)	$10	$184	(+/-)	$7
Credit Unions	$81	(+/-)	$4	$53	(+/-)	$4
Savings Institutions	$55	(+/-)	$5	$32	(+/-)	$4

Online and offline debit transactions have similar average values: $40 and $39 respectively. This compares to an estimated average value from the 2004 EP study of $38 and $42 respectively for online debit and offline debit.

Exhibit 40: Average Value of Debit Card Transactions in 2003

	Offline Debit Avg. Value		95% Confid. Interval	Online Debit Avg. Value		95% Confid. Interval
U.S. Market	**$39**	**(+/-)**	**$2**	**$40**	**(+/-)**	**$2**
Commercial Banks	$39	(+/-)	$3	$40	(+/-)	$3
Credit Unions	$36	(+/-)	$1	$39	(+/-)	$3
Savings Institutions	$39	(+/-)	$3	$42	(+/-)	$3

The value of online debit transactions estimated by both studies included cash-back totals.[24]

3.5 ATM

The 2004 DI study estimated the total annual number and value of ATM withdrawals in the United States. It also estimated the subset of total withdrawals that are on-us ATM withdrawals – those made at ATMs operated by the cardholder's financial institution. From these statistics one can estimate the number of so-called "foreign" ATM withdrawals – those made at ATMs operated by organizations other than the cardholder's depository institution.

3.5.1 Total ATM Withdrawals

The 2004 DI study estimated that 6.1 billion ATM withdrawals were made annually in the United States for a total of $520 billion. See Exhibit 41 and Exhibit 42 below.

Exhibit 41: Number of ATM Withdrawals in 2003

	ATM Withdrawals (billion)		95% Confidence Interval
U.S. Market	**6.1**	**(+/-)**	**0.3**
Commercial Banks	4.0	(+/-)	0.1
Credit Unions	1.4	(+/-)	0.2
Savings Institutions	0.7	(+/-)	0.1

Exhibit 42: Value of ATM Withdrawals in 2003

	ATM Withdrawals Value (billion)		95% Confidence Interval
U.S. Market	**$520**	**(+/-)**	**$16**
Commercial Banks	$358	(+/-)	$9
Credit Unions	$101	(+/-)	$10
Savings Institutions	$61	(+/-)	$10

[24] Many merchants allow consumers who enter their PIN when making a debit card transaction at the point of sale to augment the total value of the transaction with a "cash-back" amount provided in cash by the merchant to the consumer. Some consumers use cash-back as a method of obtaining cash rather than using an ATM, bank branch, or other method.

Exhibit 43: Average Value of ATM Withdrawals in 2003

	ATM Withdrawals Avg. Value		95% Confidence Interval
U.S. Market	**$85**	**(+/-)**	**$3**
Commercial Banks	$91	(+/-)	$2
Credit Unions	$70	(+/-)	$10
Savings Institutions	$85	(+/-)	$8

The average value per ATM withdrawal was $85. The value reported by 2004 DI study respondents included fees paid by account holders for foreign ATM usage. Therefore, the value estimates included surcharges paid to foreign ATM operators and foreign-ATM fees paid to the account holder's own financial institution for using another institution's ATMs.

3.5.2 "On-Us" and Foreign ATM Withdrawals

The 2004 DI study estimates that 3.6 billion of the 6.1 billion ATM withdrawals in the United States were from ATMs operated by the cardholder's depository institution. The average value of an on-us ATM withdrawal was $89. Exhibit 44 and Exhibit 45 show the estimated annual number and value of on-us ATM withdrawals in the United States.

Exhibit 44: Number of On-Us ATM Withdrawals in 2003

	On-Us ATM Withdrawals (billion)		95% Confidence Interval
U.S. Market	**3.6**	**(+/-)**	**0.1**
Commercial Banks	2.7	(+/-)	0.1
Credit Unions	0.5	(+/-)	0.0
Savings Institutions	0.4	(+/-)	0.0

Exhibit 45: Value of On-Us ATM Withdrawals in 2003

	On-Us ATM Withdrawals Value (trillion)		95% Confidence Interval
U.S. Market	**$323**	**(+/-)**	**$8**
Commercial Banks	$248	(+/-)	$7
Credit Unions	$39	(+/-)	$2
Savings Institutions	$36	(+/-)	$5

Exhibit 46: Average Value of On-Us ATM Withdrawals in 2003

	On-Us ATM Withdrawals Avg. Value		95% Confidence Interval
U.S. Market	**$89**	**(+/-)**	**$2**
Commercial Banks	$91	(+/-)	$3
Credit Unions	$80	(+/-)	$3
Savings Institutions	$90	(+/-)	$8

Exhibit 47 and Exhibit 48 show the number and value of foreign ATM withdrawals in the United States. Note that the number of withdrawals reported by type of DI does not reflect the number or value of foreign ATM withdrawals at the given type of DI. The withdrawal totals reflect the total number of foreign ATM withdrawals by account holders by type of DI. The average value of a foreign ATM withdrawal was $79.

Exhibit 47: Number of "Foreign" ATM Withdrawals in 2003

	Foreign ATM Withdrawals (billion)		95% Confidence Interval
U.S. Market	**2.5**	**(+/-)**	**0.1**
Commercial Banks	1.2	(+/-)	0.1
Credit Unions	1.0	(+/-)	0.2
Savings Institutions	0.3	(+/-)	0.1

Exhibit 48: Value of "Foreign" ATM Withdrawal in 2003

	Foreign ATM Withdrawals Value (billion)		95% Confidence Interval
U.S. Market	**$196**	**(+/-)**	**$6**
Commercial Banks	$110	(+/-)	$4
Credit Unions	$62	(+/-)	$5
Savings Institutions	$25	(+/-)	$4

Exhibit 49: Average Value of "Foreign" ATM Withdrawals in 2003

	Foreign ATM Withdrawals Avg. Value		95% Confidence Interval
U.S. Market	**$79**	**(+/-)**	**$7**
Commercial Banks	$90	(+/-)	$7
Credit Unions	$65	(+/-)	$15
Savings Institutions	$80	(+/-)	$20

3.6 Distribution of Debits to Deposit Accounts by Transaction Type

Of the transactions measured by the 2004 DI study, paper checks are the largest type by number, accounting for over half of all DDA transactions. Exhibit 50 below compares the estimates for each of the five transaction types.

Exhibit 50: Summary of the Estimated Number of DDA Transactions

	Total Transactions (billion)		95% Confidence Interval
Check	36.7	(+/-)	0.7
ACH	11.7	(+/-)	0.3
Offline Debit	12.4	(+/-)	0.6
Online Debit	6.7	(+/-)	0.3
ATM	6.1	(+/-)	0.3

3.7 DDA Transaction Mix by Type of Depository Institution

An important attribute of the 2004 DI study is its ability to estimate transactions by market segment. As Exhibit 51 illustrates, commercial banks paid more checks than either credit

unions or savings institutions. Checks accounted for 52 percent of DDA debits at commercial banks compared to 42 percent at credit unions and 45 percent at savings institutions. The use of checks by commercial bank customers reflects the higher share of business accounts at commercial banks. Customers of commercial banks also used ACH more often for DDA debits than customers at other DI types: ACH accounted for 17 percent of DDA debits at commercial banks, compared to 9 percent at credit unions and 9 percent at savings institutions.

Electronic transactions comprised the majority of DDA transactions at savings institutions and credit unions. Debit card-based transactions were particularly popular in these market segments. Approximately half of DDA debits from credit union accounts were made via cards: 22 percent offline debit, 13 percent online debit, 14 percent ATM withdrawals. Over 45 percent of DDA debits at savings institutions are made with cards: 22 percent offline debit, 12 percent online debit, 11 percent ATM withdrawals. At commercial banks only 31 percent of all DDA transactions are card-based transactions: 16 percent offline debit 8 percent online debit, 7 percent ATM withdrawals.

Exhibit 51: Distribution of DDA Transactions by Type of Institution

	Checks*	ACH	Offline Debit	Online Debit	ATM	Total
U.S. Market	**36.7**	**11.7**	**12.4**	**6.7**	**6.1**	**73.6**
	49.9%	***15.9%***	***16.8%***	***9.1%***	***8.3%***	***100%***
	(0.5%)	***(0.3%)***	***(0.7%)***	***(0.4%)***	***(0.3%)***	
Commercial Banks	29.1	9.2	8.7	4.6	4.0	55.6
	52.4%	*16.6%*	*15.7%*	*8.2%*	*7.1%*	*100%*
	(0.6%)	*(0.4%)*	*(1.0%)*	*(0.5%)*	*(0.1%)*	
Credit Unions	4.2	0.9	2.2	1.3	1.4	10.2
	41.6%	*8.9%*	*22.1%*	*13.3%*	*14.2%*	*100%*
	(1.4%)	*(0.5%)*	*(0.8%)*	*(0.9%)*	*(1.7%)*	
Savings Institutions	2.9	0.6	1.4	0.8	0.7	6.3
	45.4%	*8.9%*	*22.1%*	*12.3%*	*11.2%*	*100%*
	(2.5%)	*(1.9%)*	*(1.5%)*	*(0.9%)*	*(1.3%)*	

Note: Each percentage is +/- the number below it in parentheses, the half-width of the 95% confidence interval.

* The U.S. Market estimate for checks includes U.S. Treasury Checks (0.3 billion) and Postal Money Orders (0.2 billion)

APPENDICES

Appendix A: Survey Instrument (*Long Form*)

(Follow this link.)

Appendix B: Survey Instrument (*Short Form*)

(Follow this link.)

Appendix C: Registration Form

(Follow this link.)

Appendix A:

Survey Instrument (*Long Form*)

The Federal Reserve Payments Study

Survey Period: March – April, 2004

A survey of the number and dollar value of transactions by:

- Check
- ACH
- Debit Card
- ATM

>> Please Respond By: Friday, May 21 <<

Response Options:	Fax	(888) 243-0838
	Mail	Federal Reserve Payments Study c/o ICR 53 W. Baltimore Pike Media, PA 19063
	Online	www.paymentsstudy.com User ID: ****** Password: *****
Questions? Call Us:	Phone	(800) 599-5590

General Instructions

About the study... The Federal Reserve Payments Study is a national survey of financial institutions about payments and withdrawals from transaction accounts (demand deposit and NOW accounts). The survey gathers data about check, ACH, and debit card payments as well as cash withdrawals from ATMs during March and April, 2004. Data from your response will contribute to estimates of the national number of payments and withdrawals made by these transaction methods. Estimates of the number and dollar value of check payments will be compared to estimates from the 2001 Federal Reserve study to determine changes in the use of payment instruments.

Confidentiality... Any information you provide for this study is strictly confidential. Individual responses to the survey will not be shared with the public or the industry.

Your Participation... As a participant in a random sample survey, your responses may be used to represent other institutions like yours that were not selected for the study. To achieve the most reliable results, it is important that you respond completely and accurately. **If your institution outsources** payments processing to another organization, please request the necessary data from that organization or provide them with the survey so they may respond on your behalf.

Please leave no item blank ... There are **three possible ways to answer** a survey question:

Enter a Value: The actual value of the data element.

Enter a Zero: When the calculated value actually equals zero or if your financial institution does not provide the payment alternative to your customers. Please do not enter "N/A."

Enter "N/R" (Not Reported): If your institution has volume of the type being measured, but you are unable to report an accurate figure that reflects volumes across your entire organization / customer base. Please do not enter "N/A."

Reporting after a merger... If you acquire or merge with an institution, or begin processing combined volume, during the March-April reference period, please identify that institution in *Item 2* of the next section and report data for the combined enterprise as if the merger had occurred before March 1, 2004.

If you cannot provide combined data please contact us at (800) 599-5590.

Definitions and examples... Detailed definitions and examples can be found in the Appendix.

Institution Profile

This is an enterprise-wide survey... According to our records, transaction volume data from the following affiliated institutions should be included in your response (unless you indicate their exclusion below). Please contact us at (800) 599-5590 if you have any questions or concerns about the items on this page.

1) Please indicate if any of these affiliates are excluded from your response.

Mark if excluded	Name	City	State	Approximate Total Deposit Balances (in millions of dollars)
☐	<Affiliate name>	<City>	<ST>	<Total Deposits (MM)>

2) Please list any affiliates not identified above that are included in your response.

Name	City	State

Check Payments

Please Do Not Round.

1) Total "Payor Bank" Checks

Include: All checks (and/or "share drafts") drawn on your institution. Include inclearings and "On-Us" checks. Include controlled disbursement checks, if applicable. Include checks you subsequently return unpaid.

Do Not Include: Checks drawn on respondent institutions (transit items) or non-check items, such as deposit slips, G/L tickets, etc.

Note: Do not double-count electronic check presentment (ECP) items if you receive an electronic file with paper to follow.

	March	April
Number		
Value ($)		

1a) "On-Us" Checks

Include: All "payor bank" checks for which you are also the "bank of first deposit." Some institutions call these "On-Us By-Us."

Do Not Include: Payor bank checks received from the Federal Reserve, a clearing-house, or another institution (e.g., same-day settlement).

	March	April
Number		
Value ($)		

2) Total Returned Checks ("Outgoing")

Include: All checks drawn on your institution that you return unpaid, whether to your customer (see **2a** below) or to another institution.

Do Not Include: Checks drawn on another FI returned to you unpaid.

	March	April
Number		
Value ($)		

2a) "On-Us" Returned Checks

Include: All "On-Us" checks (see **1a** above) that you return unpaid. Some institutions call these "charge backs."

Do Not Include: Checks that you return to another institution or checks drawn on another institution returned to you unpaid.

	March	April
Number		
Value ($)		

Comments:

ACH (Credits Originated)

Please Do Not Round.

Important Note: This study measures ACH payments made by your customers (or institution). This includes ACH credits originated and ACH debits received. With the exception of On-Us ACH volume, **we are not measuring ACH payments made to your customers.** Therefore, debits originated and credits received have been excluded from this survey.

►ODFI = originating depository financial institution ►RDFI = receiving depository financial institution

1) Total ACH Credits Your Institution Originates

Include: All ACH credit transactions for which you are the ODFI; including On-Us transactions.

Do Not Include: Credits received from other institutions, debits originated or addenda records.

Note: Include On-Us credit transactions. If you do not originate ACH, enter zero.

	March	April
Number		
Value ($)		

1a) On-Us Credits Your Institution Originates

Definition: An On-Us ACH transaction is one in which you are both the originator and receiver of the ACH entry. You are moving funds from one account to another within your institution using the ACH platform.

In-House vs. Network: On-Us entries may be processed "In-House" or over the ACH "Network." In-House On-Us entries are processed through your ACH platform (or processor) without being cleared through the Fed or EPN. Network On-Us entries are those you originate to your own institution by sending them first through the Fed or EPN for clearing. If you originate only one type or the other, enter zero for the type you do not originate.

Note: If you cannot report In-House and Network On-Us totals separately, please report their combined totals under *Network On-Us Credits* and indicate in the *Comments* field below that the totals have been combined.

Type 1) In-House On-Us Credits

Include: All ACH credits sent from one account to another at your institution but not cleared through the Fed or EPN.

Do Not Include: Network transactions or addenda records.

Note: If you do not originate ACH, enter zero.

	March	April
Number		
Value ($)		

Type 2) Network On-Us Credits

Include: All ACH credits sent from one account to another at your institution that you clear through the Fed or EPN.

Do Not Include: On-Us entries processed entirely in-house or addenda records.

Note: If you do not originate ACH, enter zero.

	March	April
Number		
Value ($)		

Comments:

ACH (Debits Received)

Please Do Not Round.

Important Note: This study measures ACH payments made by your customers (or institution). This includes ACH credits originated and ACH debits received. With the exception of On-Us ACH volume, **we are not measuring ACH payments made to your customers.** Therefore, debits originated and credits received have been excluded from this survey.

►ODFI = originating depository financial institution ►RDFI = receiving depository financial institution

2) Total ACH Debits Your Institution Receives

Include: All ACH debit transactions for which you were the RDFI; including On-Us transactions.

Do Not Include: Debits originated to other institutions, credits received, or addenda records.

Note: Include On-Us transactions.

	March	April
Number		
Value ($)		

2a) On-Us ACH Debits Your Institution Originates

Definition: An On-Us ACH transaction is one in which you are both the originator and receiver of the ACH entry. You are moving funds from one account to another within your institution using the ACH platform.

In-House vs. Network: On-Us entries may be processed "In-House" or over the ACH "Network." In-House On-Us entries are processed through your ACH platform (or processor) without being cleared through the Fed or EPN. Network On-Us entries are those you originate to your own institution by sending them first through the Fed or EPN for clearing. If you originate only one type or the other, enter zero for the type you do not originate.

Note: If you cannot report In-House and Network On-Us totals separately, please report their combined totals under *Network On-Us Debits* and indicate in the *Comments* field below that the totals have been combined.

Type 1) In-House On-Us Debits

Include: All ACH debits sent from one account to another at your institution but not cleared through the Fed or EPN.

Do Not Include: Network transactions or addenda records.

Note: If you do not originate ACH, enter zero.

	March	April
Number		
Value ($)		

Type 2) Network On-Us Debits

Include: All ACH debits sent from one account to another at your institution that you clear through the Fed or EPN.

Do Not Include: On-Us entries processed entirely in-house or addenda records.

Note: If you do not originate ACH, enter zero.

	March	April
Number		
Value ($)		

Comments:

Debit Card Transactions

Please Do Not Round.

Note: If you cannot report Signature-Based and PIN-Based Debit Card totals separately, please report their combined totals under *Item 1* and indicate in the *Comments* field below that the totals have been combined.

1) Total Offline (Signature-Based) Debit Card Transactions

Include: All debit card transactions that carry MasterCard or Visa brands for which you were the card issuing institution.

Do Not Include: Online (PIN-based) debit card transactions, credit card transactions, or reversals.

	March	April
Number		
Value ($)		

2) Total Online (PIN-Based) Debit Card Transactions

Include: All online (PIN-based) debit card transactions for which you are the card issuing institution.

Do Not Include: ATM withdrawals, offline (i.e., signature-based) debit card transactions, credit card transactions, or reversals.

	March	April
Number		
Value ($)		

Comments:

ATM Withdrawals

Please Do Not Round.

1) Total ATM Withdrawals (Your Customer, Any ATM)

Include: All cash withdrawals made by your customers from any ATM (your ATM or a foreign ATM).

Do Not Include: Withdrawals by another institution's customers, deposit transactions, or other non-withdrawal transactions (e.g., inquiries, statement print-out, purchases of stamps, tickets, etc.)

	March	April
Number		
Value ($)		

1a) On-us ATM Withdrawals (Your Customer, Your ATM)

Include: All cash withdrawals made by your customers at your ATMs.

Do Not Include: Non-withdrawals by your customers or any transactions at foreign ATMs – by your customer or otherwise.

	March	April
Number		
Value ($)		

Note: Foreign ATMs are ATMs operated by another financial institution or ATM operator.

Comments:

Appendix: Definitions & Examples

Check Payments

Check –

A negotiable instrument drawn on a financial institution. For this study, please follow these guidelines:

Checks include…	Checks do not include…
▪ Checks written by individuals, business or government entities ▪ Traveler's checks drawn on your institution ▪ Money orders drawn on your institution ▪ Cashier's checks drawn on your institution ▪ Official checks drawn on your institution ▪ Teller's checks drawn on your institution ▪ Payable through drafts drawn on your institution ▪ Truncated checks (i.e., ECP file items)	▪ Deposit slips ▪ Rejected items (i.e., checks) ▪ General ledger tickets ▪ Other non-check documents, such as payment coupons ▪ Courtesy checks on credit card accounts ▪ Correspondent check volume ▪ Items not drawn on your institution

1) Total "Payor Bank" Items –

All checks (or "share drafts") for which your institution is the payor bank as defined by Reg. CC*. Include inclearings and "On-Us" checks. Include controlled disbursement items, if applicable. Include items you subsequently return unpaid to the financial institution of first deposit. Also include official checks written by the institution itself (as opposed to your customers or members).
* http://www.federalreserve.gov/regulations/title12/sec229/12cfr229_01.htm

Do Not Include:
- Checks not drawn on your institution or non-check items, such as deposit slips, G/L tickets, etc.
- Checks that you receive as a "pass through correspondent" for which another institution is actually the payor bank.

Note: Do not double-count electronic check presentment (ECP) items if you receive an electronic file with paper to follow. Also, if you perform proof-of-deposit processing, **do not over-report** Payor Bank volume by calculating it as the difference between Prime Pass and Transit Item volumes. Prime Pass includes Non-Check Documents that should not be counted in Payor Bank Items

► **Example:** Your customers write checks to pay utility bills. If you have depository relationships with the utilities, some of these checks will be deposited "On-Us." Others will be presented to you from other financial institutions through the Fed, local clearinghouse or directly for same-day settlement.

1a) "On-Us" Checks –

All payor bank items for which you are also the collecting institution or "bank of first deposit." Some institutions call these "On-Us By-Us" checks.

Do Not Include:
- Payor bank items received from the Federal Reserve, a clearinghouse, or another institution (e.g., same-day settlement)
- Non-check items (e.g., general ledger tickets, cash-in or cash-out tickets, deposit tickets, etc.).

► **Example:** Your customer writes a check to her babysitter, who also happens to be your customer. When the check is deposited by the babysitter, you are both the collecting institution and the paying institution on this item.

Check Payments cont.

2) Returned Checks ("Outgoing") –

All checks drawn on your institution that you return unpaid, whether to your customer (see 2a below) or to another institution.

Do Not Include: Incoming returns (i.e., checks drawn on another FI returned to you unpaid).

► **Example:** Your customer writes a check that is deposited (at your institution or another) and presented for payment. Your customer's account has insufficient funds and no overdraft protection. You return the item unpaid.

2a) "On-Us" Returned Checks –

All "On-Us" deposited checks (see 1a above) that you return unpaid. Some institutions call these "charge backs."

Do Not Include: Checks that you return to another institution or checks drawn on another institution returned to you unpaid (i.e., "incoming returns").

► **Example:** Your customer writes a check to his landlord, who also happens to be your customer. The landlord deposits the check at one of your branches. The account on which the check is drawn (the tenant's account) has insufficient funds and no overdraft protection. You return the item unpaid.

Automated Clearinghouse (ACH)

ACH Payments –

Automated Clearing House (ACH) transactions resulting in debits to demand deposit accounts at your institution. This includes ACH credits originated and debits received. With the exception of On-Us ACH volume, this study does not measure ACH payments made to your customers. Therefore, debits originated and credits received have been excluded from this survey.

Transactions in this category are entries, originated or received by your institution, that are processed through an Automated Clearinghouse platform according to NACHA rules and format conventions. For this study, please follow these guidelines:

ACH Entries include…	ACH Entries do <u>not</u> include…
▪ Debits & Credits sent and received	▪ Addenda Records
▪ On-Us entries	▪ Zero-dollar items (e.g. NOCs, Prenotes)
▪ Network entries	▪ Deletes/Reversals
▪ Returns	

Originating Depository Financial Institution (ODFI) –

The Originating Depository Financial Institution (ODFI) is the financial institution that initiates and warrants electronic payments through the ACH Network (or On-Us) on behalf of its customers.

Receiving Depository Financial Institution (RDFI) –

The RDFI is the financial institution that provides depository account services to individuals and organizations and accepts and posts electronic entries to those accounts.

Automated Clearinghouse (ACH) cont.

1) Credits Your Institution Originates –

All ACH credit transactions for which you are the ODFI. This includes On-Us entries and returns you originate.

Do Not Include: Credits received from other institutions, debits originated, Zero-dollar items or addenda records.

Note: This study counts payments made by your customers (or institution). **We are not counting debits originated,** because these are payments made to your customer. If you do not originate ACH, enter zero.

► **Example:** Your corporate customer pays its employees electronically through the ACH. Your institution originates the credit entries on behalf of your customer. Some entries may be paid to payroll recipients with deposit accounts at your institution; others may be paid to payroll recipients with deposit accounts at other institutions.

1a) On-Us Credits Originated –

An On-Us ACH credit transaction is one in which you are both the originator and receiver of the ACH entry. You are moving funds from one account to another within your institution using the ACH platform. Both the sending and receiving accounts reside on your Demand Deposit Account (DDA) or Savings posting system.

In-House vs. Network: On-Us entries may be processed "In-House" or over the ACH "Network." In-House On-Us entries (Type 1) are processed through your ACH platform (or processor) without being cleared through the Fed or EPN. Network On-Us entries (Type 2) are those you originate to your own institution by sending them first through the Fed or EPN for clearing. If you originate only one type or the other, enter zero for the type you do not originate.

1a: Type 1) In-House On-Us Credits –

Include: All ACH credits sent from one account to another at your institution but not cleared through the Fed or EPN.

Do Not Include: Entries sent through the Federal Reserve or EPN (i.e., network transactions) or addenda records.

Note: If you do not originate ACH, enter zero.

► **Example:** See the example of Credits Your Institution Receives. In-House On-Us Credits include only those cases in which you strip off the accounts of payroll recipients who have deposit accounts at your institution. You then process these transactions internally and never send them to the Fed or EPN.

1a: Type 2) Network On-Us Credits –

Include: All ACH credits sent from one account to another at your institution that you clear through the Fed or EPN.

Do Not Include: On-Us entries processed entirely in-house (without being sent through the Federal Reserve or EPN) or addenda records.

Note: If you do not originate ACH, enter zero.

► **Example:** See the example of Credits Your Institution Receives. Network On-Us Credits include only those cases in which you forward the payroll transactions to the Fed for processing along with the payroll payments that are being sent to account holders at other institutions. You subsequently receive these payroll transactions from the Fed or EPN along with any other credits you may have received from other institutions.

Automated Clearinghouse (ACH) cont.

2) Debits Your Institution Receives –

All ACH debit transactions for which you are the RDFI. This includes On-Us items and returns.

Do Not Include: Debits originated to other institutions, credits received, zero-dollar items or addenda records.

Note: Include On-Us transactions.

► **Example:** Your customer has set up direct debit of his checking account for recurring monthly bill payments. His billers, (e.g., utilities, insurance companies, credit card issuers, etc.) originate through their ODFIs debit entries that post to your customer's account. In some cases, your institution may be the ODFI.

2a) On-Us Debits Originated –

An On-Us ACH debit transaction is one in which you are both the originator and receiver of the ACH entry. You are moving funds from one account to another within your institution using the ACH platform. Both the sending and receiving accounts reside on your Demand Deposit Account (DDA) or Savings posting system.

In-House vs. Network: On-Us entries may be processed "In-House" or over the ACH "Network." In-House On-Us entries (Type 1) are processed through your ACH platform (or processor) without being cleared through the Fed or EPN. Network On-Us entries (Type 2) are those you originate to your own institution by sending them first through the Fed or EPN for clearing. If you originate only one type or the other, enter zero for the type you do not originate.

2a: Type 1) In-House On-Us Debits –

Include: All ACH debits sent from one account to another at your institution but not cleared through the Fed or EPN.

Do Not Include: Entries sent through the Federal Reserve or EPN (i.e., network transactions) or addenda records.

Note: If you do not originate ACH, enter zero.

► **Example:** See the example of Debits Your Institution Originates. In-House On-Us Debits include only those cases in which the biller has contracted with your institution to originate the ACH debit entry that, in this case, post to your customer's account through entirely internal processing. You then process these transactions internally and never send them to the Fed or EPN.

2a: Type 2) Network On-Us Debits –

Include: All ACH debits sent from one account to another at your institution that you clear through the Fed or EPN.

Do Not Include: On-Us entries processed entirely in-house (without being sent through the Federal Reserve or EPN) or addenda records.

Note: If you do not originate ACH, enter zero.

► **Example:** See the example of Debits Your Institution Originates. Network On-Us Debits include only those cases in which the biller has contracted with your institution to originate the ACH debit entry that, in this case, you clear through the Fed or EPN prior to posting to your customer's account.

Debit Card Transactions

Debit Card Transactions –

All purchase or bill pay transactions made with a debit card. Debit card transactions can be authenticated by either a Personal Identification Number (PIN) or by a signature. Funds are debited from a DDA account after authorization over a regional or national EFT network. Transactions may originate either at a physical point-of-sale (POS), via telephone, via the Internet, etc. For this study, please follow these guidelines:

Debit Card Transactions include…	Debit Card Transactions do <u>not</u> include…
▪ Signature-based transactions made with MasterCard or Visa branded cards ▪ PIN-based debit transactions ▪ Payroll card transactions by the cardholder	▪ ATM withdrawals ▪ Credit Card transactions ▪ Transfers by a corporate customer to fund its employees' payroll card accounts

1) Total Offline Debit Card Transactions –

All consumer and business debit card transactions on MasterCard or Visa branded debit cards for which you were the card issuing institution. (MasterCard and Visa brands currently include MasterMoney, MasterCard debit BusinessCard, Visa Check, or Visa Business check cards.)

Do Not Include: Online (PIN-based) debit card transactions, credit card transactions, or reversals.

Note: These transactions are generated by dual-use and signature-only debit cards.

► **Example:** Your customer buys groceries with her Visa Check card. When asked, "credit or debit," she selects "credit" and signs a sales receipt to authorize payment from her account. The transaction is cleared and settled through Visa.

2) Total Online Debit Card Transactions –

All consumer and business online (PIN-based) debit card transactions for which you are the card issuing institution.

Do Not Include: Offline (i.e., signature-based) debit card transactions, credit card transactions, or reversals.

Note: These transactions are generated by dual-use and PIN-only debit cards.

► **Example:** Your customer buys groceries with his debit card. When asked, "credit or debit," he selects "debit" and enters his PIN to authorize payment from his account. The transaction is cleared and settled through your regional EFT network.

ATM Withdrawals

ATM Withdrawals –

Cash withdrawals made by your customer at your ATM or a foreign ATM. For this study, please follow these guidelines:

ATM Withdrawals include…	ATM Withdrawals do not include…
▪ All cash withdrawals by your customers	▪ Cash withdrawals or other transactions by cardholders other than your customers ▪ Deposit Transactions ▪ Inquiries ▪ Funds Transfers ▪ Statement Prints ▪ Purchases (stamps, tickets, etc.) ▪ Any other non-withdrawal

Foreign ATM –

An ATM that is not owned, operated, or maintained by your institution or any agent of your institution.

Note: "Foreign" does not refer to ATMs outside the United States or its territories.

1) Total ATM Withdrawals (Your Customer, Any ATM) –

All cash withdrawals made by your customers at your ATMs or at foreign ATMs.

Do Not Include: Withdrawals by another institution's customers, deposit transactions, and other non-withdrawal transactions (e.g., inquiries, statement print-out, purchases of stamps, tickets, etc.)

► **Example:** Your customer uses her Visa Check card to withdraw cash from an ATM located in a grocery store but owned and operated by your institution. Later that day she makes a second ATM withdrawal from an ATM owned and operated by a bank across town. Both transactions should be counted.

1a) On-Us ATM Withdrawals (Your Customer, Your ATM) –

All cash withdrawals made by your customers at your ATMs.

Do Not Include: Withdrawals by another institution's customers, withdrawals by your customers at foreign ATMs, deposit transactions, and other non-withdrawal transactions (e.g., inquiries, statement print-out, purchases of stamps, tickets, etc.)

Note: Please count only withdrawals by your customers at your ATMs.

► **Example:** Your customer uses her Visa Check card to withdraw cash from an ATM located in a grocery store but owned and operated by your institution.

Appendix B:

Survey Instrument (*Short Form*)

The Federal Reserve Payments Study

SHORT FORM

About the study… The Federal Reserve Payments Study is a **confidential** national survey of financial institutions about payments and withdrawals from transaction accounts (demand deposit and NOW accounts). This "short form" survey includes only a select few survey items. (If you would like to complete the entire survey in order to profile your complete volumes against the industry, please call us at 1-800-599-5590.) Data from your response will contribute to estimates of the national number of non-cash payments. These estimates will be compared to estimates from the 2001 Federal Reserve study to determine changes in the use of payment instruments.

Why participate… As a participant you will receive access to confidential online reports that compare your payments volumes to that of the industry and your peers. Because the study is a random sample survey, your response is particularly important as it represents other organizations that were not selected for the study. **If you cannot report** an item, enter "N/R." A partial response is preferable to no response at all.

How to respond… You may respond by any of three methods. Please respond by **Friday, May 21.**

Online: Visit www.paymentsstudy.com and use your secure userid and password:

UserID: ******* Password: **********

Fax: (888) 243-0838

Mail: Use the enclosed postage paid envelope or send your survey to:
Federal Reserve Payments Study c/o ICR; 53 W. Baltimore Pike; Media, PA 19063.

Questions… You are welcome to call us at **(800) 599-5590**.

Check Payments

Please Do Not Round.

1) Total "Payor Bank" Checks

Include: All checks (and/or "share drafts") drawn on your institution. Include controlled disbursement checks, if applicable. Include checks you subsequently return unpaid.

Do Not Include: Checks drawn on respondent institutions (transit items) or non-check items, such as deposit slips, G/L tickets, etc.

Note: Do not double-count electronic check presentment (ECP) items if you receive an electronic file with paper to follow.

(Please enter **"N/R"** for any item you cannot report or "0" if you have no volume.)

	March	April
Number of Checks:		

2) Total Returned Checks ("Outgoing")

Include: All checks drawn on your institution that you return unpaid, whether to your customer or to another institution.

Do Not Include: Checks drawn on another FI returned to you unpaid.

	March	April
Number of Checks:		

Comments:

ACH Payments

Please Do Not Round.

3) In-House On-Us ACH Entries Originated

(Please enter **"N/R"** for any item you cannot report or "0" if you have no volume.)

Include: All ACH transactions sent from one account to another at your institution that are processed entirely internally without being cleared through the Fed or EPN.

Do Not Include: Entries sent through the Fed or EPN (i.e., network transactions) or addenda records.

Note: If you do not originate ACH, enter a zero.

	March	April
Number of Entries:		

Comments:

Institution Profile

According to our records, transaction volume data from the following affiliated institutions should be included in your responses above (unless you indicate their exclusion below). Please contact us at (800) 599-5590 if you have any questions or concerns about the items on this page.

4) Please indicate if any of these affiliates are excluded from your response.

Mark if excluded	Name	City	State	Approximate Total Deposit Balances (in millions of dollars)
☐	<Affiliate name>	<City>	<ST>	<Total Deposits (MM)>

5) Please list any affiliates not identified above that are included in your response.

Name	City	State

Appendix C:

Registration Form

Institution Name Here*

Respondent Registration Form

The *Federal Reserve Payments Study* is a national survey of depository institutions about payments and withdrawals from transaction accounts. The survey gathers data about check, ACH, and debit card payments as well as ATM withdrawals during March-April, 2004. Your response is strictly confidential.

You may register any time. If we have not heard from you **by March 1** we will call to make sure the survey has been received. Please indicate a primary contact who will be responsible for coordinating your institution's response. If you are unable to provide a single point of contact, please identify a respondent for each section of the survey.

To Register... You may return this registration form in the enclosed envelope or fax it to (888) 243-0838.

...or register securely online: www.paymentsstudy.com. [User ID: ******; Password: ******.]

► Option 1 (*Preferred*): Your Study Coordinator

A single point of contact helps to simplify the survey process and ensures the highest quality response.
PLEASE PRINT

First Name: _____

Last Name: _____

Title: _____

Organization: _____

Street: _____

City, State ZIP: _____

Phone: (_____) _____ - _____ Fax: (_____) _____ - _____

E-mail: _____

Preferred contact method: ☐ - E-mail ☐ - Phone ☐ - Fax

Option 2: Multiple Survey Respondents

Please use this option only if you are unable to identify a single point of contact to coordinate your reply.
PLEASE PRINT

	CHECK	ACH	DEBIT CARD	ATM
First Name:				
Last Name:				
Title:				
Organization:				
Street:				
City, State ZIP:				
Phone:				
Fax:				
E-mail				