2013 Federal Reserve Payments Study
Combined Exhibits (Summary and Detailed Overview)

December 2014

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Discussion outline

- Highlights of findings
- Study background
- Major trends
- General-purpose cards
- Payment accounts
- Unauthorized third-party fraud payments
- Private-label cards
- Alternative payment initiation methods
- ACH payment type breakdown
- Consumer and business large-value funds transfers (Wires)
- Checks
- Cash withdrawals and deposits from depository institutions by channel
- Appendix
Noncash payments trends as of 2012

- Noncash payments in the United States are increasingly card-based
- Card payments increased more than check payments declined
- Credit card payments returned to growth
- Debit card payments continued to grow more than any other payment type
- Paper check writing persisted as a significant portion of noncash payments
  - Interbank processing and clearing of these checks was virtually all electronic
  - Remote deposit capture was growing: More than one in six checks were deposited by electronic images rather than paper
- ACH payments continued to grow
  - Reduction in checks converted to ACH dampened overall ACH growth
  - New types of ACH payments showed significant and continued growth

SOURCE: 2013 Federal Reserve Payments Study
New fraud estimates for noncash payments in 2012

- Number and value of unauthorized third-party fraud payments were collected for
  - ACH debits and credits as well as checks
  - Various types of general-purpose credit and debit card transactions including ATM withdrawals

- Total fraud was $6.4 billion from 32.3 million unauthorized transactions

- Cards had the highest total fraud (and the highest fraud rates)
  - Single-message debit fraud rates (including ATM) were significantly lower than dual-message
  - For dual-message debit and credit cards
    - Card-not-present fraud rates by number were more than three times card-present fraud rates
    - Card-not-present fraud rates by value were roughly the same as card-present fraud rates

SOURCE: 2013 Federal Reserve Payments Study
General information about the 2013 Study

- Similar to previous studies administered triennially since 2001
- Surveys expanded to collect additional information
- Summary report released in December 2013 included
  - Major (top-line) payment trends
  - New information on unauthorized third-party fraud payments
- Detailed report released in July 2014 included
  - Overview
  - Detailed chapters on each survey
    - Reports on findings and methodologies
    - Comprehensive tables of estimates
  - Survey instruments (online)
Description of surveys

The 2013 Study consisted of three survey efforts

▪ Depository and Financial Institutions Payments Survey (DFIPS)
  ▫ Check, ACH, wire transfer, debit & prepaid card, credit card, cash, alternative payment initiation methods, unauthorized third-party fraud

▪ Networks, Processors, and Issuers Payments Surveys (NPIPS)
  – 15 different surveys
  – Cards
  – ACH
  – Alternative payment initiation methods

▪ Check Sample Survey (CSS)
  – 11 large commercial banks
  – Included paid checks and deposited checks
  – Mostly from the Viewpointe Check Archive

SOURCE: 2013 Federal Reserve Payments Study
Credit, debit and prepaid card trends include general-purpose and private-label payments.
Card payments accounted for 67% of total noncash payments by number but approximately 2% by value.

Distribution of noncash payments in 2012

Number
- Debit card: 38%
- Credit card: 21%
- ACH: 18%
- Prepaid card*: 8%
- Checks (paid): 15%

Value
- ACH: 83%
- Prepaid card*: 1%
- Debit card: 15%
- Credit card: 1%
- Checks (paid): 0%

Credit, debit and prepaid cards include general-purpose and private-label payments. Figures may not sum because of rounding.

* Prepaid cards include electronic benefits transfer (EBT) cards which are used to disburse funds for various government assistance programs.

SOURCE: 2013 Federal Reserve Payments Study
Noncash payments by number has shifted away from checks to other forms of payment, particularly cards

### Noncash payments, by number and type of transaction

<table>
<thead>
<tr>
<th>Year</th>
<th>Checks (paid)</th>
<th>ACH</th>
<th>Credit card</th>
<th>Debit card</th>
<th>Prepaid card</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>100% = 72.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>81.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>95.2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>108.1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>122.4</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Checks (paid)</td>
<td>41.9</td>
<td>37.3</td>
<td>30.5</td>
<td>24.5</td>
<td>18.3</td>
<td>-6.6%</td>
<td>-9.2%</td>
</tr>
<tr>
<td>ACH</td>
<td>15.6</td>
<td>8.8</td>
<td>14.6</td>
<td>19.1</td>
<td>21.7</td>
<td>11.1%</td>
<td>4.4%</td>
</tr>
<tr>
<td>Credit card</td>
<td>6.1</td>
<td>19.0</td>
<td>21.7</td>
<td>21.0</td>
<td>26.2</td>
<td>4.4%</td>
<td>7.6%</td>
</tr>
<tr>
<td>Debit card</td>
<td>8.3</td>
<td>15.6</td>
<td>25.0</td>
<td>37.5</td>
<td>47.0</td>
<td>15.6%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Prepaid card</td>
<td>0.5</td>
<td>0.8</td>
<td>3.3</td>
<td>5.9</td>
<td>9.2</td>
<td>26.7%</td>
<td>15.9%</td>
</tr>
</tbody>
</table>

Credit, debit and prepaid cards include general-purpose and private-label payments. Figures may not sum because of rounding. Prepaid card payments in 2000 and 2003 are displayed below the axis. * CAGR is compound annual growth rate.

**SOURCE:** 2013 Federal Reserve Payments Study
Even as checks continued to decline, the total number of noncash payments continued to grow.

### Number and growth of noncash payments 2000-2012

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total (billions)</strong></td>
<td>72.4</td>
<td>81.4</td>
<td>95.2</td>
<td>108.1</td>
<td>122.4</td>
<td>4.5%</td>
<td>4.2%</td>
</tr>
<tr>
<td><strong>General-purpose card</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit</td>
<td>12.3</td>
<td>15.2</td>
<td>19.0</td>
<td>19.5</td>
<td>23.8</td>
<td>5.6%</td>
<td>6.8%</td>
</tr>
<tr>
<td>Debit</td>
<td>8.3</td>
<td>15.6</td>
<td>25.0</td>
<td>37.5</td>
<td>47.0</td>
<td>15.6%</td>
<td>7.7%</td>
</tr>
<tr>
<td>Prepaid**</td>
<td>0.0</td>
<td>0.0</td>
<td>0.3</td>
<td>1.3</td>
<td>3.1</td>
<td>33.9%</td>
<td></td>
</tr>
<tr>
<td><strong>Private-label and EBT card</strong></td>
<td>3.8</td>
<td>4.6</td>
<td>5.8</td>
<td>6.1</td>
<td>8.5</td>
<td>6.9%</td>
<td>11.6%</td>
</tr>
<tr>
<td>Credit</td>
<td>3.3</td>
<td>3.8</td>
<td>2.7</td>
<td>1.5</td>
<td>2.4</td>
<td>-2.6%</td>
<td>17.1%</td>
</tr>
<tr>
<td>Prepaid</td>
<td>1.9</td>
<td>2.7</td>
<td>3.6</td>
<td></td>
<td>3.6</td>
<td></td>
<td>10.8%</td>
</tr>
<tr>
<td>EBT</td>
<td>0.5</td>
<td>0.8</td>
<td>1.1</td>
<td>2.0</td>
<td>2.5</td>
<td>13.6%</td>
<td>8.1%</td>
</tr>
<tr>
<td><strong>ACH</strong></td>
<td>6.1</td>
<td>8.8</td>
<td>14.6</td>
<td>19.1</td>
<td>21.7</td>
<td>11.1%</td>
<td>4.4%</td>
</tr>
<tr>
<td><strong>Checks (paid)</strong></td>
<td>41.9</td>
<td>37.3</td>
<td>30.5</td>
<td>24.5</td>
<td>18.3</td>
<td>-6.6%</td>
<td>-9.2%</td>
</tr>
</tbody>
</table>

The number of ACH payments in 2012 was revised since the Summary Report. Electronic benefits transfer (EBT) cards are used to disburse funds for various government assistance programs. Figures may not sum because of rounding. * CAGR is compound annual growth rate. ** The number of general-purpose prepaid card transactions in 2000 and 2003 was negligible.
Microchips (chips) may help reduce card-present fraud: Penetration of chip-enabled cards reached 7-8 percent

Number of general-purpose credit and debit cards in force in 2012, with or without microchips, by cardholder type

### Credit Cards

<table>
<thead>
<tr>
<th>Type</th>
<th>Total</th>
<th>Chip Enabled</th>
<th>Not Chip Enabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer</td>
<td>305.3 (99%)</td>
<td>28.1 (9%)</td>
<td>277.2 (92%)</td>
</tr>
<tr>
<td>Business</td>
<td>28.3 (1%)</td>
<td>0.1 (1%)</td>
<td>28.2 (99%)</td>
</tr>
<tr>
<td>Total</td>
<td>333.6</td>
<td>28.2 (8%)</td>
<td>305.4 (92%)</td>
</tr>
</tbody>
</table>

### Debit Cards

<table>
<thead>
<tr>
<th>Type</th>
<th>Total</th>
<th>Chip Enabled</th>
<th>Not Chip Enabled</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer</td>
<td>265.4 (92%)</td>
<td>16.0 (8%)</td>
<td>249.4 (92%)</td>
</tr>
<tr>
<td>Business</td>
<td>17.4</td>
<td>1.4 (8%)</td>
<td>16.0 (92%)</td>
</tr>
<tr>
<td>Total</td>
<td>282.8</td>
<td>17.4 (8%)</td>
<td>265.4 (92%)</td>
</tr>
</tbody>
</table>

Cards in force are those that are issued, activated, and not expired. Figures may not sum because of rounding.

SOURCE: 2013 Federal Reserve Payments Study
Number of general-purpose cards in force in 2012, with or without purchase activity, by card type

Millions

<table>
<thead>
<tr>
<th>Card Type</th>
<th>With Purchase Activity</th>
<th>Without Purchase Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debit</td>
<td>100.3 (35%)</td>
<td>145.8 (44%)</td>
</tr>
<tr>
<td>Prepaid</td>
<td>182.5 (65%)</td>
<td>29.4 (18%)</td>
</tr>
<tr>
<td>Credit</td>
<td>159.1 (82%)</td>
<td>187.8 (56%)</td>
</tr>
</tbody>
</table>

There were 775.4 million general-purpose cards in force.

Most cards in force were credit cards.

Debit cards had the highest share of active cards.

Cards in force are those that are issued, activated, and not expired, and cards with purchase activity (or active cards) are those used to make at least one purchase or bill payment in a month.

SOURCE: 2013 Federal Reserve Payments Study
### General-purpose credit cards: Consumer and business adoption and use

**Number of general-purpose credit cards in force in 2012, with or without purchase activity, by cardholder type**

<table>
<thead>
<tr>
<th>Cardholder Type</th>
<th>Total Cards in Force</th>
<th>Cards with Purchase Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Consumer</strong></td>
<td>305.3 (44%)</td>
<td>133.2 (44%)</td>
</tr>
<tr>
<td><strong>Business</strong></td>
<td>28.3 (56%)</td>
<td>15.7 (56%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>333.6 (56%)</td>
<td>145.8 (44%)</td>
</tr>
</tbody>
</table>

- **Cards in force**: 1.3 cards per adult consumer, 0.7 cards per adult business
- **Cards with purchase activity**: 1.0 card per adult consumer, 0.6 cards per adult business

Cards in force are those that are issued, activated, and not expired, and cards with purchase activity (or active card) are those used to make at least one purchase or bill payment in a month.

**SOURCE**: 2013 Federal Reserve Payments Study
Number of debit cards in force in 2012, with or without purchase activity, by cardholder type

<table>
<thead>
<tr>
<th></th>
<th>Without purchase activity</th>
<th>With purchase activity</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total</strong></td>
<td>91.4 (34%)</td>
<td>100.3 (35%)</td>
</tr>
<tr>
<td><strong>Consumer</strong></td>
<td>8.6 (49%)</td>
<td>8.8 (51%)</td>
</tr>
<tr>
<td><strong>Business</strong></td>
<td>173.9 (66%)</td>
<td>182.5 (65%)</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>265.4 (51%)</td>
<td>282.8 (49%)</td>
</tr>
</tbody>
</table>

- There were 1.1 cards in force and 0.7 active card per adult consumer
- There was 0.6 card in force and 0.3 active card per business

Cards in force are those that are issued, activated, and not expired, and cards with purchase activity (or active card) are those used to make at least one purchase or bill payment in a month. Figures may not sum because of rounding.

SOURCE: 2013 Federal Reserve Payments Study
General-purpose cards: Debit card payments were the largest by number, while credit card payments were the largest by value.

Distribution of general-purpose card payments in 2012

Number
- Debit: 64%
- Prepaid: 4%
- Credit: 32%

Value
- Prepaid: 3%
- Debit: 44%
- Credit: 53%

SOURCE: 2013 Federal Reserve Payments Study
General-purpose cards: Consumer and business payment frequency in a month per active card

Number of payments in a month per active general-purpose card in 2012, by cardholder and card type

- Consumers used debit cards more frequently
- Businesses used credit cards more frequently

<table>
<thead>
<tr>
<th></th>
<th>Debit</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer</td>
<td>24</td>
<td>10</td>
</tr>
<tr>
<td>Business</td>
<td>17</td>
<td>20</td>
</tr>
<tr>
<td>Total</td>
<td>23</td>
<td>11</td>
</tr>
</tbody>
</table>

Information about the allocation between business and consumer for general-purpose prepaid cards is not available. Active cards are those used to make at least one purchase or bill payment in a month.

SOURCE: 2013 Federal Reserve Payments Study
General-purpose card payment values were distributed differently for each card type.

Relative frequency of transaction value ranges in 2012, by general-purpose card type

<table>
<thead>
<tr>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than $5</td>
</tr>
<tr>
<td>Credit</td>
</tr>
<tr>
<td>9</td>
</tr>
<tr>
<td>Debit</td>
</tr>
<tr>
<td>13</td>
</tr>
<tr>
<td>Prepaid</td>
</tr>
<tr>
<td>20</td>
</tr>
</tbody>
</table>

Percentage distribution is within each card type.

SOURCE: 2013 Federal Reserve Payments Study
Debit cards dominated card-present payments; credit cards had slightly more card-not-present payments

Number of card-present and card-not-present payments in 2012, by general-purpose card type

<table>
<thead>
<tr>
<th>Billions</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit</td>
<td></td>
</tr>
<tr>
<td>Debit</td>
<td></td>
</tr>
<tr>
<td>Prepaid</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
</tr>
</tbody>
</table>

Debit cards: 47.0 billion card-present payments and 5.5 billion card-not-present payments.

Credit cards: 23.8 billion card-present payments and 18.0 billion card-not-present payments.

Prepaid cards: 3.1 billion card-present payments and 0.4 billion card-not-present payments.

Totals: 73.9 billion card-present payments and 11.7 billion card-not-present payments.

Figures may not sum because of rounding.

SOURCE: 2013 Federal Reserve Payments Study
Most of the increase in card-not-present payments was in general-purpose credit cards

Number of card-present and card-not-present payments, by general-purpose card type

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Credit</strong></td>
<td>19.5</td>
<td>23.8</td>
</tr>
<tr>
<td>Card-present</td>
<td>15.8</td>
<td>18.0</td>
</tr>
<tr>
<td>Card-not-present</td>
<td>3.8</td>
<td>5.8</td>
</tr>
<tr>
<td><strong>Debit</strong></td>
<td>37.5</td>
<td>47.0</td>
</tr>
<tr>
<td>Card-present</td>
<td>32.4</td>
<td>41.4</td>
</tr>
<tr>
<td>Card-not-present</td>
<td>5.2</td>
<td>5.5</td>
</tr>
</tbody>
</table>

Total: Credit 6.8% Debit 7.7%

Card-present and card-not-present data for general-purpose prepaid cards were not measured for 2009. Figures may not sum because of rounding. * CAGR is compound annual growth rate.

SOURCE: 2013 Federal Reserve Payments Study
Business payments increased at a faster rate than consumer payments for both general-purpose credit and debit cards.

Number of business and consumer payments, by general-purpose card type

<table>
<thead>
<tr>
<th></th>
<th>Billions</th>
<th>CAGR* 2009-12</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Credit</td>
<td>Debit</td>
</tr>
<tr>
<td>2009</td>
<td>19.5</td>
<td>37.5</td>
</tr>
<tr>
<td></td>
<td>2.3 (12%)</td>
<td>1.2 (3%)</td>
</tr>
<tr>
<td></td>
<td>17.2 (88%)</td>
<td>36.3 (97%)</td>
</tr>
<tr>
<td>2012</td>
<td>23.8</td>
<td>47.0</td>
</tr>
<tr>
<td></td>
<td>3.4 (14%)</td>
<td>45.5 (97%)</td>
</tr>
<tr>
<td></td>
<td>20.4 (86%)</td>
<td>1.5 (3%)</td>
</tr>
</tbody>
</table>

Business and consumer data for general-purpose prepaid cards were not measured for 2009 and 2012.

* CAGR is compound annual growth rate.

SOURCE: 2013 Federal Reserve Payments Study
Over the long run, both single-message (PIN) and dual-message (signature) transactions grew; more recently dual-message grew relatively faster.

Single-message networks were traditionally called PIN networks because most single-message transactions require a PIN as part of the transaction. Dual-message networks were traditionally called signature networks because many dual-message transactions require a signature as part of the transaction. Figures may not sum because of rounding. * CAGR is compound annual growth rate.

<table>
<thead>
<tr>
<th>Year</th>
<th>Single-message</th>
<th>Dual-message</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>3.0 (36%)</td>
<td>5.3 (64%)</td>
<td>8.3</td>
</tr>
<tr>
<td>2003</td>
<td>5.3 (37%)</td>
<td>10.3 (63%)</td>
<td>15.6</td>
</tr>
<tr>
<td>2006</td>
<td>9.4 (38%)</td>
<td>15.7 (62%)</td>
<td>25.0</td>
</tr>
<tr>
<td>2009</td>
<td>14.4 (36%)</td>
<td>23.1 (64%)</td>
<td>37.5</td>
</tr>
<tr>
<td>2012</td>
<td>16.8 (36%)</td>
<td>30.2 (64%)</td>
<td>47.0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Period</th>
<th>Single-message CAGR</th>
<th>Dual-message CAGR</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003-12</td>
<td>15.4%</td>
<td>5.2%</td>
</tr>
<tr>
<td>2009-12</td>
<td>15.7%</td>
<td>9.3%</td>
</tr>
</tbody>
</table>

SOURCE: 2013 Federal Reserve Payments Study
Average balance in general-purpose consumer credit card accounts ($1,900) was extremely close to that of business accounts ($1,899)

Number of general-purpose credit card accounts in 2012, by accountholder type
Millions

<table>
<thead>
<tr>
<th></th>
<th>Consumer</th>
<th>Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>279.7</td>
<td>29.5</td>
</tr>
<tr>
<td>Total as %</td>
<td>90%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Total outstanding general-purpose credit card balances in 2012, by accountholder type
Billions

<table>
<thead>
<tr>
<th></th>
<th>Consumer</th>
<th>Business</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>531.4</td>
<td>55.9</td>
</tr>
<tr>
<td>Total as %</td>
<td>90%</td>
<td>10%</td>
</tr>
</tbody>
</table>

Figures may not sum because of rounding.

SOURCE: 2013 Federal Reserve Payments Study
Average balance in consumer transaction accounts was $8,001; average balance for business was $61,706

Number of transaction deposit accounts in 2012, by accountholder type

<table>
<thead>
<tr>
<th>Accountholder Type</th>
<th>Millions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer</td>
<td>287.4 (90%)</td>
</tr>
<tr>
<td>Business</td>
<td>32.6 (10%)</td>
</tr>
</tbody>
</table>

Total outstanding transaction deposit account balances in 2012, by accountholder type

<table>
<thead>
<tr>
<th>Accountholder Type</th>
<th>Billions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer</td>
<td>$2,014.5 (47%)</td>
</tr>
<tr>
<td>Business</td>
<td>$2,299.0 (53%)</td>
</tr>
</tbody>
</table>

Includes deposits of individuals, partnerships, and corporations at commercial banks, savings institutions, and credit unions, and excludes deposits of other banks or foreign governments. Figures may not sum because of rounding.

SOURCE: 2013 Federal Reserve Payments Study
General-purpose cards had the most unauthorized third-party fraud

Distribution of unauthorized third-party fraud payments in 2012

**Number (32.3 million)**
- ACH: 5%
- Checks: 3%
- General-purpose cards*: 29.8 million (92%)

**Value ($6.4 billion)**
- ACH: 19%
- Checks: 17%
- General-purpose cards*: $4.1 billion (63%)

* General-purpose cards include credit, debit, and prepaid payments as well as ATM withdrawals. Figures may not sum because of rounding.

SOURCE: 2013 Federal Reserve Payments Study
Checks had the lowest rate of third-party fraud: about 47 out of 1 million checks were unauthorized.

**Rate of third-party fraud (number) in 2012**

<table>
<thead>
<tr>
<th>Basis points</th>
<th>General-purpose cards</th>
<th>ACH</th>
<th>Checks</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.74</td>
<td>0.77</td>
<td></td>
<td>0.47</td>
</tr>
</tbody>
</table>

**Rate of third-party fraud (value) in 2012**

<table>
<thead>
<tr>
<th>Basis points</th>
<th>General-purpose cards</th>
<th>ACH</th>
<th>Checks</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.43</td>
<td>0.09</td>
<td></td>
<td>0.43</td>
</tr>
</tbody>
</table>

Basis points are the number of unauthorized third-party fraud transactions per 10,000 transactions or the value of unauthorized third-party fraud transactions per $10,000 spent. One hundred basis points equals 1 percent.

SOURCE: 2013 Federal Reserve Payments Study
Card-not-present fraud was 3 times more likely than card-present fraud; single-message fraud was the lowest

Rate of unauthorized third-party fraud payments (number) in 2012, by type of general-purpose card transaction

<table>
<thead>
<tr>
<th>Basis points</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Card-present</strong></td>
</tr>
<tr>
<td><strong>Card-not-present</strong></td>
</tr>
<tr>
<td>Credit card</td>
</tr>
<tr>
<td>Dual-message debit</td>
</tr>
<tr>
<td>Single-message debit and ATM*</td>
</tr>
</tbody>
</table>

Includes general-purpose cards only. Debit includes prepaid. Basis points are the number of unauthorized third-party fraud transactions per 10,000 transactions. One hundred basis points equals 1 percent. * The rate of unauthorized ATM withdrawal fraud transactions alone by number was 2.2 basis points.

SOURCE: 2013 Federal Reserve Payments Study
By value, dual-message debit and credit card fraud rates of card-present and card-not-present were similar.

Rate of unauthorized third-party fraud transactions (value) in 2012, by type of general-purpose card transaction

<table>
<thead>
<tr>
<th>Basis points</th>
<th>Card-present</th>
<th>Card-not-present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credit card</td>
<td>9.2</td>
<td>10.9</td>
</tr>
<tr>
<td>Single-message debit and ATM*</td>
<td>2.7</td>
<td></td>
</tr>
<tr>
<td>Dual-message debit</td>
<td>12.4</td>
<td>11.6</td>
</tr>
<tr>
<td>Dual-message debit</td>
<td>11.6</td>
<td></td>
</tr>
</tbody>
</table>

Includes general-purpose cards only. Debit includes prepaid. Basis points are the dollar value of unauthorized third-party fraud transactions per $10,000 spent. One hundred basis points equals 1 percent. * The rate of unauthorized ATM withdrawal fraud transactions alone by value was 3.7 basis points.

SOURCE: 2013 Federal Reserve Payments Study
Fraudulent payments by card tended to be larger than overall card payments; fraudulent payments by ACH and check tended to be smaller.

Average values of unauthorized third-party fraud payments and overall payments in 2012, by transaction type.

<table>
<thead>
<tr>
<th>Transaction Type</th>
<th>Fraud Payments</th>
<th>Overall Payments</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP credit card</td>
<td>136</td>
<td>93</td>
</tr>
<tr>
<td>GP debit card</td>
<td>104</td>
<td>39</td>
</tr>
<tr>
<td>ATM withdrawals</td>
<td>199</td>
<td>118</td>
</tr>
<tr>
<td>ACH</td>
<td>736</td>
<td>1,410</td>
</tr>
<tr>
<td>Check</td>
<td>1,272</td>
<td></td>
</tr>
</tbody>
</table>

GP denotes general purpose. Debit card includes prepaid card. SOURCE: 2013 Federal Reserve Payments Study
Private-label cards: Prepaid cards were used for more frequent, smaller-value payments; credit cards the opposite.

Distribution of private-label card payments in 2012

Figures may not sum because of rounding. Private-label prepaid transportation payments are not included.

SOURCE: 2013 Federal Reserve Payments Study
Private-label prepaid cards were used primarily for very small payments; private-label credit cards for larger payments.

Relative frequency of transaction value ranges in 2012, by private-label card type

<table>
<thead>
<tr>
<th>Percent</th>
<th>Prepaid</th>
<th>Credit</th>
</tr>
</thead>
<tbody>
<tr>
<td>$5 or less</td>
<td>59</td>
<td>3</td>
</tr>
<tr>
<td>$5.00 - $9.99</td>
<td>25</td>
<td>3</td>
</tr>
<tr>
<td>$10.00 - $14.99</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>$15.00 - $24.99</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>$25.00 - $49.99</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>$50 or more</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Percentage distribution is within each card type. Figures may not sum because of rounding.

SOURCE: 2013 Federal Reserve Payments Study
Private-label credit cards: Consumer payments grew more rapidly than business payments

Number of business and consumer private-label credit card payments

<table>
<thead>
<tr>
<th></th>
<th>Billions</th>
<th>CAGR*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2009-12</td>
<td></td>
</tr>
<tr>
<td>Business</td>
<td>2.4</td>
<td>17.1%</td>
</tr>
<tr>
<td>Consumer</td>
<td>0.8 (35%)</td>
<td>7.0%</td>
</tr>
<tr>
<td></td>
<td>1.6 (65%)</td>
<td>24.4%</td>
</tr>
<tr>
<td>2009</td>
<td>1.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.8 (46%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.7 (54%)</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>2.4</td>
<td></td>
</tr>
</tbody>
</table>

* CAGR is compound annual growth rate.

SUMMARY: 2013 Federal Reserve Payments Study
Number of prepaid card payments, by card type

<table>
<thead>
<tr>
<th>Year</th>
<th>Prepaid card</th>
<th>General-purpose</th>
<th>Private-label</th>
<th>EBT</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>3.3 (9%)</td>
<td>0.3 (9%)</td>
<td>1.9 (58%)</td>
<td>1.1 (33%)</td>
</tr>
<tr>
<td>2009</td>
<td>5.9</td>
<td>1.3 (22%)</td>
<td>2.7 (45%)</td>
<td>2.0 (33%)</td>
</tr>
<tr>
<td>2012</td>
<td>9.2</td>
<td>3.1 (34%)</td>
<td>3.6 (39%)</td>
<td>2.5 (27%)</td>
</tr>
</tbody>
</table>

CAGR*:

- Prepaid card: 18.5% (2006-12), 15.9% (2009-12)
- General-purpose: 47.7% (2006-12), 33.9% (2009-12)
- Private-label: 11.0% (2006-12), 10.8% (2009-12)
- EBT: 14.6% (2006-12), 8.1% (2009-12)

Excludes payments by private-label prepaid transit cards and far-field RFID toll collections, which are reported below. Figures may not sum because of rounding. * CAGR is compound annual growth rate.

SOURCE: 2013 Federal Reserve Payments Study
Captured a large portion of private-label prepaid transportation market: Number of transactions reached at least 9.9 billion in 2012

Number of private-label prepaid transportation payments in 2012

Billions

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Private-label prepaid transit card payments</td>
<td>Payments by electronic fare cards issued by transportation authorities for use on local public bus and rail transportation systems</td>
</tr>
<tr>
<td>Far-field radio frequency identification (RFID) transponder toll collections</td>
<td>Payments by a device, usually mounted on a vehicle windshield, that debits a special-purpose account when the vehicle passes through a toll lane at the entrance or exit of a toll road or bridge</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Mode of Payment</th>
<th>Billions</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transit</td>
<td>4.7</td>
<td>47%</td>
</tr>
<tr>
<td>Far-field RFID tolls</td>
<td>5.2</td>
<td>53%</td>
</tr>
<tr>
<td>Prepaid transportation</td>
<td>9.9</td>
<td>100%</td>
</tr>
</tbody>
</table>

SOURCE: 2013 Federal Reserve Payments Study
### Alternative payment initiation methods

<table>
<thead>
<tr>
<th>Alternative Payment Method</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Person-to-person (P2P) and money transfer</strong></td>
<td>Products that specialize in transferring funds between two individuals, usually featuring an online or email based system</td>
</tr>
<tr>
<td><strong>Online bill payment</strong></td>
<td>Bill payments initiated over the Internet via a bank or biller website and processed by bill payment aggregators and consolidators</td>
</tr>
<tr>
<td><strong>Walk-in bill payment</strong></td>
<td>In-person bill payments made at convenience stores, kiosks, and other locations and processed by large walk-in bill payment aggregators</td>
</tr>
<tr>
<td><strong>Private-label ACH debit card</strong></td>
<td>Cards, typically issued by merchants, which use point-of-sale debit terminals but route transactions through the ACH system rather than a card network</td>
</tr>
<tr>
<td><strong>Secure online payment</strong></td>
<td>Enhancements to online purchases that, for example, allow the entry of a PIN at the computer terminal, or redirect the purchaser to allow them to use an existing Internet payment account</td>
</tr>
<tr>
<td><strong>Mobile wallet</strong></td>
<td>Payments using the cell phone short message service (SMS), a mobile application, a virtual cloud based account, or near field RFID connected to a mobile device</td>
</tr>
</tbody>
</table>

*Source: 2013 Federal Reserve Payments Study*
Alternative payment initiation methods use card and ACH networks to clear and settle

Number of payments using alternative payment initiation methods in 2012, by payment type

<table>
<thead>
<tr>
<th>Payment Type</th>
<th>Billions</th>
</tr>
</thead>
<tbody>
<tr>
<td>P2P and money transfer</td>
<td>0.2</td>
</tr>
<tr>
<td>Online bill payment</td>
<td>3.1</td>
</tr>
<tr>
<td>Walk-in bill pay</td>
<td>0.3</td>
</tr>
<tr>
<td>Private-label ACH</td>
<td>0.1</td>
</tr>
<tr>
<td>Secure online payment</td>
<td>1.8</td>
</tr>
<tr>
<td>Mobile wallet</td>
<td>0.3</td>
</tr>
</tbody>
</table>

All figures represent lower bound estimates of the number of payments of each type in 2012.
On-us ACH payments grew at a higher rate than network payments over both the long and short run.

Number of ACH payments, by clearing method

<table>
<thead>
<tr>
<th>Year</th>
<th>On-us</th>
<th>Network</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>8.8 (16%)</td>
<td>1.3 (14%)</td>
<td>10.1 (88%)</td>
</tr>
<tr>
<td>2006</td>
<td>14.6 (20%)</td>
<td>2.3 (22%)</td>
<td>16.9 (77%)</td>
</tr>
<tr>
<td>2009</td>
<td>19.1 (23%)</td>
<td>3.7 (23%)</td>
<td>22.8 (77%)</td>
</tr>
<tr>
<td>2012</td>
<td>21.7</td>
<td>4.9 (23%)</td>
<td>26.6 (77%)</td>
</tr>
</tbody>
</table>

Direct exchange ACH payments—those cleared directly between financial institutions without the use of a traditional network operator—were found to be negligible, and were included in the estimates of network volumes. Figures may not sum because of rounding. * CAGR is compound annual growth rate.

CAGR*

<table>
<thead>
<tr>
<th>Period</th>
<th>On-us</th>
<th>Network</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003-12</td>
<td>10.6%</td>
<td>9.4%</td>
<td>9.8%</td>
</tr>
<tr>
<td>2009-12</td>
<td>16.4%</td>
<td>3.0%</td>
<td>4.4%</td>
</tr>
</tbody>
</table>

SOURCE: 2013 Federal Reserve Payments Study
After rising through 2009, checks converted to ACH for clearing began to decrease

Number of ACH payments, by type

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>Converted checks</th>
<th>Other ACH</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012</td>
<td>21.7</td>
<td>2.7 (12%)</td>
<td>19.0 (88%)</td>
</tr>
<tr>
<td>2009</td>
<td>19.1</td>
<td>3.3 (17%)</td>
<td>15.8 (83%)</td>
</tr>
<tr>
<td>2006</td>
<td>14.6</td>
<td>2.6 (17%)</td>
<td>12.0 (82%)</td>
</tr>
<tr>
<td>2003</td>
<td>8.8</td>
<td>0.3 (4%)</td>
<td>8.4 (96%)</td>
</tr>
</tbody>
</table>

**CAGR**

- **2003-12**
  - Total: 10.6%
  - Converted checks: 26.3%
  - Other ACH: 9.5%

- **2009-12**
  - Total: 4.4%
  - Converted checks: -6.3%
  - Other ACH: 6.3%

* CAGR is compound annual growth rate.

Figures may not sum because of rounding.

SOURCE: 2013 Federal Reserve Payments Study
Even as ACH check conversion volume began to decline after 2009, ACH continued to grow from new markets such as Internet (WEB) payments.

**Trends in ACH payments (number) 2000-2012, by selected types of transactions**

**Billions**

**Trends in ACH payments (value) 2000-2012, by selected types of transactions**

**Trillions**

ACH payment types are based on the definitions of the standard entry classification (SEC) codes assigned to the payments (obtained from NACHA-The Electronic Payments Association). Check conversion categories include ARC, POP, and BOC.

SOURCE: 2013 Federal Reserve Payments Study
About 22 percent of wire transfers were for $2,500 or less

Relative frequency of transaction value ranges in 2012

Includes only wire transfers sent over CHIPS and Fedwire.
Most wire transfers were for business customers; far fewer were for bank-to-bank settlement or consumers.

Number of wire transfers in 2012, by accountholder type

<table>
<thead>
<tr>
<th>Millions</th>
<th>Settlement/bank-to-bank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer</td>
<td>17.4 (6%)</td>
</tr>
<tr>
<td>Business</td>
<td>246.5 (91%)</td>
</tr>
<tr>
<td>All other</td>
<td>270.1 (94%)</td>
</tr>
</tbody>
</table>

Number of non-consumer wire transfers in 2012, by accountholder type

- Settlement/bank-to-bank: 23.6 (9%)
- Business: 246.5 (91%)
- All other: 270.1 (94%)

Total wire transfers reported in the survey includes both network volumes (CHIPS and Fedwire) as well as book transfers.

SOURCE: 2013 Federal Reserve Payments Study
Almost all value of wire transfers were for business or bank-to-bank settlement transactions

Value of wire transfers in 2012, by accountholder type

<table>
<thead>
<tr>
<th>Accountholder Type</th>
<th>Value (Trillions)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer</td>
<td>$1.5</td>
<td>0.1%</td>
</tr>
<tr>
<td>All other</td>
<td>$1,114.8</td>
<td>99.9%</td>
</tr>
<tr>
<td>Business</td>
<td>$821.1</td>
<td>74%</td>
</tr>
</tbody>
</table>

Value of non-consumer wire transfers in 2012, by accountholder type

<table>
<thead>
<tr>
<th>Accountholder Type</th>
<th>Value (Trillions)</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Settlement/ bank-to-bank</td>
<td>293.7</td>
<td>26%</td>
</tr>
</tbody>
</table>

Total wire transfers reported in the survey includes both network volumes (CHIPS and Fedwire) as well as book transfers.

SOURCE: 2013 Federal Reserve Payments Study
Most wires were domestic; of the 38 percent sent to foreign payees, 3 percent were sent from consumer accountholders.

Number of wire transfers in 2012, by payee location

<table>
<thead>
<tr>
<th>Type</th>
<th>Millions</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>177.2</td>
<td>62%</td>
</tr>
<tr>
<td>Foreign</td>
<td>110.4</td>
<td>38%</td>
</tr>
</tbody>
</table>

Number of foreign wire transfers in 2012, by accountholder type

<table>
<thead>
<tr>
<th>Type</th>
<th>Millions</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consumer</td>
<td>107.1</td>
<td>97%</td>
</tr>
<tr>
<td>All other</td>
<td>3.2</td>
<td>3%</td>
</tr>
</tbody>
</table>

Total wire transfers reported in the survey includes both network volumes (CHIPS and Fedwire) as well as book transfers. Figures may not sum because of rounding.

SOURCE: 2013 Federal Reserve Payments Study
The number of checks written declined roughly the same amount per year since 2003; the rate of decline accelerated because of a shrinking base.

Number of checks written, by converted to ACH or paid as checks

<table>
<thead>
<tr>
<th>Year</th>
<th>Checks written</th>
<th>Converted to ACH</th>
<th>Paid as checks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>37.6 (99%)</td>
<td>37.3 (99%)</td>
<td>0.3 (1%)</td>
</tr>
<tr>
<td>2006</td>
<td>33.1 (92%)</td>
<td>30.5 (92%)</td>
<td>2.6 (8%)</td>
</tr>
<tr>
<td>2009</td>
<td>27.8 (88%)</td>
<td>24.5 (88%)</td>
<td>3.3 (12%)</td>
</tr>
<tr>
<td>2012</td>
<td>21.1 (87%)</td>
<td>18.3 (87%)</td>
<td>2.7 (13%)</td>
</tr>
</tbody>
</table>

CAGR*  

<table>
<thead>
<tr>
<th></th>
<th>2003-12</th>
<th>2009-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checks</td>
<td>-6.2%</td>
<td>-8.8%</td>
</tr>
<tr>
<td>Converted</td>
<td>26.3%</td>
<td>-6.3%</td>
</tr>
<tr>
<td>Paid as</td>
<td>-7.6%</td>
<td>-9.2%</td>
</tr>
</tbody>
</table>

* CAGR is compound annual growth rate.

Figures may not sum because of rounding.

SOURCE: 2013 Federal Reserve Payments Study
An on-us check is a check paid by the depository institution at which it was first deposited. An interbank check is a check paid at one depository institution but deposited at another. Figures may not sum because of rounding. * CAGR is compound annual growth rate.
Business-to-consumer and consumer-to-business checks declined the fastest

Number of checks written, by counterparty

<table>
<thead>
<tr>
<th>Counterparty</th>
<th>Bill &amp; invoice payment</th>
<th>POS</th>
<th>Bill &amp; invoice payment / POS</th>
<th>Other</th>
<th>CAGR* 2006-12</th>
<th>CAGR* 2009-12</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006 (total = 33.1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2B</td>
<td>10.7</td>
<td>4.4</td>
<td>1.9</td>
<td>17.0</td>
<td>-10.0%</td>
<td>-9.6%</td>
</tr>
<tr>
<td>B2B</td>
<td>5.4</td>
<td>1.8</td>
<td>1.1</td>
<td>8.3</td>
<td>-3.5%</td>
<td>-3.8%</td>
</tr>
<tr>
<td>B2C</td>
<td></td>
<td></td>
<td></td>
<td>5.6</td>
<td>-9.1%</td>
<td>-15.2%</td>
</tr>
<tr>
<td>P2P /C2C</td>
<td>2.2</td>
<td></td>
<td></td>
<td>2.8</td>
<td>-0.3%</td>
<td>-8.8%</td>
</tr>
<tr>
<td>2009 (total = 27.8)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2B</td>
<td>8.6</td>
<td>2.0</td>
<td>1.7</td>
<td>12.3</td>
<td>-7.3%</td>
<td>-8.8%</td>
</tr>
<tr>
<td>B2B</td>
<td>5.8</td>
<td>0.6</td>
<td>1.2</td>
<td>7.6</td>
<td>-3.8%</td>
<td>-3.8%</td>
</tr>
<tr>
<td>B2C</td>
<td></td>
<td></td>
<td></td>
<td>5.1</td>
<td>-9.1%</td>
<td>-15.2%</td>
</tr>
<tr>
<td>P2P /C2C</td>
<td>2.8</td>
<td></td>
<td></td>
<td>2.8</td>
<td>-8.8%</td>
<td>-8.8%</td>
</tr>
<tr>
<td>2012 (total = 21.1)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C2B</td>
<td>6.6</td>
<td>1.5</td>
<td>1.0</td>
<td>9.0</td>
<td>-10.0%</td>
<td>-9.6%</td>
</tr>
<tr>
<td>B2B</td>
<td>5.0</td>
<td>1.3</td>
<td>0.4</td>
<td>6.7</td>
<td>-3.8%</td>
<td>-3.8%</td>
</tr>
<tr>
<td>B2C</td>
<td></td>
<td></td>
<td></td>
<td>3.1</td>
<td>-9.1%</td>
<td>-15.2%</td>
</tr>
<tr>
<td>P2P /C2C</td>
<td>2.1</td>
<td></td>
<td></td>
<td>2.1</td>
<td>-8.8%</td>
<td>-8.8%</td>
</tr>
</tbody>
</table>

Estimates are based on a large sample of checks from 11 large commercial banks. “C” refers to consumers. “B” refers to businesses, nonprofits, or government organizations. The rise in the number of C2C checks from 2006 to 2009 may have, in part, been because of a change in the composition of the sample from 2006 to 2009 (explained in the detailed report). Figures may not sum because of rounding. * CAGR is compound annual growth rate.

SOURCE: 2013 Federal Reserve Payments Study
About three-quarters of checks were written for $500 or less

Relative frequency of transaction value ranges in 2012, checks written

<table>
<thead>
<tr>
<th>Checks written</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>$50 or less</td>
<td>29</td>
</tr>
<tr>
<td>$50.01-$100</td>
<td>15</td>
</tr>
<tr>
<td>$100.01-$500</td>
<td>32</td>
</tr>
<tr>
<td>$500-$1,000</td>
<td>11</td>
</tr>
<tr>
<td>$1,000.01-$2,500</td>
<td>7</td>
</tr>
<tr>
<td>$2,500.01-$5,000</td>
<td>3</td>
</tr>
<tr>
<td>More than $5,000</td>
<td>3</td>
</tr>
</tbody>
</table>

Estimates are based on a large sample of checks from 11 large commercial banks.
Smaller-value checks declined the most

Change in the number of checks written from 2009 to 2012, by transaction value ranges

<table>
<thead>
<tr>
<th>Transaction Value Ranges</th>
<th>Billions</th>
</tr>
</thead>
<tbody>
<tr>
<td>$50 or less</td>
<td>0.07</td>
</tr>
<tr>
<td>- $100</td>
<td>0.01</td>
</tr>
<tr>
<td>$50.01</td>
<td>1.19</td>
</tr>
<tr>
<td>- $500</td>
<td>0.26</td>
</tr>
<tr>
<td>$100.01</td>
<td>0.29</td>
</tr>
<tr>
<td>- $1000</td>
<td>0.03</td>
</tr>
<tr>
<td>$500.01</td>
<td>1.86</td>
</tr>
<tr>
<td>- $2500</td>
<td>0.05</td>
</tr>
<tr>
<td>$1000.01</td>
<td>3.07</td>
</tr>
<tr>
<td>- $5000</td>
<td>6.75</td>
</tr>
<tr>
<td>$2500.01</td>
<td>0.03</td>
</tr>
<tr>
<td>More than $5,000</td>
<td>0.05</td>
</tr>
<tr>
<td>Total</td>
<td>6.75</td>
</tr>
</tbody>
</table>

Estimates are based on checks sampled from 11 large commercial banks.

SOURCE: 2013 Federal Reserve Payments Study
More than 1 out of 6 checks were deposited by images in 2012, an increase from about 1 out of 8 in 2009.

Number of checks deposited, by format*

<table>
<thead>
<tr>
<th>Year</th>
<th>Image</th>
<th>Paper</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>3.0</td>
<td>20.7</td>
</tr>
<tr>
<td>2012</td>
<td>3.4</td>
<td>15.9</td>
</tr>
</tbody>
</table>

* Format means the method, either image or paper, by which accountholders deposit checks at the bank of first deposit.

Image checks deposited, by accountholder type

- **Business**: 93.5%
- **Consumer**: 3.8%
- **Mobile**: 2.7%
- **Other**: 2.7%

SOURCE: 2013 Federal Reserve Payments Study
The total number of checks returned unpaid dropped by almost half from 2009 to 2012

<table>
<thead>
<tr>
<th>Year</th>
<th>Total</th>
<th>On-us</th>
<th>Interbank</th>
<th>Interbank</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>164.2</td>
<td>131.1</td>
<td>33.1</td>
<td>131.1</td>
</tr>
<tr>
<td>2006</td>
<td>153.0</td>
<td>126.8</td>
<td>26.2</td>
<td>126.8</td>
</tr>
<tr>
<td>2009</td>
<td>126.8</td>
<td>107.4</td>
<td>19.4</td>
<td>107.4</td>
</tr>
<tr>
<td>2012</td>
<td>66.4</td>
<td>57.2</td>
<td>9.1</td>
<td>57.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Returns</th>
<th>On-us Returns</th>
<th>Interbank Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003</td>
<td>22.7 (12%)</td>
<td>21.9 (14%)</td>
<td>0.8 (4%)</td>
</tr>
<tr>
<td>2006</td>
<td>153.0</td>
<td>126.8</td>
<td>26.2</td>
</tr>
<tr>
<td>2009</td>
<td>126.8</td>
<td>107.4</td>
<td>19.4</td>
</tr>
<tr>
<td>2012</td>
<td>66.4</td>
<td>57.2</td>
<td>9.1</td>
</tr>
</tbody>
</table>

**CAGR***

- **Total:** -10.9%  -19.4%
- **On-us:** -9.6%  -22.3%
- **Interbank:** -11.0%  -18.9%

 Figures may not sum because of rounding. * CAGR is compound annual growth rate.

SOURCE: 2013 Federal Reserve Payments Study
ATM withdrawals were largest by number, while over-the-counter withdrawals were largest by value

Number and value of cash withdrawals at depository institutions in 2012, by method

<table>
<thead>
<tr>
<th>Method</th>
<th>Number of cash withdrawals</th>
<th>Value of cash withdrawals</th>
<th>Average value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Billions</td>
<td>Trillions</td>
<td></td>
</tr>
<tr>
<td>Over the counter/branches</td>
<td>26% 2.1</td>
<td>58% $1.5</td>
<td>$715</td>
</tr>
<tr>
<td>Wholesale vaults/smart safes</td>
<td>0.4% 0.03</td>
<td>15% $0.4</td>
<td>$12,299</td>
</tr>
<tr>
<td>ATMs</td>
<td>74% 5.8</td>
<td>27% $0.7</td>
<td>$118</td>
</tr>
<tr>
<td>Total</td>
<td>100% 7.9</td>
<td>100% $2.5</td>
<td>$322</td>
</tr>
</tbody>
</table>

Includes cash (currency and coin) withdrawals from domestic deposit accounts only. Does not include credit card cash advances (measured separately). May include withdrawals made with checks written for “cash” at the counter. Figures may not sum because of rounding.

SOURCE: 2013 Federal Reserve Payments Study
Over-the-counter deposits were largest by both number and value

Number and value of cash deposits at depository institutions in 2012, by method

<table>
<thead>
<tr>
<th>Number of cash deposits</th>
<th>Value of cash deposits</th>
<th>Average value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Billions</td>
<td>Trillions</td>
<td></td>
</tr>
<tr>
<td>Over the counter/</td>
<td>61% $1.6</td>
<td>$1,000</td>
</tr>
<tr>
<td>branches</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wholesale vaults/</td>
<td>5% $0.1</td>
<td>$4,978</td>
</tr>
<tr>
<td>smart safes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ATMs</td>
<td>37% $1.0</td>
<td>$372</td>
</tr>
<tr>
<td>Total</td>
<td>100% $2.8</td>
<td>$953</td>
</tr>
</tbody>
</table>

Includes cash (currency and coin) deposits to domestic deposit accounts only. Check deposits are not included. Figures may not sum because of rounding.

SOURCE: 2013 Federal Reserve Payments Study
Even as ATM withdrawals declined, the value increased faster than inflation; On-us (own bank) ATM growth is driving total ATM value.

Trends in ATM cash withdrawals 2003-2012, by withdrawal type

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of ATM cash withdrawals</th>
<th>Value of ATM cash withdrawals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Billions</td>
<td>Billions</td>
</tr>
<tr>
<td></td>
<td>On-us (own bank)</td>
<td>Foreign (other bank)</td>
</tr>
<tr>
<td>2003</td>
<td>5.9 (59%)</td>
<td>$500.0 (62%)</td>
</tr>
<tr>
<td></td>
<td>3.5 (59%)</td>
<td>308.9 (62%)</td>
</tr>
<tr>
<td></td>
<td>2.4 (41%)</td>
<td>191.1 (38%)</td>
</tr>
<tr>
<td>2006</td>
<td>5.8 (61%)</td>
<td>$578.8 (65%)</td>
</tr>
<tr>
<td></td>
<td>3.6 (61%)</td>
<td>376.4 (65%)</td>
</tr>
<tr>
<td></td>
<td>2.3 (39%)</td>
<td>202.4 (35%)</td>
</tr>
<tr>
<td>2009</td>
<td>6.0 (64%)</td>
<td>$646.7 (68%)</td>
</tr>
<tr>
<td></td>
<td>3.8 (64%)</td>
<td>439.9 (68%)</td>
</tr>
<tr>
<td></td>
<td>2.1 (36%)</td>
<td>206.7 (32%)</td>
</tr>
<tr>
<td>2012</td>
<td>5.8 (68%)</td>
<td>$687.0 (71%)</td>
</tr>
<tr>
<td></td>
<td>3.9 (68%)</td>
<td>489.3 (71%)</td>
</tr>
<tr>
<td></td>
<td>1.9 (32%)</td>
<td>197.7 (29%)</td>
</tr>
</tbody>
</table>

ATM cash withdrawal data was not collected for 2000. Figures may not sum because of rounding.

SOURCE: 2013 Federal Reserve Payments Study
The surveys offer different vantage points and insights into the use of the payments system

Payer
- Consumer
- Business

Network
- Operator
- Processor

Payee
- Consumer
- Business

Depository Institution

SOURCE: 2013 Federal Reserve Payments Study