Seeds of Change in Debit
The 2016 Debit Issuer Study

MEDIA EXHIBITS
Study Overview

- The Debit Issuer Study is the definitive assessment of U.S. debit market
  - *2016 Debit Issuer Study* is the 11th edition of the Study
  - 72 debit card issuers, representing ~153 MM debit cards and ~77,000 ATMs
  - ~48%\(^1\) of industry debit transactions (largest sample in Study’s history)

Study Scope

- Debit performance (consumer and business)
- Rewards
- Debit economics
- Networks
- Fraud
- EMV
- Mobile wallets
- Prepaid cards
- P2P
- ATMs

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1. Based on reported transactions in the *2016 Debit Issuer Study* as a share of total transactions processed by U.S. payment networks in *Nilson Report*
Study Identified Five Macro Debit Trends

1. Accelerating EMV Transition
2. Increasing Fraud
3. Emerging Mobile Wallets
4. Converging Debit Transaction Types
5. Continuing Strength of Debit
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Accelerating EMV Transition
Accelerating EMV Transition

Chip Debit Transactions Still a Small Fraction of Total

All debit card transactions

- Magstripe card transactions at non-chip terminals: 4%
- Chip card transactions at non-chip terminals: 32%
- Chip card transactions at chip-enabled terminals: 64%

Chip debit card transactions

- Chip card transactions at non-chip terminals: 89%
- Chip card transactions at chip-enabled terminals: 11%

Note: Excludes mobile payments, which are a very small fraction of the total
Accelerating EMV Transition

Issuers Ramp up Chip Debit Card Issuance

Initiation of chip debit card issuance

October 2015 – Network liability shift

Bars represent quarter when FI began, or plans to begin, EMV debit card issuance

% of issuers

Quarterly issuance  Cumulative issuance
Debit Card Conversion to be 76% Complete by Yearend

Cumulative conversion of U.S. debit cards to EMV

1. Transitions are measured at the end of each year (e.g., 2015 means as of December 31, 2015). Projection based on issuers’ forecasts of the rate of EMV debit card migration, weighted based on issuers’ card base sizes.
Increasing Fraud
Increasing Fraud

Fraud Loss Rates Increased in 2015

No-PIN POS debit net fraud loss rate

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Banks</td>
<td>6.1</td>
<td>6.7</td>
</tr>
<tr>
<td>Credit Unions</td>
<td>6.7</td>
<td>6.7</td>
</tr>
<tr>
<td>Community Banks</td>
<td>5.5</td>
<td>8.2</td>
</tr>
<tr>
<td>Overall</td>
<td>6.1</td>
<td>6.7</td>
</tr>
</tbody>
</table>

+$0.004 increase

($0.022) ($0.026) ($0.023) ($0.026)

PIN POS debit net fraud loss rate

<table>
<thead>
<tr>
<th></th>
<th>2014</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Banks</td>
<td>0.8</td>
<td>2.2</td>
</tr>
<tr>
<td>Credit Unions</td>
<td>0.5</td>
<td>($0.009)</td>
</tr>
<tr>
<td>Community Banks</td>
<td>0.3</td>
<td>($0.006)</td>
</tr>
<tr>
<td>Overall</td>
<td>0.7</td>
<td>($0.008)</td>
</tr>
</tbody>
</table>

+$0.005 increase or ~3x increase

($0.003) ($0.002) ($0.001) ($0.003)

1. Includes all debit transaction types not authorized with a PIN
Increasing Fraud
Sources of Debit Card Compromises Are Shifting

Percentage of debit fraud losses by point of compromise

- **Large Banks**
  - Mass data breach: 33%
  - Lost/stolen card: 16%
  - Skimming: 20%
  - Other: 5%
  - Family/friends: 2%
  - International: 4%
  - Cardholder fraud: 7%

- **Credit Unions**
  - Mass data breach: 49%
  - Lost/stolen card: 8%
  - Skimming: 4%
  - Other: 4%
  - Family/friends: 4%
  - International: 4%
  - Cardholder fraud: 16%

- **Community Banks**
  - Mass data breach: 36%
  - Lost/stolen card: 6%
  - Skimming: 30%
  - Other: 4%
  - Family/friends: 4%
  - International: 4%
  - Cardholder fraud: 17%

- **Overall (2015)**
  - Mass data breach: 33%
  - Lost/stolen card: 57%
  - Skimming: 15%
  - Other: 5%
  - Family/friends: 7%
  - International: 3%
  - Cardholder fraud: 11%

- **Overall (2014)**
  - Mass data breach: 57%
  - Lost/stolen card: 12%
  - Skimming: 17%
  - Other: 7%
  - Family/friends: 2%
  - International: 3%
  - Cardholder fraud: 11%

Many issuers define “Other” as internet or CNP fraud.
Emerging Mobile Wallets
Issuers with cards eligible to be loaded into mobile wallets

Emerging Mobile Wallets

Issuer Adoption of Mobile Payments Surged

<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>30%</td>
<td></td>
<td>65%</td>
</tr>
</tbody>
</table>
**Emerging Mobile Wallets**

Mobile Wallet Adoption and Usage Rates Remain Low

### Total est. mobile wallet debit transactions for January 2016

<table>
<thead>
<tr>
<th>Mobile Wallet</th>
<th>% of total debit cards enrolled</th>
<th>Transactions/enrolled card/month</th>
<th>Est. share of debit transactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apple Pay</td>
<td>3.5%</td>
<td>× 0.7</td>
<td>≈ 0.15%</td>
</tr>
<tr>
<td>Samsung Pay</td>
<td>0.2%</td>
<td>× 1.8</td>
<td>≈ 0.02%</td>
</tr>
<tr>
<td>Android Pay</td>
<td>0.2%</td>
<td>× 1.7</td>
<td>≈ 0.02%</td>
</tr>
</tbody>
</table>

1. As a proportion of the average monthly total of signature and PIN transactions for both consumer and business, for all issuers (includes those with no mobile wallets)
2. Based on the number of transactions from the 2013 Federal Reserve Payments Study with 2012-2015 growth rates from past Debit Issuer Studies

~8 million industry-wide monthly debit transactions
Emerging Mobile Wallets

Mobile Payments Experiences Are Mixed

Positive Experiences

- Ease of implementation and servicing
- Regular users are impressed with the speed and security of mobile payments

Negative Experiences

- Difficulties with user authentication and provisioning resulting in high call volumes
- Lack of merchant mobile wallet acceptance and an inconsistent customer experience

Issuers

Cardholders
Expectations High for Mobile Payments Adoption

Issuers’ views on share of debit transactions that will migrate to mobile over the next five years

- 2014 Study:
  - 0–9.99%: 30%
  - 10–14.99%: 21%
  - 15–24.99%: 28%
  - >25%: 21%

- 2015 Study:
  - 0–9.99%: 39%
  - 10–14.99%: 16%
  - 15–24.99%: 33%
  - >25%: 12%

- 2016 Study:
  - 0–9.99%: 46%
  - 10–14.99%: 14%
  - 15–24.99%: 27%
  - >25%: 13%
Converging Transaction Types
Converging Debit Transaction Types

Debit Transaction Types Are Increasingly Difficult to Distinguish

Monthly consumer debit transactions per active card by transaction type

By traditional definition

22.1
“Signature”
“PIN”
By functional definition

22.1
CP w/ signature
CP w/o signature
CNP dual-message
PAVD
CP with PIN
CP w/o PIN
CNP1

Note: CP = card-present, CNP = card-not-present, PAVD = PIN-authenticated Visa Debit
1. Includes PINless bill payment and internet PIN
Continuing Strength of Debit
Debit Transaction Growth Exceeded 6% in 2015

Overall consumer dual-message vs. single-message transaction growth
2015 projected\(^1\) vs. actual

<table>
<thead>
<tr>
<th></th>
<th>Projected</th>
<th>Actual(^*)</th>
</tr>
</thead>
<tbody>
<tr>
<td>% transaction growth</td>
<td>7%</td>
<td>8%</td>
</tr>
<tr>
<td></td>
<td>7%</td>
<td>5%</td>
</tr>
</tbody>
</table>

Issuers’ expected growth for 2015, as reported in the 2015 Debit Issuer Study
Issuers’ actual growth, based on values reported for 2014 and 2015 in this year’s Study

Projected debit growth in 2016
Overall transaction volume

<table>
<thead>
<tr>
<th></th>
<th>% transaction growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Large Banks</td>
<td>5%</td>
</tr>
<tr>
<td>Credit Unions</td>
<td>9%</td>
</tr>
<tr>
<td>Community Banks</td>
<td>6%</td>
</tr>
<tr>
<td>Overall</td>
<td>6%</td>
</tr>
</tbody>
</table>

1. Overall transaction growth was 6.26% Y-o-Y in 2015
**Continuing Strength of Debit**

**Consumer Debit KPIs Remain Strong**

**Consumer debit Key Performance Indicators**

2014 vs. 2015

- **Penetration**
  - 2014: 77%
  - 2015: 77%

- **Active Rate**
  - 2014: 68%
  - 2015: 66%

- **Txns per active card per month**
  - 2014: 21.2
  - 2015: 22.1

- **Dual-message % of Txns**
  - 2014: 62%
  - 2015: 63%

- **Average Ticket Size**
  - 2014: $37
  - 2015: $37

- **Annual spend per active card**
  - 2014: $9,287
  - 2015: $9,739

1. Percentage of cards that performed any transaction in the last 30 days
2. Blended average of single-message and dual-message transactions
3. Measure debit card prevalence and frequency of use; transaction volume is main revenue driver for regulated issuers
4. Measure spend and transaction types, important metrics for exempt issuers

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Continuing Strength of Debit

Business Debit KPIs Reflect Revenue Opportunity

Business debit KPIs
2013 vs. 2015

<table>
<thead>
<tr>
<th>Measure</th>
<th>2013</th>
<th>2015</th>
</tr>
</thead>
<tbody>
<tr>
<td>Penetration</td>
<td>46%</td>
<td>46%</td>
</tr>
<tr>
<td>Active Rate¹</td>
<td>49%</td>
<td>51%</td>
</tr>
<tr>
<td>Txns per active card per month</td>
<td>14.5</td>
<td>15.0</td>
</tr>
<tr>
<td>Dual-message % of Txns²</td>
<td>70%</td>
<td>71%</td>
</tr>
<tr>
<td>Average Ticket Size³</td>
<td>$92</td>
<td>$96</td>
</tr>
<tr>
<td>Annual spend per active card</td>
<td>$15,989</td>
<td>$17,002</td>
</tr>
</tbody>
</table>

Measure debit card prevalence and frequency of use; transaction volume is main revenue driver for regulated issuers

Measure spend and transaction types, important metrics for exempt issuers

¹ Percentage of cards that performed any transaction in the last 30 days
² Blended average of single-message and dual-message transactions
³ $17,002 rounded to nearest $100
Leading performers in penetration and usage far outperform the average

- Penetration rate, %
  - 4th: 62%
  - 3rd: 75%
  - 2nd: 82%
  - 1st: 92%
  - Mean: 77%

- Transactions per active card per month
  - 4th: 14.4
  - 3rd: 20.0
  - 2nd: 23.1
  - 1st: 31.2
  - Mean: 22.1
Continuing Strength of Debit

Regulated vs. Exempt Interchange Differential

Debit transaction types

- Dual-message
  - CP w/ signature
  - CP w/o signature
  - CNP
  - PAVD
- Single-message
  - CP with PIN
  - CP w/o PIN
  - CNP

By ‘functional’ definition

Average blended interchange rate for consumer debit
2015, regulated vs. exempt issuers

Regulated
- $0.24

Exempt
- $0.39

Note:
1. Includes PINless bill payment and Internet PIN debit
Note: CP = card-present, CNP = card-not-present, PAVD = PIN-Authenticated Visa Debit
Note: Exempt issuers’ cardholders average more transactions per active card/month, this is reflected in the annual revenue calculation
Continuing Strength of Debit

Debit Rewards Program Incidence is Unchanged

Rewards program incidence
By year

Rewards program incidence
2015, regulated vs. exempt
Issuers See Person-to-Person Payments as Growth Opportunity

% of FIs offering P2P payments in 2015

Yes: 51%
No: 49%

Overall: 50%

% making changes to program

No: 52%
Yes: 48%

% offering P2P payments in 2016

No: 50%
Yes: 50%
Most Issuers View FinTech as Both an Opportunity and Threat

Is FinTech an opportunity or a threat?

- **51%**: Both
- **24%**: Opportunity
- **18%**: Threat
- **7%**: Not sure
Issuers’ Top Opportunities in 2016…

<table>
<thead>
<tr>
<th>Change in Top Opportunities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2015</td>
</tr>
<tr>
<td>1  Improve PAU</td>
</tr>
<tr>
<td>2  Mobile wallet</td>
</tr>
<tr>
<td>3  EMV/tokenization</td>
</tr>
<tr>
<td>2016</td>
</tr>
<tr>
<td>Mobile wallet</td>
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<tr>
<td>EMV/tokenization</td>
</tr>
<tr>
<td>Improve PAU</td>
</tr>
</tbody>
</table>

% of Issuers

- Mobile wallet: 48% (Regulated), 53% (Exempt)
- EMV/tokenization: 35% (Regulated), 38% (Exempt)
- Improve PAU: 35% (Regulated), 24% (Exempt)
- Rewards/loyalty: 6% (Regulated), 26% (Exempt)
- Card control: 10% (Regulated), 21% (Exempt)
- Faster payments: 13% (Regulated), 6% (Exempt)
- Branding/marketing: 6% (Regulated), 12% (Exempt)
- P2P: 13% (Regulated), 3% (Exempt)
- Instant issuance: 3% (Regulated), 12% (Exempt)

Substantial disparity between regulated and exempt.

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...And Their Top Challenges for 2016

Change in Top Challenges

<table>
<thead>
<tr>
<th>Challenge</th>
<th>2015</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Fraud</td>
<td>69%</td>
<td>Fraud</td>
</tr>
<tr>
<td>2 Regulation</td>
<td>41%</td>
<td>Regulation</td>
</tr>
<tr>
<td>3 Maintaining margins</td>
<td>35%</td>
<td>Maintaining pace with new technology</td>
</tr>
</tbody>
</table>

% of Issuers

- Fraud: 69% (Regulated) 62% (Exempt)
- Regulation: 41% (Regulated) 35% (Exempt)
- Maintaining pace with new technology: 31% (Regulated) 5% (Exempt)
- Maintaining margins: 9% (Regulated) 27% (Exempt)
- Alternative payment forms: 19% (Regulated) 16% (Exempt)
- Competition from mobile and non-FIs: 16% (Regulated) 19% (Exempt)
- Mobile wallet: 13% (Regulated) 14% (Exempt)
- Faster Payments: 9% (Regulated) 5% (Exempt)
- EMV: 3% (Regulated) 8% (Exempt)

Substantial disparity between regulated exempt
Media Contact:

Anne Uwabor
832-214-0234
annerhodes@pulsenetwork.com