



The Outlook for Contactless Payments

RFID Security Workshop

John's Hopkins University

Nasreen Quibria

Federal Reserve Bank of Boston

January 23 & 24, 2008

Agenda

- **Emerging Payments Research Group (EPRG) Overview**
- **The Payments Landscape**
- **Value Proposition: Merchant & Consumer**
- **Security Concerns**
- **Future Contactless Growth**

Agenda

- **Emerging Payments Research Group (EPRG) Overview**
- The Payments Landscape
- Value Proposition: Merchant & Consumer
- Security Concerns
- Future Contactless Growth

Emerging Payments Research Group

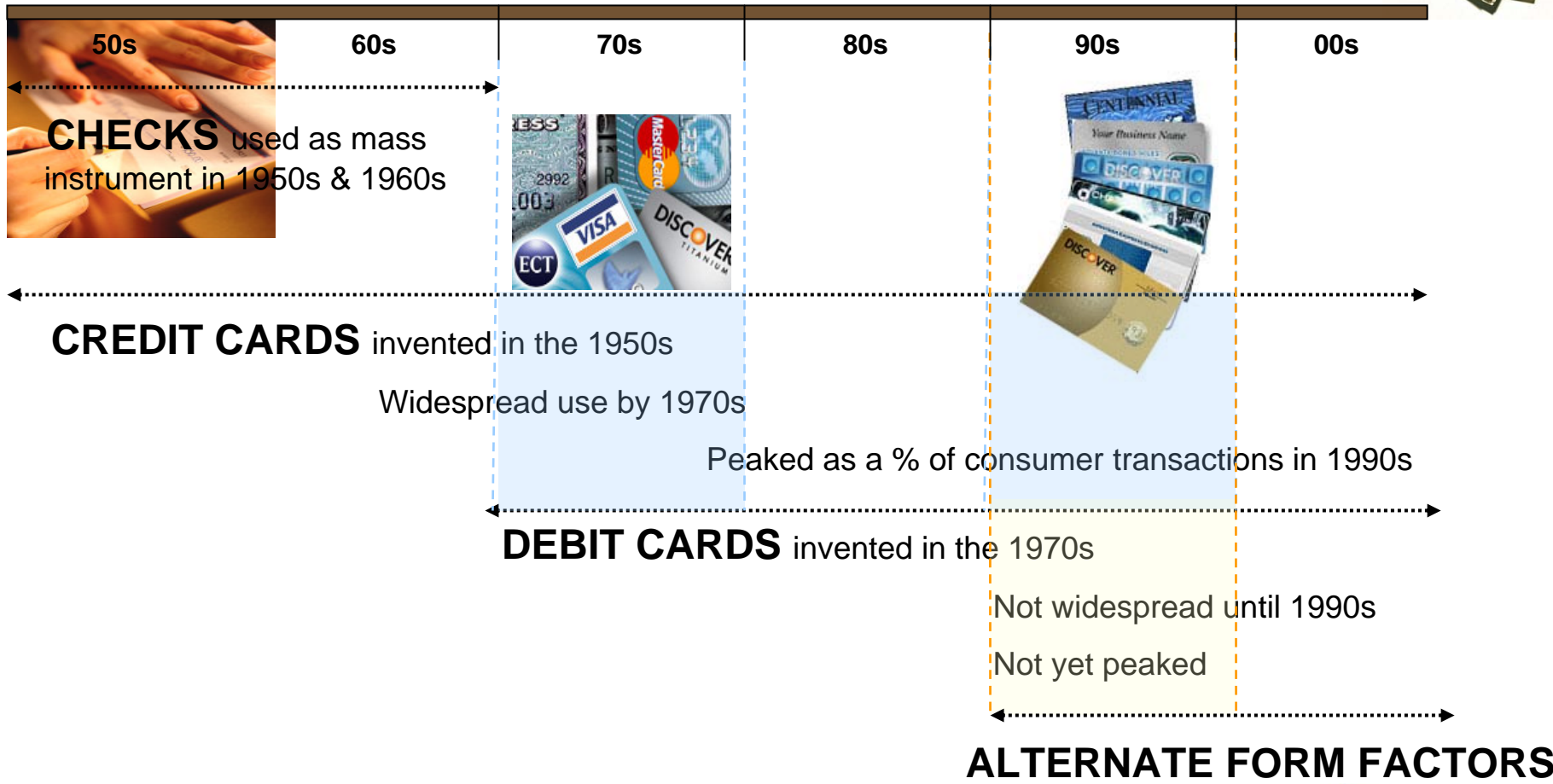
Research why consumers choose different payment methods

- Understanding consumer payment behavior helps the Fed with long term planning, policy decisions
- Knowledge can also benefit external stakeholders
 - Help make more informed payment product decisions for one's business and customers
 - Identify possible opportunities and barriers to acceptance (e.g. risk issues, competition)

Agenda

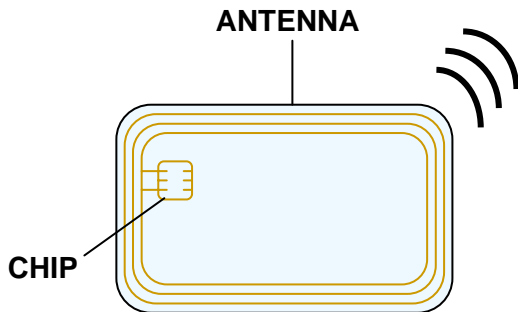
- Emerging Payments Research Group (EPRG) Overview
- **The Payments Landscape**
- Value Proposition: Merchant & Consumer
- Security Concerns
- Future Contactless Growth

Evolution of Payments



Contactless Technology

Card or device with an embedded short range radio frequency (RF) tag that transmits information wirelessly by holding up the card near a secure reader



- ❑ **Communication:** Based on short-range RF – also known as Near Field Communication (NFC) – technology at 13.56 MHz
- ❑ **Read Range:** Up to 10 cm (or 2 inches)
- ❑ **Standard:** ISO/IEC 14443
- ❑ **Security:**
 - 128-bit Triple DES Encryption
 - Dynamic CVV - Unique watermark created per transaction
 - Transaction processed via existing fraud detection tools of secure payment networks

Contactless Landscape

- Discover took a “wait and see” approach - piloting RFID enabled credit cards, fobs, and cell phones in December 2006
- Discover is ready to roll out its “ZIP” contactless payment solution



- First issuer to launch contactless cards nationally in June 2005
- “ExpressPay” available on its Blue and Clear cards, fobs

- Accepted at over 73,000 merchant locations worldwide
- MasterCard “PayPass” cards, fobs, phones: *over 19 million globally*



- Visa “payWave” cards worldwide: *over 7 million*
- Testing mobile payment platform

SOURCE: Company Reports & Press Releases, 3Q 2007

...Accepted at over 73,000 merchant locations

Agenda

- Emerging Payments Research Group (EPRG) Overview
- The Payments Landscape
- **Value Proposition: Merchant & Consumer**
- Security Concerns
- Future Contactless Growth

Value Proposition: Merchant & Consumer

Merchants

Speed

Faster transactions and increased throughput
(transaction completed in less than .5 seconds) SOURCE: Visa USA

Revenue

Potential lift in value per transaction
(40% increase in average ticket sales) SOURCE: MasterCard

Customer
Relationship
Management

Increased customer satisfaction; loyalty programs

Improved
Accountability

Higher degree of accuracy and reduced loss from fraud

Consumers

Speed

Save time by not having to swipe or sign for transactions less than \$25
(40% faster than cards and 55% faster than cash) SOURCE: MasterCard

Convenience

Easier than having to get and carry cash

Security

Greater control over the payment device (never leaves consumer's hands);
lower personal risk of theft (from carrying cash);

Agenda

- Emerging Payments Research Group (EPRG) Overview
- The Payments Landscape
- Value Proposition: Merchant & Consumer
- **Security Concerns**
- Future Contactless Growth

Security Concerns

- ▶ As of January 2008, **over 215 million data records** of U.S. residents have been **exposed** due to security breaches since January 2005

SOURCE: Privacyrights.org

- Media reports confuse consumers to equate data breaches with identity theft (i.e., creating a new identity to commit fraud)
- Lost laptops and other devices were the source of most data breaches, but hacking of systems created the most exposure



Security Concerns

Magnetic Stripe

- Name, card account number, security code
- PIN - added security measure with debit cards



Contactless

- User information not exposed: no name, truncated account number (Best practice)
- Dynamic CVV, encrypted data
- Mailing label
- Read only in close range
- Chip technology is expensive to replicate

Consumers have zero liability protection from fraud/unauthorized transactions

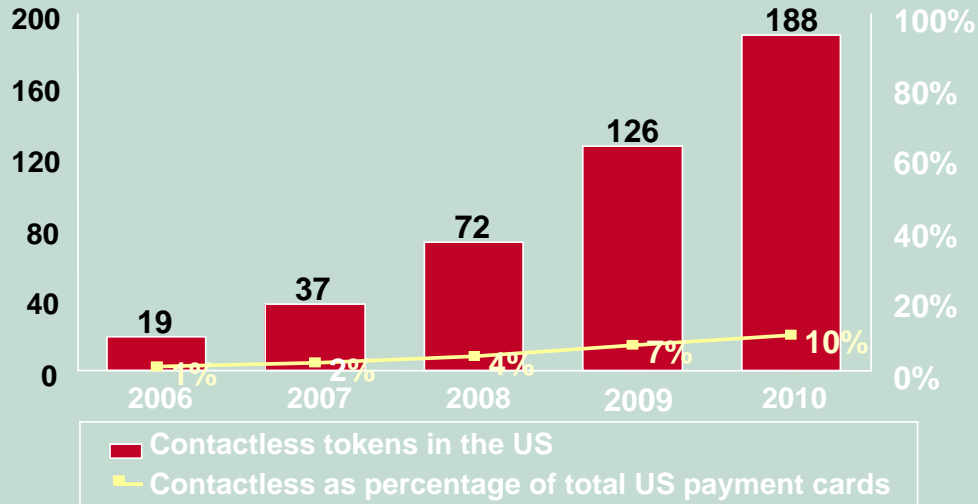
Agenda

- Emerging Payments Research Group (EPRG) Overview
- The Payments Landscape
- Value Proposition: Merchant & Consumer
- Security Concerns
- **Future Contactless Growth**

Future Contactless Growth

FORECAST

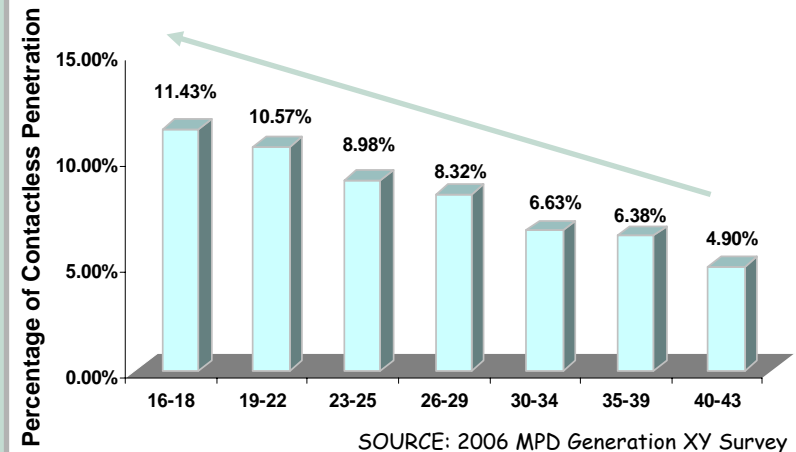
10% of US payments will be contactless by 2010...



SOURCE: JupiterResearch Contactless Payments Research, 10/2006

DEMOGRAPHICS

Adopters will be the younger generation...



Security concern is a potential barrier to adoption – 61% of non-adopters report safety as the top concern

SOURCE: 2006 Javelin Research & Strategy Contactless Payment Survey





<http://www.bos.frb.org/economic/eprg/>