Tap and Grow? The Case For Contactless Payments In The U.S.

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Federal Reserve Bank of Boston
First, A Story . . .
Their Biggest Challenge?

Consumer Adoption
### Examining The Market For Contactless

**Fewer than 12% of the market for contactless had contactless readers and less than 0.5% of overall merchant locations overall did.**

<table>
<thead>
<tr>
<th></th>
<th>New York</th>
<th>Boston</th>
<th>San Francisco</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Current contactless merchant locations</strong></td>
<td>984</td>
<td>402</td>
<td>64</td>
</tr>
<tr>
<td><strong>Total # of targeted/potential contactless merchant locations</strong></td>
<td>10,872</td>
<td>3,230</td>
<td>2,407</td>
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<td><strong>Current contactless penetration (as a percentage of potential contactless merchant locations)</strong></td>
<td>9%</td>
<td>12%</td>
<td>3%</td>
</tr>
<tr>
<td><strong>Estimated total # of merchant locations</strong></td>
<td>246,042</td>
<td>74,779</td>
<td>56,298</td>
</tr>
<tr>
<td><strong>Current contactless penetration (as a percentage of all merchant locations)</strong></td>
<td>0.40%</td>
<td>0.54%</td>
<td>0.11%</td>
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</tbody>
</table>

Based on MasterCard PayPass merchant locations. Includes merchant locations within 10 miles of the cities. Sources: MasterCard; Superpages.com.
The Decision:
Mag Stripe Now, Maybe Contactless Later
"This is really an innovative introduction that will fundamentally change how people use cards, as significant as when the magnetic stripe was introduced 30 years ago."

*Chase Card Services*

Blue with ExpressPay will help consumers and merchants reap substantial benefits in terms of speed and convenience."

*American Express*

“We're confident our customers will embrace the convenience and speed the cards offer, and enjoy the benefit of being able to track their smaller purchases for greater financial control."

*Wells Fargo Card Services*
Some Merchants Are Getting On Board

PayPass Locations in the New York Metro Area
(top 6 categories)

- Drug Stores and Pharmacies: 342
- Fast Food Restaurants: 288
- Automobile Parking Lots and Garages: 150
- Convenience Stores, Misc. Food Stores and Vending: 81
- Grocery Stores and Supermarkets: 38
- Motion Picture Theaters: 18

Source: MasterCard PayPass website.

“Given that so many of our customers are all about speed of service and convenience, this is a perfect fit.” – McDonalds
And (So They Say) For Good Reason

“In one pilot, participating merchants realized a 20-30 percent increase in customer spending when using contactless cards as compared to customers paying by cash.”

Source: Chase Blink Fact Sheet
But Others Continue To Sit On The Sidelines

“We have to see where the market is going with this.”

Dunkin Donuts
Forecasts of Contactless Payments in the U.S. (Number of Contactless Cards)

Between 2004 and 2006, Jupiter cut its forecast for the number of contactless cards in circulation by 70%.
The Current State

Forecasts of Contactless Payments in the U.S.
(Spending on Contactless Cards as a Percent of Total Purchase Volume)


Jupiter also cut their forecast of contactless as a percentage of all card purchasing by more than 75%
A “Real World” Snapshot

MPD Reality Payments

MPD Generation XY Survey
The Scoop On Contactless Penetration

“Do you have a contactless card?”

Percent that said “Yes”

Notes: Based on Market Platform Dynamics Generation XY Survey. Internet-based survey administered quarterly (March, June, September and December) in 2006. 4,000 people between the ages of 16 and 43 surveyed in total.
Contactless Transactions as a Percentage of All < $25 Purchases

(Number of Transactions) 1.8%
(4 contactless transactions out of 222 transactions)

(Amount of Transactions) 1.44%

But fewer than 2% of all transactions take place on a contactless card and account for only slightly more than 1% of all spending.

Source: MPD 2006 Gen XY survey.
What Is The Available Market For Contactless?

Total Number of Transactions
2,442

- Greater than $25
  - 1,110
- Less than $25
  - 1,080
- Online
  - 252

Total Amount of Transactions
$129,750

- Greater than $25
  - 12,753
- Less than $25
  - 87,103
- Online
  - 29,984

< $25 transactions account for 45.6% of all transactions but less than 10% of all spending

Source: MPD 2006 Gen XY survey.
When was the last time you saw anyone using a PayPass or contactless card?

- Yesterday: 76%
- Last Week: 7%
- Last Month: 7%
- At Least a Month Ago: 17%
- Never: 3%
- Last 2 Weeks: 0%
- Not Sure: 0%

How many people do you see using it every week, on average, according to your best estimate?

- 11–20: 20%
- 21–30: 10%
- 31–40: 0%
- 41–50: 10%
- 5–6: 10%
- 1–5: 17%
- Less than 1: 10%
- More than 50: 10%
- Not Sure: 13%

Contactless accounts for less than 0.5% of all weekly customers in an average CVS store

Source: MPD 2006 Gen XY survey.
Calculating The ROI For Merchants NOW

\[
\left\{ \text{little benefit for purchases} \right\} + \left\{ \text{Not enough consumers with contactless cards} \right\} + \left\{ \text{A very long timeline until enough consumers have cards} \right\} = \text{Not enough incentive to install contactless readers}
\]

Unless…
There’s a killer app that drives consumer and merchant adoption.
## Killer App #1: Closed Loops

<table>
<thead>
<tr>
<th>Octopus Cards</th>
<th>Shanghai Public Transportation Card</th>
</tr>
</thead>
<tbody>
<tr>
<td>• 1997 joint venture of five major transport operators</td>
<td>• 1999 joint venture of major transport operators/companies</td>
</tr>
<tr>
<td>• More than 14 million cards in circulation</td>
<td>• More than 13 million cards in circulation</td>
</tr>
<tr>
<td>• Accepted at 444 locations</td>
<td>• Accepted for subway, taxi, ferry, tolls, stadiums, parking meters, garages, and gas stations.</td>
</tr>
<tr>
<td>• Generates nearly a quarter of its transactions from non-transit purchases</td>
<td>• Compatible with public city transit systems in several cities nearby.</td>
</tr>
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Sources: Octopus and SPTC websites.
## A Quick Comparison

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<tr>
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<th>Octopus</th>
<th>SpeedPass</th>
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<tr>
<td><strong>Target market</strong></td>
<td>Anyone using public transportation</td>
<td>Frequent Exxon Mobil users</td>
</tr>
<tr>
<td><strong>User penetration</strong></td>
<td>High – 95% of the population possess the card</td>
<td>Low – less than 2% penetration rate</td>
</tr>
<tr>
<td><strong>Leverage to force contactless to users</strong></td>
<td>High – monopoly in transit systems</td>
<td>Low – lots of ways to pay</td>
</tr>
<tr>
<td><strong>Attractiveness to merchants</strong></td>
<td>Very attractive due to the high user penetration</td>
<td>Low – too few SpeedPass holders. And most SpeedPass holders also carry mag stripe credit/debit cards</td>
</tr>
<tr>
<td><strong>Expansion into open systems</strong></td>
<td>Successfully expanded into non-transit payments</td>
<td>Unsuccessful trial in McDonald’s; Now limited to Exxon Mobil stations</td>
</tr>
</tbody>
</table>

**How does a closed loop expand?**

**Acceptance is the key.**
Killer App #2: Mobile

“Do you have a mobile phone?”

Percent that said “Yes”

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<tbody>
<tr>
<td>67.1%</td>
<td>91.3%</td>
<td>96.0%</td>
<td>94.2%</td>
<td>92.4%</td>
<td>90.3%</td>
<td>92.3%</td>
<td></td>
</tr>
</tbody>
</table>

Overall mobile phone penetration in the U.S. is 73.4 percent.

Source: MPD 2006 Gen XY survey. Overall penetration figure based on number of active subscribers as of June 2006 according to CTIA Wireless.
The NTT DoCoMo Wallet Phone Case Study

- High mobile phone penetration in Japan: 97.2 million subscribers or approx. 76% penetration rate.
- Broad acceptance of advanced non-voice features of mobile phone: as of March 2007, 69% of NTT DoCoMo users subscribe to 3G services.
- Proprietary FeliCa network (joint venture of NTT DoCoMo and Sony).
- Ignited the market by offering customized solutions to targeted big stores, and putting phones into the hands of consumers.
- About 20.8 million e-wallet handsets in use as of May 2007.
- More than 60,000 readers in place as of October 2006.

Source: NTT DoCoMo website.
Killer App #3: Eliminate The $25 Limit

Broad use by consumers (and acceptance by merchants) will require eliminating the $25 limit

Is personal biometrics a solution to the $25 ceiling?
It took 16 years for debit cards to account for 3% of all card volume – plus an aggressive card distribution program.

Bar codes are ubiquitous for both end users and merchants.

Contactless chips need to use their intelligence to be superior to otherwise “dumb” solutions.
At least half of you think it will be between 5 and 10 years before contactless hits a critical point.

Source: MPD 2006 Gen XY survey.
Your View Of The Obstacles

“What are the TWO biggest factors that hinder adoption of contactless by merchants?”

Lack of a compelling business model is a gating factor.

Source: MPD 2006 Gen XY survey.
Igniting the Market: Getting Both Sides On Board

- Leverage the intelligence of chip-based cards
  - Create rich software ecosystems with apps that rely on chips (security issues...)

- Establish a meaningful value proposition for end users.
  - Speed and convenience can only be part of the value delivered

- Use closed loops to drive open acceptance
  - Popularize in closed loops before expanding into open loops
Further Reading

Catalyst Code:
The Strategies Behind The World’s Most Dynamic Companies
David S. Evans and Richard Schmalensee
www.catalystcode.com

Paying with Plastic:
The Digital Revolution in Buying and Borrowing
David S. Evans and Richard Schmalensee
MIT Press, 2nd ed., 2006
Thanks!

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