Discussion of “Multihoming in the Market for Payment Media”

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Motivation and Summary of the Paper

- To identify factors influencing multihoming (# payment media)
- **Main Hypothesis**: Consumers’ awareness is a key factor
- Empirical testing using data on young Finnish cardholders
- **Result**: Becoming informed leads to a 20% increase in the expected # of cards held by consumers
Definitions

• The authors identify multihoming with the number of payment media

• However, the paper is restricted to payment cards only

• Cash and checks are excluded (for a good reason, as checks are hardly used in Northern Europe)

• Question: Shouldn’t multihoming refer to # debit/charge cards linked to households’ main bank account?
Payment Media: A Discussion

• Payment media can be classified according to various criteria.

• One common classification method relates to how cards are linked to the households’ various accounts:
  - Linked (checks, charge/debit/credit & ATM cards)
  - Other linked: Mobile phone & Internet providers
  - Non-account linked (currency, e-cash, travelers’ checks)
  - Card dependent: PayPal, GoogleCheckout, etc.
Payment Media: Con’d

• Second classification method is by “real” costs (excluding fees):
  – Costs borne by cardholders: Time loss, theft and misplacement, float, acceptability
  – Cost borne by merchants: Time loss, float
  – Transaction clearing costs borne by card issuers and acquirers.

This paper focuses on cardholders only (assuming a large, non-binding, supply of cards)
Lessons from E-cash

• Why the e-cash story is so important?

• Because it provides a “negative” example of an adoption failure (by consumers)!

• Three advantages to e-cash:
  1. Final settlement (just like cash)
  2. Anonymity (just like cash)
  3. Time saving (no need to carry and count coins and notes)
The Failure of E-cash con’d

• Two disadvantages to e-cash (both result in a loss of cash):
  1. Security (misplacement, loss, but not theft)
  2. Card failure (magnetic errors),

In contract, for the commonly-used “linked” cards, the above two disadvantages are irrelevant. However, “linked” cards are costly.
Key Question: Why Holding More Than One Card (if all linked to the same bank account)?

• Advantages:
  1. “Insurance” against unexpected card failure (read-error)
  2. Diversification (if linked to different or foreign accounts)

• Disadvantages:
  1. Time consuming bill management and fraud prevention
  2. Multiple fees

Can the authors control for the above?
The Model

\[ \tau = \text{total time spent on paying for } T \text{ transactions is} \]

\[ \tau = AT^{\gamma_1} \left( \frac{T}{n} \right)^{\gamma_2} + T \cdot \text{const.} \]

where const. could measure the time cost of card handling & verification, \( n \) is the \# cards.

The account holder chooses \( n \) to solve

\[ \min_n \left\{ \omega \left[ AT^{\gamma_1} \left( \frac{T}{n} \right)^{\gamma_2} + T \cdot \text{const.} \right] + \psi n \right\} \]

Objective function is convex, interior minimum exists
The Model (con’d)

The cardholder’s cost-minimizing number of cards is therefore,

\[ n = T^{\frac{\gamma_1 + \gamma_2}{1 - \gamma_2}} \left( \frac{A \omega \gamma_2}{\psi} \right)^{\frac{1}{1 - \gamma_2}} \]

Assumption: \( \psi'(a) < 0 \implies \) awareness reduces card adoption cost

Result: Awareness increases number of used cards
The Model (mixing flow and stock costs)

Mixing flow cost with stock cost in cardholder’s objective function

\[ \omega \left[ A T^{\gamma_1} \left( \frac{T}{n} \right)^{\gamma_2} + T \cdot \text{const.} \right] + \psi n \]

That is, \( T \) is a flow, whereas \( n \) is a stock. To pursue this framework one needs to estimate the \( \# \) transactions in a lifetime of a card, and bring all to a common denominator.
The Model: Possible Modification

Let $\tau$ be the time cost per transaction. Then,

$$\tau \overset{\text{def}}{=} An^{-\gamma} + \text{const.} \quad \text{for } \gamma > 0$$

Let $T = \# \text{ yearly transactions}$. $\psi = \text{yearly cost of holding a card}$. Then, a cardholder solves

$$\min_{n} \left[ T \cdot \tau + \psi \cdot n \right] = \min_{n} \left[ T(An^{-\gamma} + \text{const.}) + \psi \cdot n \right]$$
Some Minor Disagreements

p.10: “...equate use of cash to using “virtual payment card.” “ATM card is a payment card with improved security an privacy...” Cash (legal tender) should be viewed very differently by consumers.

p.4: “The model predicts that the optimal level of multihoming depends on consumer awareness, because the non-monetary costs are inversely related to it.” The connection between costs and awareness is not clear.

p.16: Why \( \omega \) (value of time) & \( T_i \) (# transactions) are unobservable? Can’t you obtain this data?
Some Needed Clarifications 1

What type of survey data the authors used to characterize awareness ($a_i$). More precisely, authors should specify

- Exact questions answered by consumers concerning awareness (i.e., obtaining information)

- Shouldn’t you control of the media type? (i.e., brand-name credit cards versus ATM)
Some Needed Clarifications 2

- Cardholders hold on average 1.6 cards. Since 1 card is ATM, it means that many consumers hold ATM card only.

- i.e., do you have enough cards to perform this test? (Is Fig.1 sufficient for drawing conclusions?)

- Controlling for age, perhaps banks don’t issue charge/credit cards to young before college.

- Having at most 2 cards may be for different purposes (ATM for withdrawing cash and local stores), whereas Visa and M/C for more global transactions.
Some Needed Clarifications 3

• p.26: You write: “83% of multihomers are better informed.” Is this a causality statement or correlation?

• Why am I asking this? Clearly, if a consumer has a card, the consumer must be informed about the card and its usage.

• In fact, what does it mean to have a card without being informed about it?

• Isn’t there a problem with reversed causality?