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 <u>linked</u> 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

τ = total time spent on paying for T transactions is

$$\tau \stackrel{\text{def}}{=} AT^{\gamma_1} \left(\frac{T}{n}\right)^{\gamma_2} + \underbrace{T \cdot \text{const.}}_{\text{my modification}}$$

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 # 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 # used cards

The Model (mixing flow and stock costs)

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

$$\omega \underbrace{\left[AT^{\gamma_1} \left(\frac{T}{n} \right)^{\gamma_2} + T \cdot \text{const.} \right]}_{\text{flow (transactions)}} + \underbrace{\psi n}_{\text{stock (adoption)}}$$

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 τ be the time cost per transaction. Then,

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

Let $T = \#$ yearly transactions. $\psi = $ 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 ω (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 useage

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

- Isn't there a problem with reversed causality?