The No Surcharge Rule and Card User Rebates:

Vertical Control by a Payment Network

by

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1. Introduction

Electronic Payment Network (EPN)

- Enables transactions between card users & merchants (we abstract from credit role)
- 2 types of EPN:

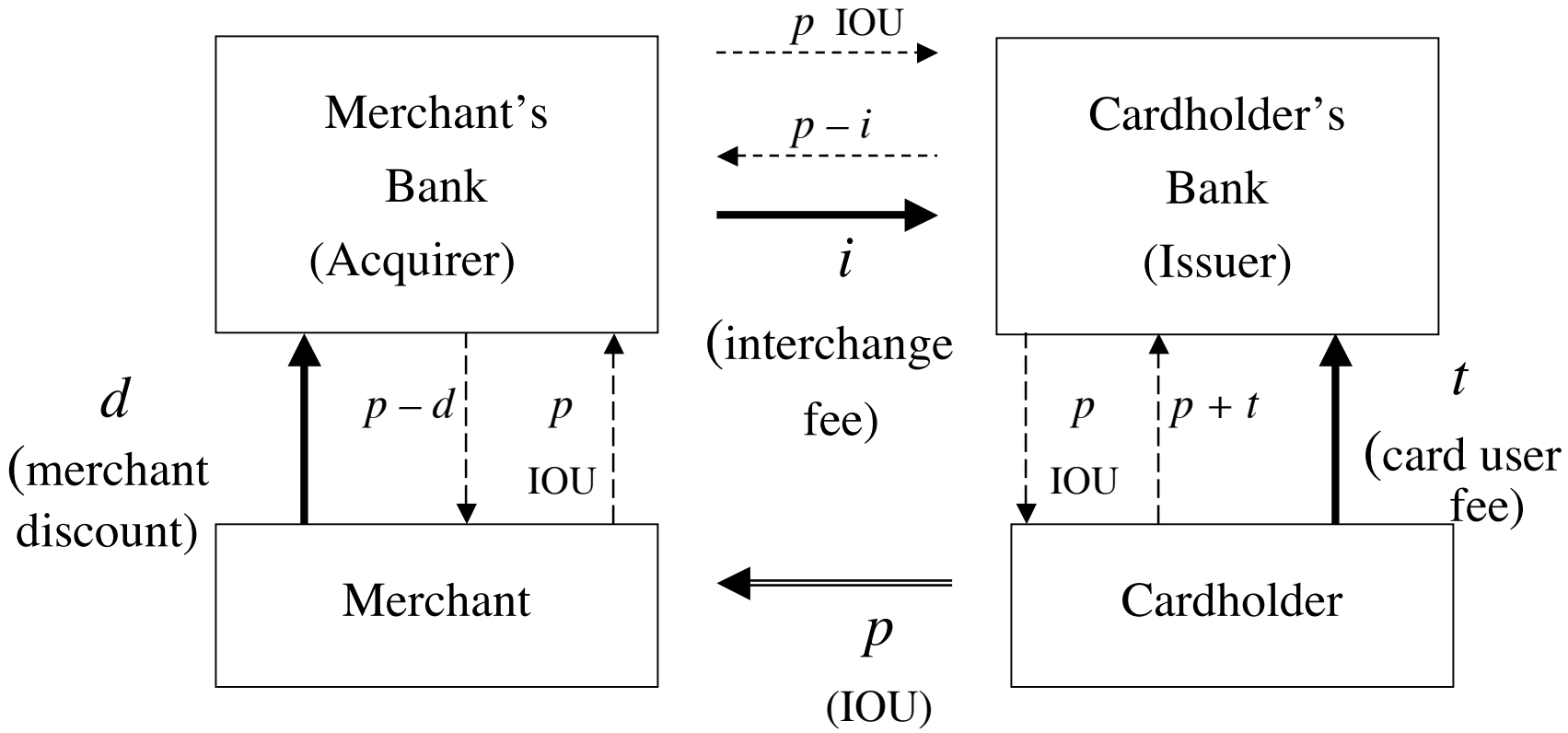
Proprietary Network (e.g. Amex, Discover)

- Same entity sets fees to card users and merchants

Bankcard Association (e.g. MasterCard, Visa)

- In typical transaction, merchant's bank ("acquirer") differs from card user's bank ("issuer")
- Acquirer pays Issuer ***interchange fee***.

Bankcard Network



Controversial practices

- *Interchange fee*: Too high? Joint setting = price fixing?
- *Tying* some cards to other(s): 'Honor All Cards' rule
- ***No Surcharge 'Rule'*** (NSR) – our focus: Merchant may not charge higher price for card vs. other payment modes (cash, checks,…). NSR constraint may reflect:

  1) laws (federal or state in US), or EPN rules

  2) trading environment: merchant reluctance to set different prices; transaction costs

Importance of NSR

- With unrestricted surcharging, *tying* is ineffectual. *Interchange fee* also is **'neutral'** — only EPN's total fee matters, not its allocation between merchants & card users
- With NSR: EPN's fee *structure* matters; *total* fee also changes. Some policy issues:

  – In case 1), repeal NSR? In case 2), intervene in EPN pricing?

2. Model

- 2 consumer groups: *e* use only cards; *c* only cash
  - $\alpha \equiv$ ratio of cash/card users (relative size of cash market) — exogenous
  - $b \equiv$ merchant's extra benefit from card v. cash sale
- Same demand curves for transactions; downward sloping — not fixed quantity
  - Existing literature: mix of cash v. card users is endogenous;
    but total quantity of transactions is fixed
  - Here, users are exogenous, but *per capita* transactions of *e* and *c* are endogenous
- Price > marginal cost at successive levels: single EPN, local monopolist merchants
  - abstract from inter-network competition
  - abstract from imperfect merchant competition

Two Models of EPN's Conduct:

Main Model: *Proprietary EPN* sets all fees; ⇒ double-marginalization in card pricing. So NSR has potentially efficient role in boosting card transactions.

Model also fits bank association *if* 1) & 2) met:

1) Acquirers are *competitive* but issuers have market power; ⇒ issuers set merchant discount d — via interchange fee i — to maximize issuers' profits.

2) Issuers are *collusive* in setting fees to card users; ⇒ card user fee (t) also set to maximize issuers' joint profit.

Another polar case: retain 1), but assume *issuers almost perfectly competitive*:

2') Earn a minimal margin ε — banks compete away almost all their rents from interchange fee i via rebates to card users ($i + t_b = \varepsilon \Rightarrow t_b = -i + \varepsilon$).

- Banks' net profit = ε X (total card transactions). EPN maximizes issuers' profit by imposing NSR and setting i to maximize card transactions.

SOME QUESTIONS & ANSWERS

1. **Given double marginalization on card pricing, does NSR — which squeezes merchant's card margin — improve overall pricing? In general, NO:**

   - Maximum RPM analogy is flawed: NSR impacts also other market (cash)
   - Optimal Taxation (Ramsey Pricing) analogy is flawed, as EPN is unregulated
     - For given EPN fees, NSR ⇒ merchant sets uniform *intermediate* price for cash & cards, so overall welfare ↑
     - But NSR induces change in fees: with No Rebates, total fee ($i+t$) can ↑ ; with Rebates, can get greater reverse misallocation (cash → cards)

2. **Do rebates to card users (cash, miles…) necessarily reflect EPN's inability to limit competition among its issuing banks? NO:**

   - Rebates help also a monopolist proprietary EPN to increase impact of NSR

3. **If card issuers are (almost) perfectly competitive, is NSR irrelevant? NO:**

   - NSR + rebates ⇒ worsens cards v. cash 'mix' if b small, improves mix if b large.

3. EPN's Preferred Fee Structure with NSR

Now EPN wants to maximize merchant fee, *minimize* card user fee (Prop. 2):

- Suppose EPN
  (1) raises merchant fee by Δ, and
  (2) cuts card fee by Δ (or increases rebate), so total EPN fee is unchanged

- (1) raises merchant's Marginal Cost for card sales by Δ;
  (2) raises card users' Demand by Δ
  With surcharging, merchant raises only card price by Δ ⇒ transactions unchanged ('neutrality')

- With NSR, merchant raises price *less than* Δ, because price must be same for cash, where (1) & (2) are absent. So *card transactions* ↑, hence EPN profit ↑.

What Determines EPN's equilibrium fees? Relevant constraints:

- *Merchant Acceptance (MA)*: (i, t) must leave merchant at least the profit it would get if served only cash users.
  - As size of cash market $(\alpha)\uparrow$, cash-only profit $\uparrow$, so EPN's latitude $\downarrow$
- Rebates to card users feasible or not?
  - Section 4—"No Rebates" ($t \geq 0$): EPN sets card user fee $t = 0$, and *MA* constrains merchant fee i if and only if $\alpha >$ some threshold α^*
  - Section 5—Rebates Feasible: EPN will grant them ($t < 0$). *MA* determines (i, t)

    (unless α is fairly small; then binding constraint is ensuring merchant does not price out *cash* users)

4. EPN Fees Under No Rebates

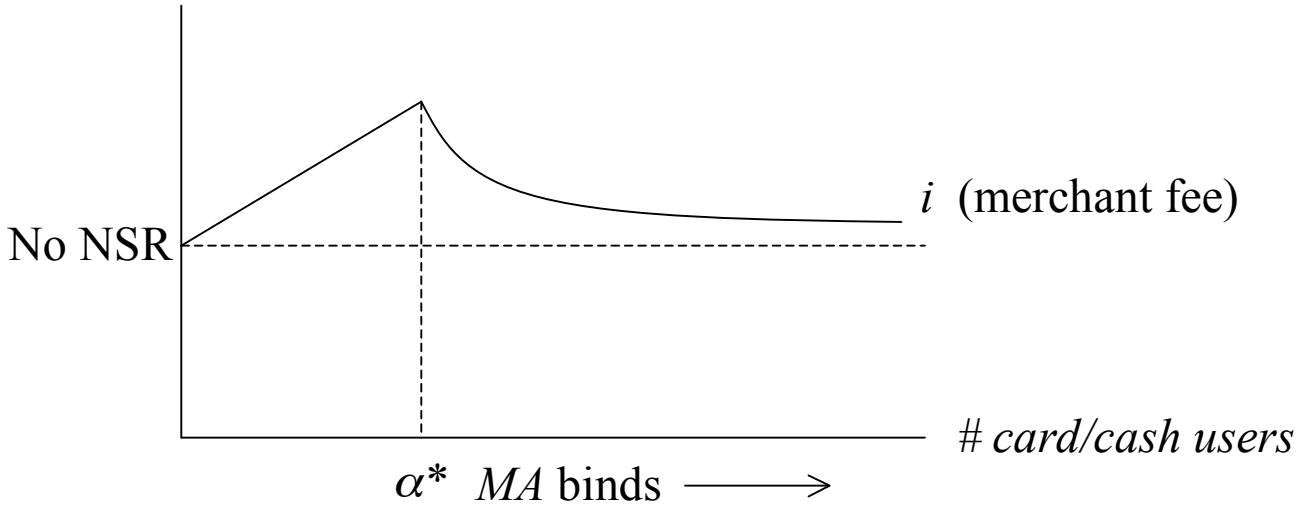
Proposition 3 (fees): EPN sets

i) Card user fee: $t = 0$. So per-capita cash & card transactions are equal

ii) Merchant fee: Let $\alpha^* \equiv$ lowest α for which *Merchant Acceptance* (*MA*) binds
- If $\alpha \leq \alpha^*$ (*MA* does not bind), i is at EPN's optimal level given $t = 0$
- If $\alpha > \alpha^*$, *MA* constraint determines i.

iii) For $\alpha > \alpha^*$: EPN's 'net tax' $(i - b) \downarrow$ as $\alpha \uparrow$ (but unaffected by b, merchant benefit)

iv) (Linear Demand): For all α, under NSR $i >$ EPN's total fee under no NSR



Proposition 4 (transaction quantities & welfare — NSR w No Rebates vs. no NSR):

i) *MA* not binding. For $\alpha \leq \alpha^*$, under NSR:

a) **Cash** users' per-capita quantity (& consumer surplus) ↓

b) **Card** users' quantity unchanged if merchant's benefit $b = 0$, and ↓ if $b > 0$

⇒ NSR harms *Total Surplus*, *Consumer Surplus* of each group, *Merchant Profit*.

ii) *MA* binding. For $\alpha > \alpha^*$, under NSR merchant's profit ↓, and:

a) **Cash** quantity ↓

b) **Card** quantity ↑ if α sufficiently $> \alpha^*$

c) (*Linear Demand*): ∀ α and b, Total quantity ↓ & overall Consumer Surplus ↓

Total Surplus: For $b = 0$, TS ↑ at α sufficiently $> \alpha^*$

– Let $\Delta TS^{NR} \equiv$ [Total Surplus | NSR, No Rebates – TS | No NSR]:
ΔTS^{NR} ↑ in α; ΔTS^{NR} ↓ in b [reverse under NSR *with Rebates* — section 5].

5. EPN Pricing if Rebates Are Feasible

(linear demand)

- EPN always grants rebates to card users — even when cash market large enough that *MA* binds on merchant fee i when t=0 ($\alpha > \alpha^*$) — and raises i
- To respect *MA*, rise in i is less than fall in t (size of rebate), so total EPN fee (i+t) under NSR is lower with rebates than without. Total fee is now same as under No NSR
  - Despite lower total fee, EPN grants rebates because card transactions rise enough
- Total transactions, cash + cards, are higher with rebates than without (since total fee ↓) ⇒ effect of NSR on Total Surplus is better with rebates (but is still bad if α is small)
- Rebates harm cash users: merchant price ↑ as (i) card users' demand ↑ & (ii) EPN raises i
- With rebates, card users always gain from NSR
- Overall Consumer Surplus ↓ relative to No NSR if α relatively *large* — opposite of TS. (Large α ⇒ dispersion in total prices to cash v. card users is less than under No NSR).

Proposition 5 (fees):

i) For all α, EPN grants rebates ($t < 0$). So per-capita transactions higher for card users

ii) When i determined by *MA* constraint ($\alpha >$ approx. 0.22):

- EPN total fee ($i+t$) same as with No NSR ($= (1+b)/2$)
- As α rises, merchant fee i falls and rebate $|t|$ falls (so spread $i-t$ shrinks)

Proposition 6 (quantities & welfare): When i determined by *MA*, compared to No NSR:

i) Per-capita quantities: card ↑ (card users gain), cash ↓; total quantity same
(so changes in Total Surplus below are driven solely by changes in mix)

ii) ΔTS^R ↑ in α. For $b = 0$, *TS* is higher under NSR if and only if $\alpha > \alpha^*$ (=1/3).

iii) ΔCS^R ↓ in α. For $b = 0$, *CS* is lower under NSR if and only if $\alpha > \alpha^*$

iv) ΔTS^R & ΔCS^R ↑ in b. For $b > 0$, there is range of α where NSR raises both *TS* and *CS*.

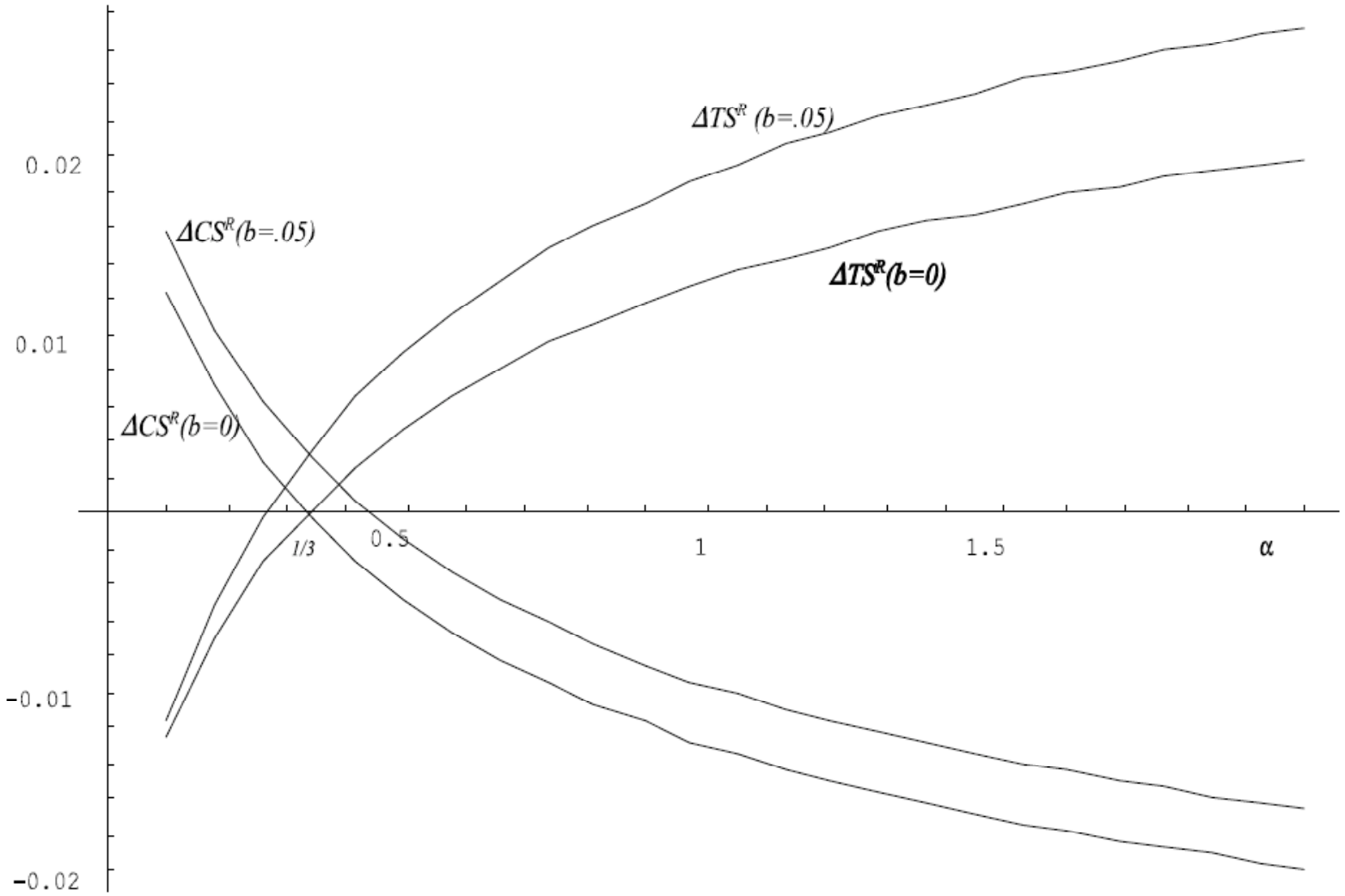


Figure 2

- **If repeal of NSR is not an option, what are the welfare effects of Rebates?**

Proposition 7 (NSR, Rebates vs. No Rebates): Moving from No Rebates to Rebates:

i) *Consumer Surplus* for *card* users ↑, for *cash* users ↓, and *overall* ↑.

ii) For α large enough that *MA* binds in both cases, *total quantity* and *Total Surplus* ↑.

- Cash users lose for 2 reasons: rebates induce higher p directly, and indirectly since i ↑.
- Total quantity ↑ because EPN has lower total fee (i+t) under rebates
- Overall consumer surplus ↑ because total quantity ↑ *and* spread $|q_e - q_c| > 0$ with rebates but = 0 without.

6. Competitive Card Issuers

- Suppose now EPN is association of independent card-issuing banks and sets *i*, but each bank set own card user fee *t*. (A bank gets *i* on purchases by its card users.) If competition among issuing banks is vigorous (perfect-substitutes Bertrand), what are effects of NSR?

- Simple game:

  1. Banks, via EPN, set merchant fee *i* (and choose NSR or No NSR)

  2. Given *i*, merchant and banks set their respective prices (*p's* & *t's*) simultaneously

  3. Each of the *m* banks that charges lowest *t* gets *1/m* of all card users, rest get 0.

- Bertrand equilibrium => $t_b = -i+\varepsilon$ (*t* is set in discrete units, ε, banks compete away almost all their rents via rebate, $t_b+i = \varepsilon \approx 0$). Banks' net profit = ε x (total card transactions). To maximize card transactions, EPN will again impose NSR.

Proposition 8: (strongly competitive issuers): Consider $b = 0$. In the equilibrium with NSR:

i) If $\alpha < 1$, merchant strictly prefers to accept NSR, and EPN raises i until merchant is indifferent to dropping cash customers; if $\alpha > 1$, merchant's *MA* binds.

ii) Cash sales (q_c) are lower, card sales (q_e) are higher, but total sales ($Q = \alpha q_c + q_e$) are the same as under No NSR.

iii) $\forall \alpha$, NSR $\Rightarrow$ overall Consumer Surplus $\uparrow$, but merchant profit & Total Surplus $\downarrow$.

iv) As $\alpha \to \infty$, $q_c \to 1/2$ (single-level monopoly quantity), and $q_e \to 1$ (competitive quantity).

Remarks:

iii) Total Surplus $\downarrow$ since Q is now misallocated: NSR + card user rebates => $q_e > q_c$
[If $b=0$, efficiency requires $q_e = q_c$; with No NSR & competitive issuers, $q_c \approx q_e$ ($=1/2$)]

But overall Consumer Surplus $\uparrow$ for similar reason (dispersion argument for $q_e \neq q_c$).

7. Conclusions and Extensions

Effects of NSR	**No Rebates**	**Rebates**	**Rebates Bertrand Issuers**
Merchant π Cash users' CS	$\downarrow$	$\downarrow$	$\downarrow$
Card users' CS	$\downarrow$ *iff* α small	$\uparrow$	$\uparrow$
Overall CS	$\downarrow$	$\downarrow$ *iff* α large	$\uparrow$
Total Surplus	$\downarrow$ *iff* α small	$\downarrow$ *iff* α small	$\downarrow$ if b small
$\partial TS/\partial b \mid_{\text{MA binds}}$	< 0	> 0	> 0

Possible extensions:
- imperfect competition at merchant level
- endogenous choice of means of payment
- competing EPNs.