

Regulating Interchange Fees for Credit Cards: Why and How ?

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MOTIVATION (1)

Payment cards: often a very efficient means of payment.

But criticized on many fronts:

- retailers complain about excessive fees (for credit cards)
- competition authorities suggest banks give exaggerated incentives to cardholders.

MOTIVATION (2)

Usual suspects: interchange fees (IFs)

- Transfer of more than \$ 60 bn in the US only in 2007.
- Not clear why IFs are so high (typically 1 % or 2 % of the transaction value) for credit cards.

More than 50 lawsuits in the USA only, more than 20 countries have taken regulatory action (Bradford and Hayashi 2008).

THIS PAPER

- We adapt previous literature on cards (Schmalensee 2002, Rochet and Tirole 2002, Wright 2003) that focused on the payment service (more suited to debit cards).
- We show when, why and how IFs for credit should be regulated.
- Among the first papers to explicitly model credit functionality (exceptions: Chakravorti and To (2007), Bolt and Chakravorti (2008), but do not study the regulation of IFs).

MAIN RESULTS (1)

We determine three IF levels:

- monopoly card network: a_M
- competitive card networks: a_C
- consumer surplus maximum: a_{CS}

We show $a_M \geq a_C \geq a_{CS}$

⇒ Need for regulating IFs.

MARKET FAILURE: $a_C = a_{CS}$

only occurs when all cardholders “multihome” and cards are perfect substitutes.

MAIN RESULTS (2)

Two regimes for a_{CS} :

a) either $a_{CS} = a_T$, based on merchant avoided cost
(related to Tourist Test, Rochet and Tirole 2008)

b) or $a_{CS} = a^*$ based on issuer cost
(related to cap implemented by RBA).

- We give a condition for regime **b)** to prevail (may be difficult to check). Cap based on merchant avoided cost ($a \leq a_T$) always increases Consumer Surplus.
- However, cap based on issuer cost ($a \leq a^*$) may sometimes decrease Consumer Surplus.

THE MODEL (1)

- Fraction x of consumers have credit cards (exogenous)
- Monopoly credit card network sets IF a .
- Banks compete for consumers and retailers:

$$\text{cardholder fee } f = c_I + \pi_I - a \quad (\text{issuers})$$

$$\text{merchant fee } m = c_A + a \quad (\text{acquirers}).$$

THE MODEL (2)

2 types of purchases:

- “normal”
 - cash (or debit): no cost no benefit (normalization)
 - credit card: chosen by consumer when $f < 0$
costs c_I and c_A for banks

This situation is socially wasteful (convenience users).

Notation: $L_C = 1$ if $f < 0$.

- “credit”
 - credit card: no cost no benefit (normalization)
 - store credit: $\begin{cases} \text{cost } c_S & \text{for seller} \\ \text{cost } c_B & \text{for buyer} \end{cases}$

c_S is merchant specific while c_B is transaction specific. $D(f) \equiv \Pr(c_B \geq f)$

THE MODEL (3)

Two retailers/merchants ($i = 1, 2$) compete for consumers:
retail price p_i accept cards $\Leftrightarrow L_i = 1$.

Consumers select retailer based on retail prices, transport cost (Hotelling) and quality of service (cards accepted or not).

Once in the shop, opportunity for credit purchase arise with (exogenous) proba θ .

Expected utility of a customer of shop i :

$$U_i^{cash} = u_O + \theta u_C - tx_i - \theta E(c_B) - (1 + \theta) p_i$$

(retailer cannot distinguish ordinary from credit purchases
 \Rightarrow same price p_i)

$$U_i^{card} = U_i^{cash} + L_i \left[-f L_C + \theta E(c_B - f)_+ \right]$$

Term between brackets = expected consumer surplus $S(a)$.

COMPETITION BETWEEN RETAILERS

Sequential game:

Stage 1: Given a (and thus f and m), retailers

simultaneously choose $L_i = 1$ if i accepts cards
 $= 0$ otherwise.

Stage 2: Given (L_1, L_2) and a , retailers compete in prices.

Proposition 1: *Equilibrium prices and profits of retailers (at stage 2) are:*

$$p_i(a) = \gamma + \frac{1}{1+\theta} \left[t + \theta c_s + x\Gamma(a)L_i + \frac{x}{3}\phi(a)(L_i - L_j) \right]$$

$$\pi_i(a) = 2ts_i^2(a) \quad \text{where} \quad \Gamma(a) = (c_A + a)L_C + \theta(m(a) - c_s)D(f(a))$$

expected net cost of accepting cards for retailer

$$\phi(a) = S(a) - \Gamma(a) \quad \text{total user surplus}$$

$$s_i(a) = \frac{1}{2} + \frac{x}{6t}\phi(a)(L_i - L_j) \quad \text{market share of } i.$$

IMPACT OF INTERCHANGE FEES (1)

Corollary 1: Retailer i accepts cards only when they increase this market share s_i (and profit π_i):

$$L_i = 1 \quad \text{iff} \quad \phi(a) \geq 0.$$

This is satisfied iff $a \leq a_M = \phi^{-1}(0)$, which we assume from now on.

Corollary 2: A monopoly card network maximizes banks' profit by setting $a = a_M$.

IMPACT OF INTERCHANGE FEES (2)

Corollary 3: Equilibrium retail price increases in $\Gamma(a)$ and thus in a :

$$(1 + \theta)p(a) = t + \gamma(1 + \theta) + \theta c_s + x\Gamma(a).$$

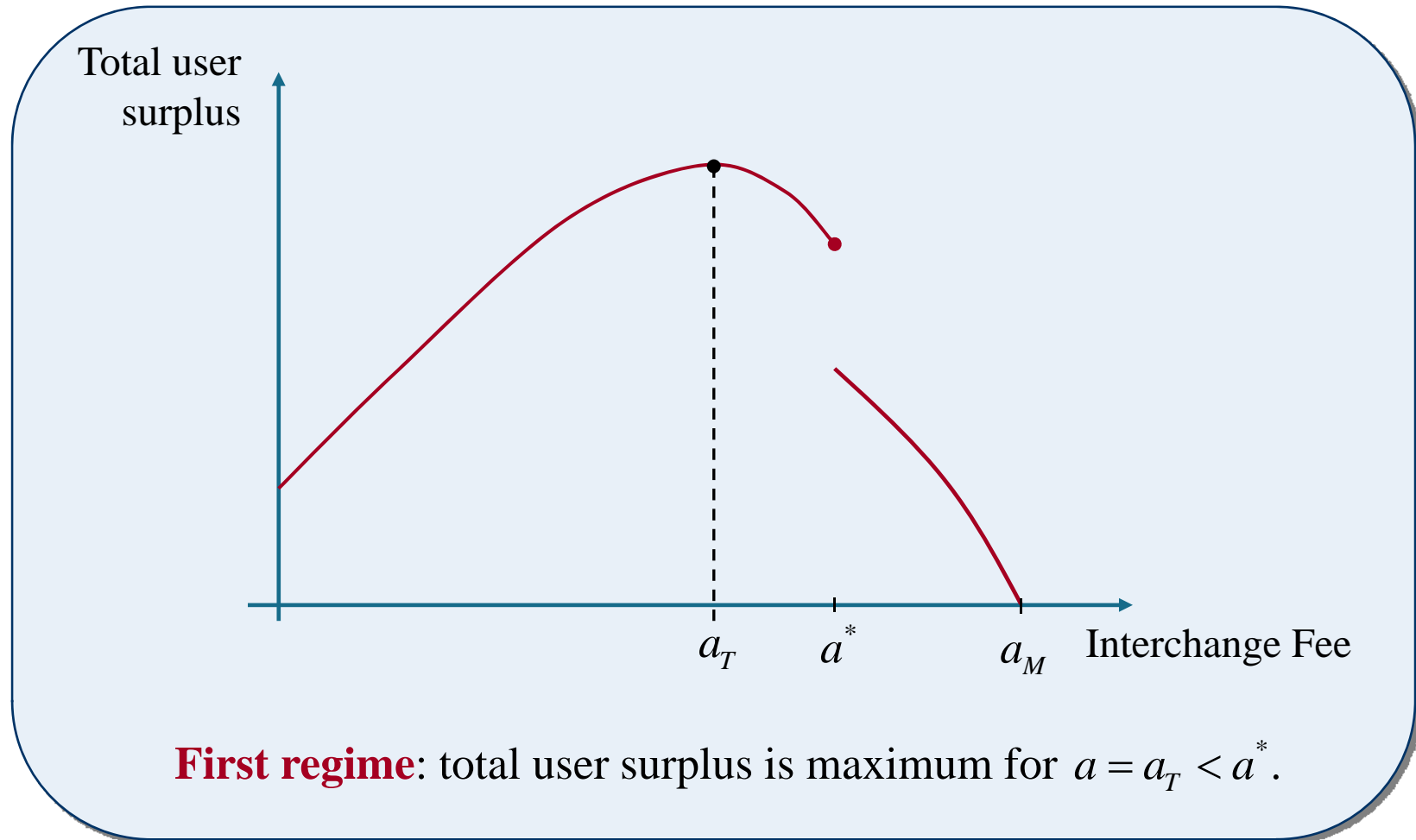
Corollary 4: Average surplus of cash users decreases in a .

Corollary 5: Average surplus of all consumers is an increasing function of $\phi(a)$:

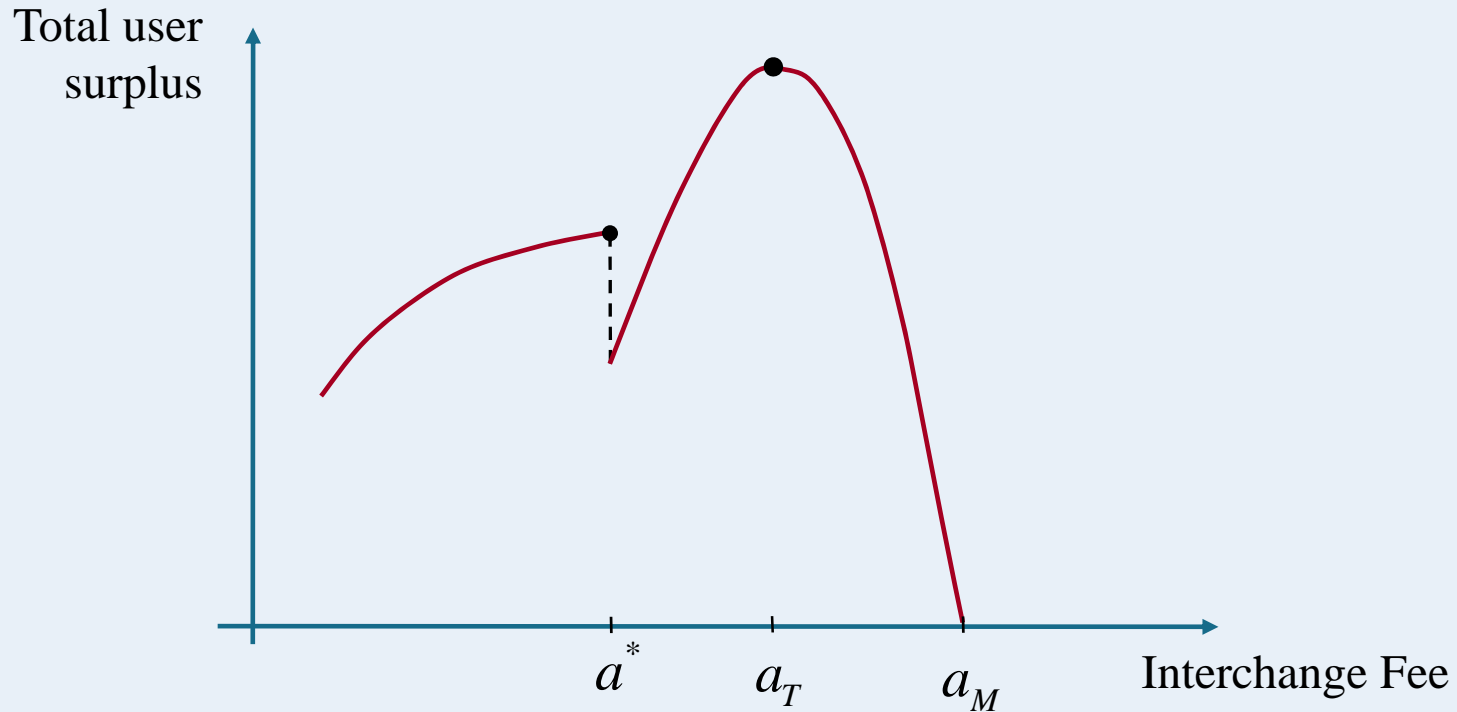
$$CS(a) = (u_o - \gamma) + \theta(u_c - \gamma) - \frac{3t}{2} - \theta(c_s + E(c_B)) + x\phi(a).$$

CONSUMER SURPLUS MAXIMIZATION (1)

There are 3 regimes:

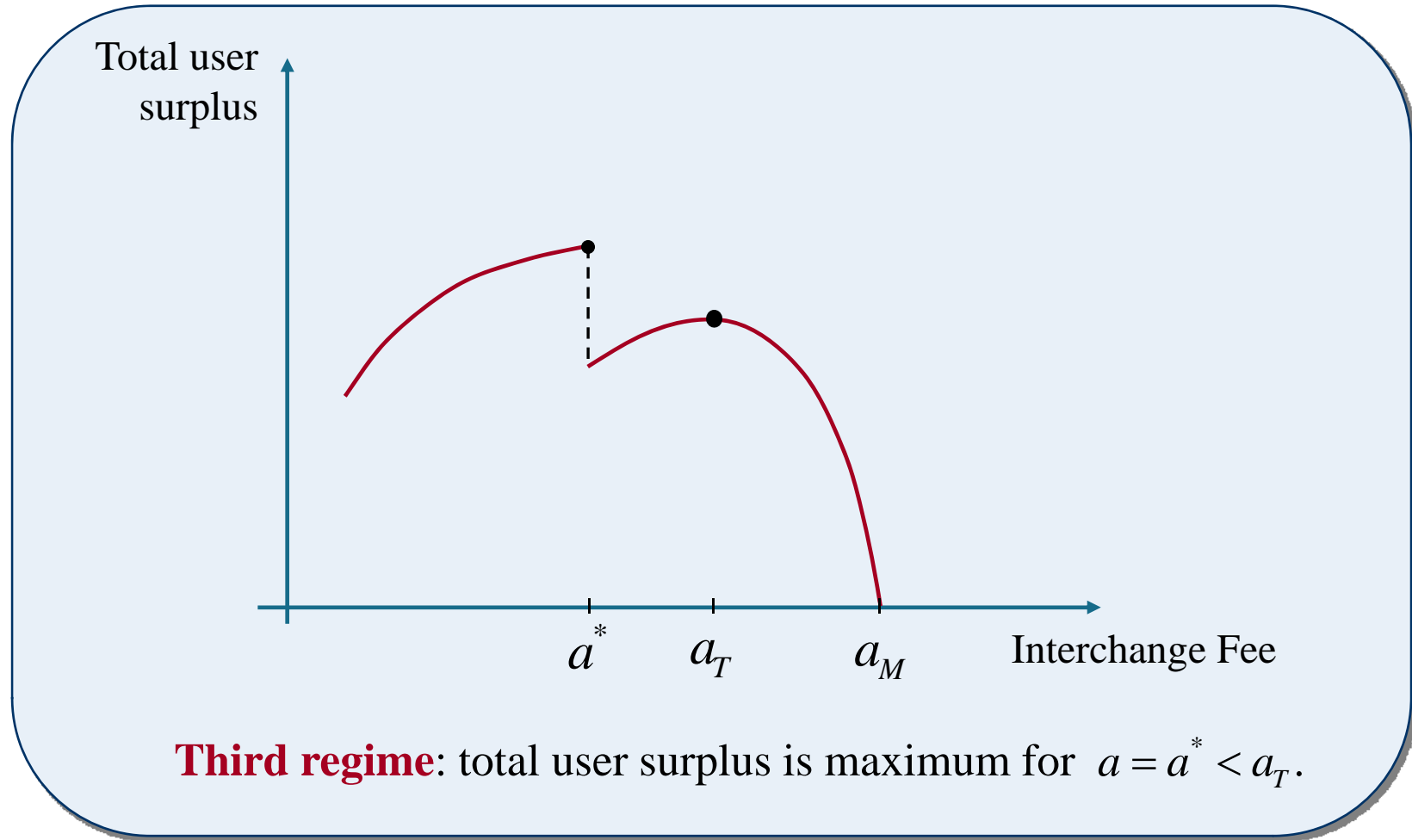


CONSUMER SURPLUS MAXIMIZATION (2)



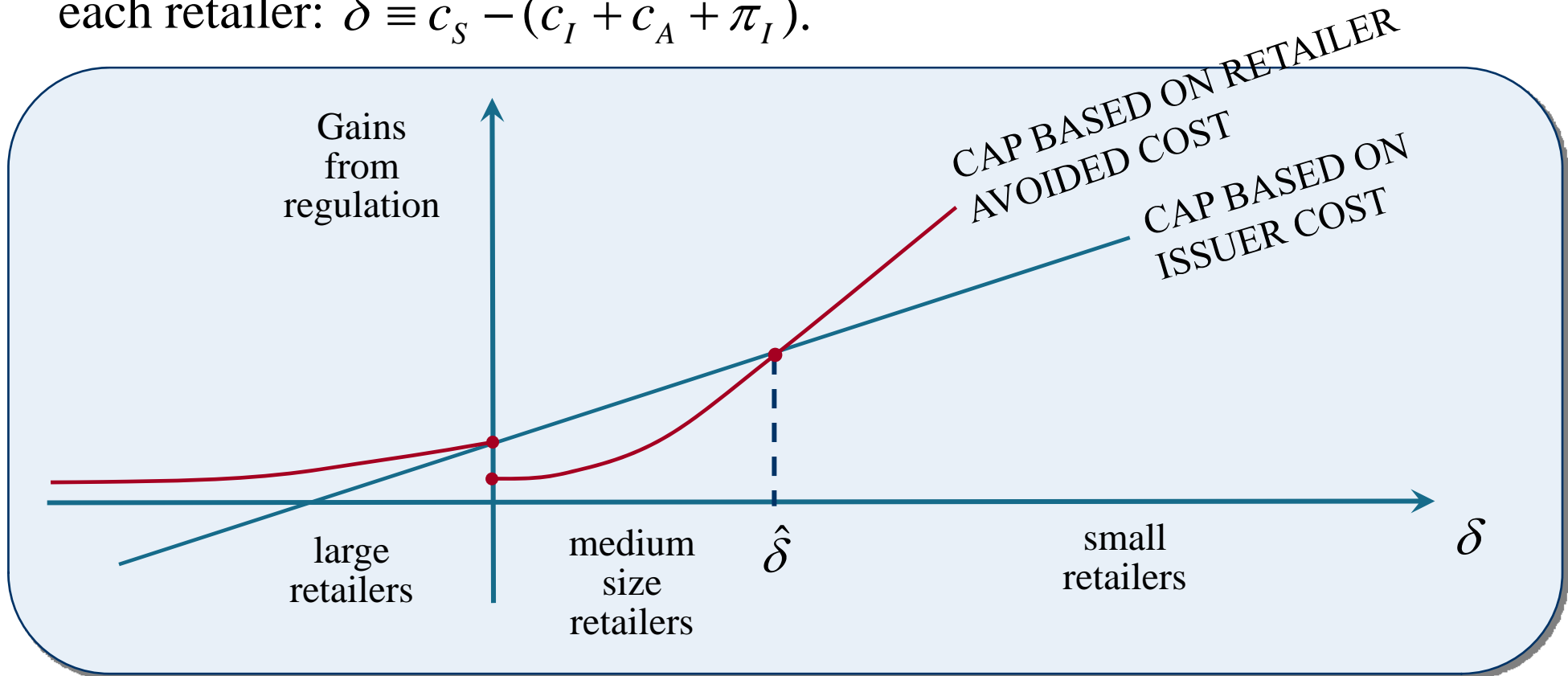
Second regime: total user surplus is maximum for $a = a_T > a^*$.

CONSUMER SURPLUS MAXIMIZATION (3)



POLICY IMPLICATIONS

They differ according to the relative efficiency of credit cards for each retailer: $\delta \equiv c_S - (c_I + c_A + \pi_I)$.



Except for medium size retailers, a cap based on retailer avoided cost $a \leq a_T = c_S - c_A$ is better than a cap based on issuer cost $a \leq a^* = c_I + \pi_I$.

SUMMARY AND CONCLUSIONS

1- Privately set IFs are excessive: $a_M > a_{CS}$.

2- Socially optimal IFs can be either

$$a_T = c_S - c_A = \text{net avoided cost by retailer}$$

(related to Tourist Test: Rochet and Tirole 2008)

or $a^* = c_I + \pi_I = \text{issuer cost} + \text{profit margin}$.

3- A regulatory cap based on a_T is always better than no regulation.

4- This is not true for a^* .