# Some Antitrust Foundations of Payment Card Associations: Comments and Re-interpretation for Rochet and Tirole (2002)

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Abstract

In this study we analyze platforms and rejections in two-sided markets with network externalities, using the specific context of a payment card association. We look at the cooperative antitrust determination of the interchange fee by member banks, using a framework in which banks and merchants may have market power and consumers and merchants decide rationally on whether to buy or accept a payment card developed by Rochet and Tirole (2002). After showing the welfare implications of a cooperative determination of the interchange fee and antitrust conduct, we describe in detail the factors affecting merchant resistance, compare cooperative and for-profit business models, and make a first cut in the analysis of system competition.

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1. Introduction

The rapid growth in the use of payment cards is a striking feature of modern economies.

Such a system is characterized by the existence of strong network externalities: In a payment

card transaction, the consumer's bank, called the issuer, and the merchant's bank, the acquirer,

must cooperate to enable the transaction. Two successful not-for-profit joint ventures, Visa

U.S.A., Inc. ("Visa U.S.A" or "Visa") and MasterCard International, Inc. ("MasterCard"),

have designed a set of rules to govern the "interconnection" between their members,

including: (i) an Interchange fee, (ii) an Honor-all-cards rule, and (iii) a No-surcharge rule.

Two successful for-profit firms, American Express and Discover, follow the same rules.


Some of these institutional features have gained wide acceptance and are rationalized. To

see the benefits of a centrally determined interchange fee used under the honor-all-cards rule,

it suffices to envision the complexity of bilateral bargaining among thousands of banks as

well as the cost for issuers of informing consumers about the set of merchants with whom an

agreement has been reached. The latter transactions costs could be avoided by keeping the

honor-all-cards rule while letting issuers and acquirers set their pairwise interchange fees.

However, an individual issuer would then be able to impose an arbitrarily high interchange

fee, since the acquirer would in that case face the grim choice between accepting this fee on a fraction of her payments and exiting the industry altogether. Individual issuers would become bottlenecks, and their free riding would dissuade acquirers from entering the industry.

Two features of these interconnection rules are viewed with suspicion by competition authorities and by some economists. (See, e.g., Frankel (1998) and Carlton and Frankel (1995).) First, the no-surcharge rule is sometimes viewed as an attempt by payment card systems to leverage their market power by forcing more card transactions than is efficient. Second, the collective determination of the interchange fee is seen by some as a potential instrument of collusion. Recently, after all, we obtained a court decision on an antitrust law suit about the card systems' exclusionary agreement.

The U.S. Department of Justice (DOJ) brought a civil enforcement action challenging the organizational structure of two of the nation's four major payment card systems. The complaint charged that MasterCard and Visa U.S.A., which are organized as joint ventures owned by their member banking institutions, conspired to restrain trade in two ways: (1) By

enacting rules permitting a member-owner of one to function as a director of the other ("dual governance") (Count I); and (2) by enacting and enforcing "exclusionary rules," which prohibit their member banks from issuing American Express ("Amex") or Discover cards (Count II).

After a 34-day trial, the court, in a commendably comprehensive and careful opinion, ruled in the defendants' favor as to dual governance (Count I). As to Count II, however, the court held that Visa U.S.A. and MasterCard violated the antitrust act by enforcing their respective versions of the exclusionary rule, barring their member banks from issuing Amex or Discover cards. The court further held that Visa International, which owns the Visa brand, licenses it to Visa U.S.A., and exercises certain governance powers over Visa U.S.A., was liable for participating in Visa U.S.A.'s violation. The court ordered the exclusionary rules revoked and permanently enjoined all three defendants from promulgating similar rules in the future. (See generally United States v. Visa U.S.A., Inc., 163 F.Supp.2d 322 (S.D.N.Y.2001) (opinion and Proposed Final Judgment); United States v. Visa U.S.A., Inc., 183 F.Supp.2d 613 (S.D.N.Y.2001) (modifications to Proposed Final Judgment).)

The defendants, MasterCard, Visa U.S.A., and Visa International, brought appeal. Visa U.S.A. and MasterCard argued that the district court erred in its conclusion that their respective exclusionary rules violate the Sherman Act. Visa International contended there was no adequate basis to hold it liable for Visa U.S.A.'s violation[1]. The U. S. Court of Appeals for the Second Circuit affirmed the judgment (hereinafter, the "Judgment").

In this study we analyzed the validity of the concern. To provide a policy analysis, we developed a normative framework of the determination of an efficient interchange fee and of impact of the antitrust agreement. The strength of our approach relative to that taken in a previous study (contrary to Rochet and Tirole (2002)) is that we build in antitrust effects and are able to show a proper welfare analysis. The Rochet and Tirole study focused on the payment system strategic mechanism based on the particular market power premises. Namely, it assumed that issuers have some market power, while acquirers are in competitive positions (no market power) alternatively. This may be a typical general situation, but is not a good analogy. The similar argument in the courtroom was rejected for the following reasons:

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[1] This count is omitted in this paper.

"Visa U.S.A. and MasterCard, however, are not single entities; they are consortiums of competitors. They are owned and effectively operated by some 20,000 banks, which compete with one another in the issuance of payment cards and the acquiring of merchants' transactions. These 20,000 banks set the policies of Visa U.S.A. and MasterCard. These competitors have agreed to abide by a restrictive exclusivity provision to the effect that in order to share the benefits of their association by having the right to issue Visa or MasterCard cards, they must agree not to compete by issuing cards of Amex or Discover. The restrictive provision is a horizontal restraint adopted by 20,000 competitors.[2]"

This article is organized as follows: Section 2 describes the working of the payment card industry and antitrust conduct. Section 3 develops the model. Section 4 re-interprets the model under antitrust conduct. Section 5 compares the findings with those in earlier studies of this case. Section 6 summarizes the main insights and discusses some topics for future research.

2. Working of the payment card industry

A card payment is a service offered to two parties (the cardholder and the merchant) jointly by two other parties (the issuer and the acquirer). The left side of Figure 1 shows the costs and benefits attached to a card transaction. The total cost of this service is the sum of the issuer's cost $C_I$ and the acquirer's cost $C_A$. Suppose that the benefit accruing to the cardholder (or buyer) for the marginal use of a payment card is equal to $b_B$. Similarly, the
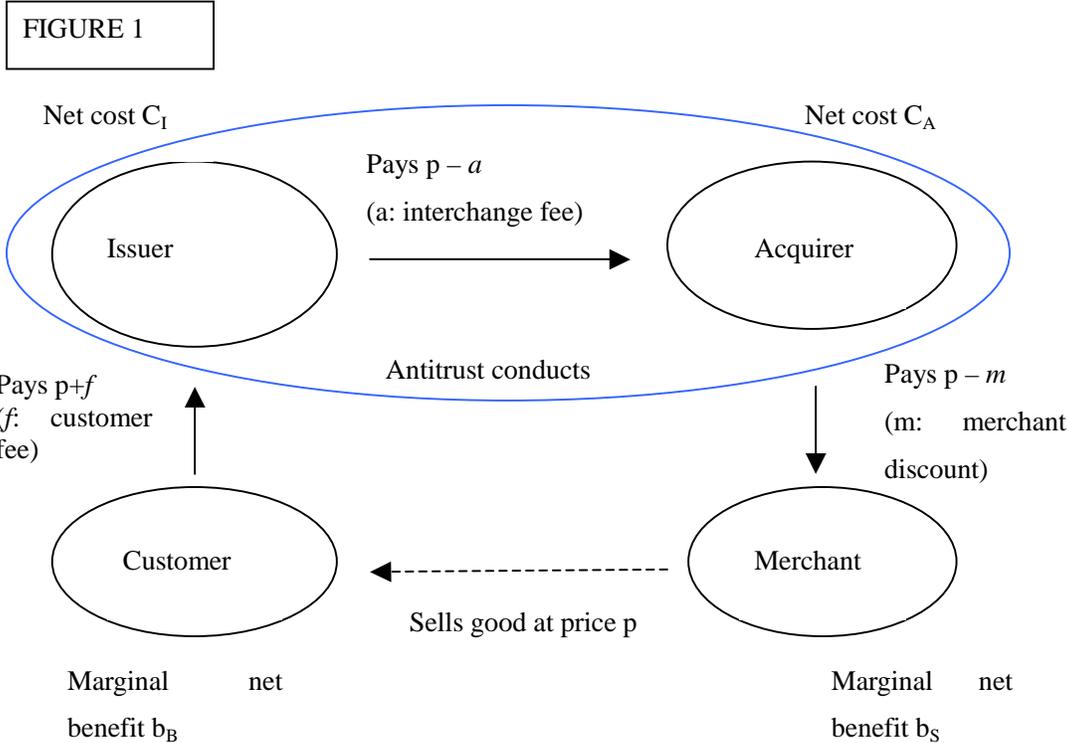
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[2] See the Judgment: III The Defendants' Arguments, A Harms to Competition, Paragraph Five.

benefit to the merchant (or seller) of this marginal use of a payment card is $b_S$. The benefits $b_i$ and costs $c_i$ referred to above are net benefits and costs. The cardholder and the merchant must compare the utilities they get by using payment cards with those associated with alternative payment methods (cash, checks, etc.). At the social optimum, the total benefit of the marginal transaction, $b_B+b_S$, is equal to its total cost, $C_I+C_A\equiv c$. The left side of Figure 1 also features the payments from end users to intermediaries: cardholders pay $f$ to issuers and merchants pay merchant discount $m$ to acquirers.

One of the features of this type of payment system is its two-sidedness. Whether the transactions occur within a cooperative undertaking as studied here, or through a for-profit company playing the roles of both issuer and acquirer, the system must attract both sides of the market. Any contemplated increase in the merchant discount must carefully consider the likely merchant resistance, and similarly on the cardholder side.

The key feature of payment systems is antitrust conduct. As noted above, the issuers and the acquirers are consolidated among the 20,000 banks and Visa U.S.A. and MasterCard in order to receive the maximum benefits of the consolidations through rejecting business agreements

with for-profit companies. The consolidated issuers and acquirers have market power in

this type of payment system.

FIGURE 1

Net cost $C_I$

Pays p – $a$
(a: interchange fee)

Issuer

Acquirer

Net cost $C_A$

Antitrust conducts

Pays p+$f$
($f$: customer
fee)

Pays p – $m$
(m:    merchant
discount)

Customer

Merchant

Sells good at price p

Marginal        net
benefit $b_B$

Marginal        net
benefit $b_S$

3. A model of the payment card industry under antitrust conduct

Some models assume that issuers have some market power, while acquirers are perfectly

competitive. (See Evans and Schmalensee (1999) and Rochet and Tirole (2002).) The

cause and the extent of market power is highly country-specific. In the model below, we

assume that issuers have some market power, and we then analyze the antitrust effect, also.

Our model is based on the model of Rochet and Tirole (2002). Accordingly, most of the assumptions such as a fixed volume of transactions, normalized to one transaction, etc. are included in our model. For example, $C_I$ and $C_A$ denote the per-transaction costs for the issuer and acquirer, respectively, the interchange fee is denoted as *a,* and the merchant discount is denoted as *m* (as in Section 2). The customer's yearly fee is *f,* and there is no variable fee. Let $b_B$ and $b_S$ denote the customer's and the merchant's benefit, respectively.

Consumer side: Let $E(b_B \mid b_B >= b_{B*})$ denote the expected benefit enjoyed by an average cardholder, when consumers with type $b_B$ $b_{B*}$ purchase the card, and those with type $b_B < b_{B*}$ do not.

Issuer side: Let $D(f)$ denote the total demand for cards, and let $\beta(f)$ denote the average card holder benefit. Let $f = f^*(C_I - a)$ denote the equilibrium customer fee. The important assumption is as follows: The oligopolistic equilibrium fee, $f^*(C_I - a)$, is defined for all values of the interchange fee *a* (even $a > C_I$) and decreases with it. Each member bank's profit increases with the interchange fee *a*.

Acquirer side: Acquirers face per-transaction cost $C_A$ and are competitive. For interchange

fee $a$, they offer merchant discount $m$, given by $m = a + C_A$.

Merchant side: Merchants $I = 1, 2$ set their retail prices ($p_1$, $p_2$) noncooperatively as in

Hotelling's model.

Timing: The timing is as follows:

Stage 1: The interchange fee is set (by collusive action).

Stage 2: Issuers set fees for their customers, who elect whether to have a card. Merchants

decide whether to accept payment cards and then set their retail prices.

Stage 3: Customers observe the retail prices and whether cards are accepted, and pick a store.

If the selected store does not accept payment cards or if the consumer does not own a

payment card, the consumer must incur an opportunity cost ($b_B$) of using the alternative

payment method; similarly, the merchant incurs opportunity cost $b_S$.

The level of the interchange fee at which the net cost to the merchants is equal to the average

cardholder benefit is designated by $\hat{a}$.

4. Re-interpretation of the model

After these preparations, Rochet and Tirole show and prove their Proposition 1, which is as follows:

Proposition 1. (i) Under the no-surcharge rule, there exists an equilibrium in which all merchants accept the card if and only if $a \le \hat{a}$.

(ii) As competition among issuers intensifies, merchant resistance increases, i.e., the maximal interchange fee $\hat{a}$ decreases.

An easy way to look at this is by considering the reverse situation. We are supposed to think of the issuer as equivalent to a consolidation among the acquirers. Once the issuer is thought of this way, then the agreed-upon price (customer fee; $f$) could be at an optimal level in the payment card consumer market. This can occur if and only if there exists an optimal level of the fee, which is the issuer=acquirer monopoly level against the consumer and the merchant. The level is higher than the Cournot (or Bertrand) competition level of the acquirers. It is easy to think that there exists an internal distributive level of the fee in the collusive system,

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and if competition rose among the banks in the collusive system, the total payoff of the

consolidation would decrease.

Rochet and Tirole's Proposition 2 illustrates the externalities, which describes strategic

complementarity. This is a typical characteristic of credit cards. The more convenient a

credit card is, the more we use it and the more we use it the more merchants accept a credit

card, and vice versa. The court agrees with this finding (including even the equilibrium of

card rejection, such as "(1) Network-level costs are so high that banks and merchants cannot

provide these services for themselves."[3]).

Rochet and Tirole's Proposition 3 deals with interchange fees under the no-surcharge rule[4].

Proposition 3 means that an optimal internal distribution level can be set and the effects on

merchant side can be controlled (overprovision). Rochet and Tirole's Proposition 4 shows

that issuers' perfect two-part tariffs implication. It mentions that variable payments reduce

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[3] The Judgment: I. Relevant Markets and Market Power.

[4] Rochet and Tirole's Proposition 3: Under the no-surcharge rule, the issueres' preferred interchange fee is equal to $\hat{a}$ .

(i) If $C_I+C_A-b_S$   $f^*(C_I - \hat{a}$ ), then the socially optimal interchange fee is equal to the issuers' preferred interchange fee.

(ii) If $C_I+C_A-b_S>f^*(C_I - \hat{a}$ ), the interchange fee set by a payment card association controlled by issuers leads to an overprovision of payment card services.

merchant resistance if and only if the interchange fee exceeds the issuer cost. And both

associations and a proprietary system enhance a positive externality by using some sort of

policies. As for Rochet and Tirole's Proposition 5, they introduce the subject of consumer

information incompleteness and show the existence of a social optimal interchange fee under

general conditions.


The other matter of interest is Rochet and Tirole's Proposition 6, which states that:

In the absence of transaction costs associated with the merchants' charging different prices,

(i) For a given interchange fee, allowing card surcharges raises the merchant price for

cardholders and lowers it for noncardholders.

(ii) When the no-surcharge rule is lifted, the interchange fee is neutral and there is an

underprovision of card services.

(iii) Lifting the no-surcharge rule reduces social welfare in case (i) of Provision 3. Lifting

the no-surcharge rule may increase or reduce social welfare in case (ii) of Provision 3[5].

In the antitrust conduct situation, the context includes a problem of double marginalization[6].

The no-surcharge rule prohibits a merchant from conducting price discrimination as a

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[5] See footnote four.
[6] See Tirole (1998), p174.

monopolist against a consumer.   If the no-surcharge rule is lifted, then the merchant who has

a market power in the oligopoly situation can raise the price as long as the marginal cost is

equal to the marginal revenue (This is a description of (i) above.).   This situation  has no

effect on the interchange fee, which is like a cost to the merchant ((ii)'s description).   If the

merchants marginalize their action, the direction of social welfare depends on the situation

before and after[7] ((iii)'s description).


Regarding system competition, which is thought of as consisting of two (or more)

associations, Rochet and Tirole deliberately note that system competition may reduce social

welfare by lowering the interchange fee.   And they express that they only want to warn

against "natural conclusions" and to stimulate further research on this very interesting topic.


The last item to note is Rochet and Tirole's Proposition 7.   Before Proposition 7, they note

that a key difference between the for-profit and the cooperative paradigms is that the former

has two separate instruments and optimizes over the merchant discount and the customer fee,

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[7] If the limitation is constrained rigidly, the merchant's marginalization may cause a dead weight loss if
there is a merchant-side monopoly.   If not, the merchant's perfect discrimination may raise social welfare
through the rising merchant's benefit.

while in the latter the customer fee is determined by issuer competition once the merchant

discount/interchange fee is set. Then, Proposition 7 states: Let $m_P$ and $m_C$ denote,

respectively, the merchant discount chosen (directly) by a proprietary system and (indirectly)

by cooperative banks.

(i) When issuer competition is described by the Hotelling model, $m_C < m_P$, under the (weak)

assumption that the elasticity of merchant acceptance is small when $m$ is outside the

competitive region.

(ii) Linear demands, $m_C < m_P$.

(iii) When issuers compete a la Cournot and demands are linear, $m_C = m_P$.

In the antitrust context, including the for-profit entity in the model leads to leaking profits to

the for-profit entity. The conduct needed to obtain profits for the for-profit entity causes a

decrease in $m_C$ rather than $m_P$ in the oligopolistic situation. Remember that we are

comparing the welfare of the competition of a proprietary system with that of a cooperative

system.


5. Comparison with previous studies

The theoretical and empirical analyses of the United States' credit card market were initiated

by Baxter (1983) and Ausubel (1991), and there have been several articles in which ATM

networks have been compared[8].   Baxter's report is the standard reference.   Baxter assumed

a perfectly competitive paradigm and then performed the normative analysis of finding the

optimal interchange fee. Schmalensee (2002) analyzed market power issues.   Schmalensee

considered that the interchange fee balances charges between cardholders and merchants

under imperfect competition, and that this balance is the economic basis for proprietary

payment systems and cooperative bank card systems.


Rochet and Tirole (2002) identified the determinants of merchant resistance and analyzed the

impact of the no-surcharge rule, as well as making a comparison between the privately

optimal interchange fee and the socially optimal one.   In a follow-up article (Rochet and

Tirole (2003)), they provide a general analysis of platform competition and compare price

structures under platform competition with those under a monopoly platform.

We have pointed out the lack of antitrust conduct in the framework of Rochet and Tirole

(2002), and we demonstrate here a simple re-interpretation of the credit card industry.

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[8] These are mentioned in Rochet and Tirole (2002).

Another interesting topic is excess interest rates. Ausubel (1991) pointed out that credit card interest rates during the 1980s stayed at more than three to five times the financial market interest rates. This indication led to several similar studies. Calem and Mester (1995) noted that because of the high interest rate of credit cards, it is necessary for consumers to incur a search cost and a switching cost for the appropriate card. They pointed out that credit card issuers offer high rates to keep away consumer's adverse selection, and provided that this situation made the high interest rate of credit card ruling out perfect competition in the market. Stango (2000) confirmed that high interest rates for credit cards was in place by the early 1990's and that there was no price competition between incumbents and newcomers. Knittel and Stango (2003) argued that the lack of a ceiling on credit card interest rates functioned as a focal point for card issuers, and that the focal point created tacit collusion because of the interest rate.

The situations mentioned by Ausubel and others are explained by market power caused by antitrust conduct of the cooperative bank card systems. Market power may be presumed if the entity controls a large enough share of the relevant market. The court stated that:

"Indeed, despite recent increases in both networks' interchange fees, no merchant had

discontinued acceptance of their cards.   In addition, the court inferred market power from the defendants' large shares of a highly concentrated market: In 1999, Visa U.S.A. members accounted for approximately 47% of the dollar volume of credit and charge card transactions, while MasterCard members accounted for approximately 26%.   (American Express accounted for 20%; Discover, for 6 %.)[9]"

While competition among (and within) these networks is robust at the issuing level (where 20,000 separate issuers compete to provide products to consumers), at the network level (where four major networks seek to sell their technical, infrastructure, and financial services to issuer banks) competition has been seriously damaged by the defendants' exclusionary rules.   The market power is regarded as one of the main reasons for the high interest rate of credit cards in the 1980's and early 1990's.

6. Conclusion

In this article we have pointed out a leitmotif of economic effect of antitrust conduct in payment card systems and compared our findings with those of Rochet and Tirole (2002). They state that in the absence of unobserved heterogeneity among merchants, an increase in the interchange fee increases the usage of payment cards, as long as the interchange fee does not exceed a threshold level at which merchants no longer accept payment cards.   Indeed,

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[9] The Judgment; I. Relevant Markets and Market Power, Paragraph Five.

there is such a threshold in the model, but this threshold is a kind of internal optimal

redistribution point in antitrust collusion between many acquirers and association type

issuers.

Rochet and Tirole mentioned the meaningful role played by merchant resistance.   Payment

card systems can exploit each merchant's eagerness to obtain a competitive edge over other

merchants, and this searching has two benefits for systems: it forces merchants to internalize

card holders' convenience benefit, and it offsets the underprovision of cards by issuers with

market power.   From the viewpoint of the antitrust context, merchant resistance means the

cost of buying in terms of acquirer and issuer collusion.   Therefore, if the cost is low (in the

situation where a merchant has no market power and is on the competitive edge), payment

card systems obtain merits from the low cost and can pass those benefits on to the consumer.

Additionally, if system competition happens, merchant resistance (selling power[10]) would

increase and the system's benefit would be decreased.   If the no-surcharge rule is lifted and

price discrimination is costless to merchants, the interchange fee no longer affects the level of

payment card services.   The merchant price for cardholders is increased and that for

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[10] [as opposed] to "buying power."

noncardholders is decreased.

The payment card industry has received scant theoretical attention, and it will not come as a surprise to the reader that more research is warranted. We believe that the framework developed here can be used as a building block to analyze more general situations with acquirer market power and distorted competing means of payments, including antitrust conduct like that of Visa U.S.A. and MasterCard. The payment card industry offers many other fascinating topics for theoretical and empirical investigation, such as the competition between associations and proprietary, the development of e-commerce, and the comparison of world payment card systems. It is important to determine who the decision-makers are and that we continue to remain aware of antitrust viewpoints.

This argument can be expanded to consider a broader perspective. Consider the pooling association containing the music copyrights from musicians. The association has a two-sided effect similar to that of the payment card system. It is common to charge a licensing fee for music; however, if we examine this issue within the framework described in this study then the association may be illegal under the antitrust law[11]. More generally, most

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[11] [This] is the situation in Japan.

markets with network externalities and industrial association involve multiple sides, a choice

of price structure, and potential antitrust problems.   Many markets come to mind, including

Internet operations, international banking associations, media advertisers, and real estate

agency assessment association, among others.   What is important is to gain real insights and

recognize positive reality.

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