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Payment card regulation and the use of economic analysis in antitrust

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Contents

I.   Introduction

The card payment industry is remarkable in several respects and definitely worthy of our attention. First, it is sizeable[1].

Second, its contours are rapidly changing. The competition between "four-party", mainly open systems such as Visa and MasterCard and "three-party", mainly closed[2] systems such as American Express and Discover rages, with old-fashioned payment means (cash, checks) still commanding a respectable market share[3]. It is hard to predict who, among incumbents or entrants will end up serving the various and interrelated business segments: debit and credit transactions, large, mid-size and micro payments, e- and mobile phone payments, P2P payments, and so forth.

Third, this experimentation with alternative business models and the subsequent shakeout will be deeply affected by regulation, as the payment industry is becoming one of the most intensively regulated industries in some parts of the world.

Fourth, and of particular interest to antitrust practitioners and economists, the industry's two-sidedness and other specificities make received antitrust doctrine largely irrelevant, and fresh thinking is required in order to design sound policy intervention.

The purpose of this note is to guide the reader through the intricacies of a rigorous understanding of regulatory stakes and interventions, and to hopefully clarify an otherwise muddled debate.

II.   Description

II.1 Three- and four-party systems

We first describe the two dominant business models of the card payment industry[4].

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[1] Combined, credit and debit cards accounted for $3.5 trillion dollars worth of transactions in the U.S. in 2009, which is over 45% of the total purchase of goods and services. The total dollar amount of has grown 29% since 2005. Over that same time the total purchase of goods and services increased 13%. (Nilson Report #962) In 2009, in the US and for debit cards alone, there were 38bn payments, bringing in to issuers (cardholders' banks) $16bn in interchange fee revenue (the interchange fee is the fee paid by the acquirer- the merchant's bank- to the issuer-the cardholder's bank- subsequent to a card transaction). In Europe, general purpose cards from Visa, MasterCard, American Express, and Diner Club accounted for more than $1.8 trillion in purchase volume and another $1.2 trillion in cash volume in 2009 (Nilson Report #950).

[2] The systems are not fully closed. In particular, American Express and Discover do also issue their cards through some selected bank licensees (this was facilitated in the US by a 2001 court decision saying that Visa and MasterCard could not demand exclusivity from their member banks.

[3] In 2008, checks still made up 26% of all transactions in the U.S., more than in many other industrialized countries. France also had relatively high levels of check usage in 2008 at 22.1% (Bank of International Settlements, Country Statistics of Payment Settlements 2008). Cash was the most commonly selected payment method in 2009 accounting for one-third of all transactions in the US (Nilson Report #962).

[4] Some other well-known payment systems build on top of existing ones. For instance, PayPal makes it easier for small merchants and individuals to accept cards. It charges nothing to the sender/buyer, who gives a card number or a bank account number or else a PayPal account number, and sets a charge for the merchant, that more than covers the cost of using card systems or the cost of withdrawing from the sender's bank account. PayPal further uses different tariff structures depending on the amount (and also on the merchant). For instance, instrumental to

The basics of <u>four-party payment systems</u> such as Visa and MasterCard can be grasped by looking at Figure 1. Any card transaction between a merchant and a consumer is enabled by two system member banks, the acquirer (the merchant's bank) and the issuer (the cardholder's bank). For each card transaction the issuer and the acquirer pay system fees to the network. Because these fees are not at the core of current disputes we will ignore them in the following.

When a consumer makes debit a card purchase of 100 at a merchant, the merchant transfers this information to her bank, the acquirer, who credits the merchant say 99 if the merchant fee (or "discount") is 1%. The acquirer uses this discount to cover his acquiring cost, his margin, a fee paid to the system (Visa or MasterCard) and finally- and also the focus of the regulatory attention- the interchange fee (IF, often called in the European context "MIF" for "multi-lateral interchange fee") paid not to the system but to the cardholder's bank, the issuer. The issuer in turn debits 100 from the cardholder's account and may either charge the cardholder for the transaction or reward him through frequent flyer miles, cash back bonuses or another reward instrument[5]. The merchant fee is equal to the IF plus the acquiring cost (plus the system fee) if the acquiring industry is competitive.

The IF level may vary within a country by merchant category, merchant size, type of payment instrument (Visa/MasterCard, PIN debit/signature debit/credit, premium/basic, etc) , and then varies across countries. For example large supermarkets were brought on board through a reduction (roughly by half in the US) of IFs applicable to them. And, over the last decade, quick service restaurants such as large hamburger and pizza chains, which in view of their $5 or 6 bills relied exclusively on cash payments, were induced to take the Visa and MasterCard through tailored merchant pricing of card payments, which now account for close to half of sales in the US .

Similarly, IFs and merchant fees do vary within a card system depending on the reward system. High-reward (premium) cards can command an IF double that of basic cards[6]. Merchants are prevented by the honor-all-cards rule (and also perhaps by transaction costs) from picking a subset of cards within a system.

In (pure) <u>three-party payment systems</u>, the network, acquirer and issuer are a single entity. So there is no explicit IF. One can define an implicit or *shadow IF*, though, by considering a fictitious competitive acquiring industry within the system. Because American Express could delegate its acquiring services to a competitive industry and achieve exactly the integrated outcome by setting this shadow interchange fee, this shadow IF is equal to the difference between American Express's merchant fee and its acquiring cost.

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its acceptance for payments below $2 (such as the purchase of a $0.99 song) was a structure with a low fixed (non-proportional to transaction value) amount and a high proportional levy.

[5] We here do not go into the details of pricing structures (the decomposition between fixed and variable fees), which are fascinating in their own right. For example, reductions in the IF can affect cardholders' variable fee (e.g. cash back bonuses), or their fixed fee per transaction, or else (in the case of debit cards, which are linked to a bank account) the rest of the banking relationship. See Evans (2011, chapter 13) for an assessment of the impact of IF reduction in Australia.

[6] See Prager et al (2009) for details on this point.
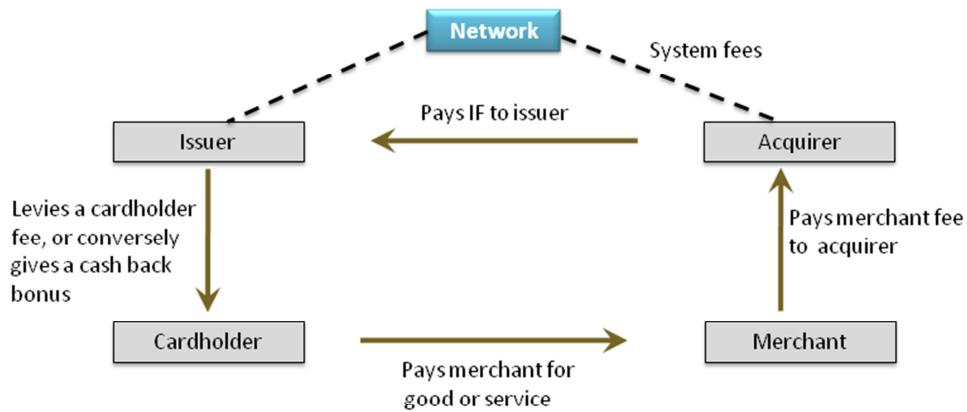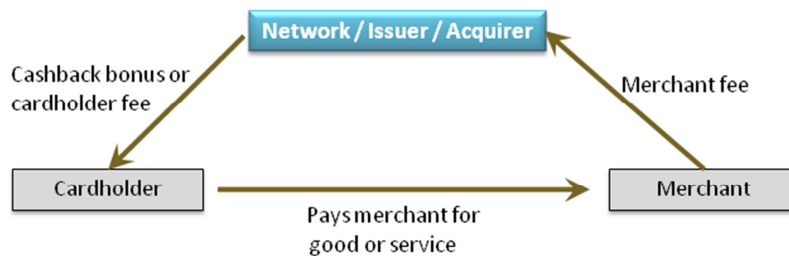
Figure 1: Four- and three-party systems

Regardless of the organizational form, the merchant may or may not surcharge for card usage. Most often, the merchant does not surcharge and the customer pays the same amount to the merchant regardless of the payment method. This absence of surcharging may be due to a combination of wanting to induce card payments or to attract customers inclined to pay by card, of transaction costs associated with surcharging, and- in some countries and card systems- of an explicit prohibition to surcharge (although these prohibitions are gradually disappearing due to regulatory intervention. Australia and the US, following the RBA investigation and the Visa/MasterCard settlement with DOJ respectively, are cases in point). As Prager et al (2009) point out, the fact that only a small number of merchants surcharge per se does not imply that surcharging is broadly irrelevant; for, it might be the case that the threat of surcharging effectively caps the merchant fee. Nonetheless, past experience shows that high merchant fees need not lead to surcharging[7].

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[7] The literature has shown that in a wide range of circumstances surcharging deprives the IF of any role in affecting the volume of card payments. See Gans-King (2003), Rochet-Tirole (2002), Swartz-Vincent (2006) and Wright (2003).

II.2 IF regulations

These have been many investigations into IF setting since the late 70's and the NaBanco case against Visa (1979) in the US. The last decade has witnessed particularly intense antitrust and regulatory questioning of the IF level in most developed countries, with Australia as an emblematic case of mandated[8] reduction of IFs for Visa and MasterCard[9].

IF regulation has sometimes been motivated by the associated agreement among competitors (the issuers). This "illegal-price-fixing" argument, which was the basis for the NaBanco case and was invalidated by the courts in 1984, is based on an incorrect analogy. An increase in the IF is not a price increase for some final users like in standard cartel theory, but a reallocation of cost between two categories of end-users (merchants and cardholders). This point was made by authorities' staff in some regulatory hearings, and yet is not always taken on board as a key principle for policy intervention[10].

US: Following the lead of the Reserve Bank of Australia (2005), which uses an issuer-cost-based approach to compute a cap on the IF, the recent regulatory proposals in the US follow a "cost of service" or "public utility" approach. The Dodd-Frank Act requires the Federal Reserve Board to issue regulations on debit-card interchange fees and stated that they should be "reasonable and proportional to cost incurred by the issuer with respect to the transaction". According to some estimates[11] the proposed regulations will wipe out between 75 and 85 percent of issuers' debit card interchange fee revenue.

Europe: The European Commission recently fixed an IF for MasterCard cross-border transactions equal to 0.2% on average for debit card transactions and to 0.3% for credit card transactions[12]. Cross-border transactions represent a small fraction of total card transactions in Europe, but this cross-border rule is widely expected to impact the IF levels for domestic markets. In contrast with American regulators, the European Commission has chosen to regulate the cross-border IFs in such a way that the merchant fee does not exceed the retailer's avoided-cost when a cash (or check) payment is replaced by a card payment[13]:

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[8] Note that in order to regulate the IF, one must also check that the system does not undo the reduction in the IF by increasing the system fee for merchants and reducing by an equal amount the system fee paid by issuers. Also, Visa (except for Visa Europe) and MasterCard, which have moved in the last decade from a not-for profit status to a for-profit one, can alternatively raise the acquirer system fee without lowering the issuer one.

[9] As well as the removal of the no-surcharge rule.

[10] Recently, competition authorities of New Zealand, Poland and the UK have declared the multilateral setting of interchange fees illegal and to be discontinued (Prager et al 2009).

[11] See Evans et al (2011).

[12] MasterCard has appealed to the European Court of Justice. Visa accepted to apply 0.2% for debit cards and 0.61% for credit cards for both its cross-border transactions and for some countries' domestic transactions.

[13] See also: "…without further evidence, which MasterCard failed to submit – it cannot safely be assumed that by pursuing its member banks' aim of maximizing sales volumes MasterCard's MIF has created efficiencies that benefit all customers, including merchants" (EC MEMO/07/590, December 2007).

The reader can also find useful information about the Commission's methodology in a memorandum. In particular:

"As regards calculation of the (cross-border) MIF, MasterCard has engaged to apply a methodology developed in economic literature to assess efficient interchange fees which is called the 'avoided-cost test' or 'tourist test'. The fee which meets this test, also referred to as the balancing fee, ensures that user benefits are enhanced. The balancing is such that merchants do not pay higher charges than the value of the transactional benefits that card

"But most importantly the aim of the new MIFs to be applied by MasterCard is that a merchant's costs in accepting card payments should be no higher than the benefits from avoiding receiving cash."
Neelie Kroes (European Commissioner for Competition Policy) speech/09/165, April 2009

This "cash-substitution" approach is closely related to the "tourist test', which we later discuss. The European Commission further requires the methodology to be "transparent"[14].

In the following, we will discuss whether these methodologies are sound, not the particular numbers that agencies or parties may come up with in application of the regulatory methodology.

III.   Looking for a market failure

Basic economics by no means vindicates laissez-faire; market failures abound, that offer substantial scope for improvement through sensible policy intervention. But basic economics also teaches us that that policy interventions must be grounded in a rigorous treatment of several questions: what is the exact market failure and is it sizeable? Does the state have the information and the instruments to correct the failure? Will the remedy's costs be offset by sufficient benefits? Such questions should be satisfactorily investigated before enacting new regulations.

The payment industry is no exception to the rule. Because there is widespread confusion about where the market failure lies[15], we start by identifying it. It is sometimes believed that the joint determination of an IF by banks represents an attempt to cartelize and raise prices. Economists and antitrust enforcers are rightly suspicious of attempts by competitors to get together and raise prices to users. The snag with this reasoning in the case of payment cards, though, is that there are two groups of users and that increasing the IF raises the price of card transactions for one group (merchants) and lowers it for another (cardholders). Put differently,

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use generates for them. Merchants derive such transactional benefits if card payments reduce their cost relative to cash payments, for instance, because transportation and security expenses for cash are saved or if check-out times at cashier desks are reduced. The implementation of the balancing fee ensures that the merchant is indifferent as to whether card or cash payments are made. To the extent that the fee is passed on to the cardholder, it will ensure that cardholders make efficient choices with respect to payment instruments, being effectively led by the MIF to internalise the cost saving that card usage entails for the merchants. Importantly, this approach prevents the MIF from being set at a level such that banks would take advantage, by collective agreement, of the fact that individual merchants feel compelled to accept a payment card even if it is more expensive than other payment instruments, fearing their customers would otherwise not make purchases at their store (e.g. because other merchants accept the card)."

[14] "The methodology underlying a MIF should be transparent to the final users of a scheme" (EC EMO/07/590, December 2007).

[15] Chairman Bernanke famously posed this question in a Federal Reserve Open Board Meeting: "There's a presumption that prices will be set by market competition, generally, but then, of course there are counter examples such as electric utilities, for example, where the government intervention can be justified … for various reasons. Can you … help us thin[k] about … what are the arguments for and against allowing interchange fees to be determined in the market versus having a regulatory intervention when we think about the economics?" See "Federal Reserve Board of Governors Holds an Open Meeting," *CQ Financial Transcripts*, December 16, 2010, at p. 8 of 28.

in a first approximation[16] the IF affects the price *structure* and not the price *level*[17]. This feature by itself makes received knowledge about "cartelization" inadequate.

Later we will remark on the implications of banning the collective setting of IFs. For most of our analysis, let us follow regulatory practice, keep the institution as a given and examine the consequences of laissez-faire. We will also assume that merchants' surcharging for card usage is either prohibited or deemed by merchants to involve high transaction costs or to be unattractive to the consumer; when retail prices are the same regardless of the means of payment, the price of a card transaction relative to a cash transaction is 0. These two assumptions are broadly realistic in our current environment.

There accordingly can exist two externalities between end-users:

- The merchant may not take a card that the cardholder would like to use, implying a loss of surplus by the latter.
- Conversely, the cardholder may prefer a means of payment that the merchant finds costlier than an alternative payment method. The cardholder then does not internalize the extra cost he imposes on the merchant.

To be sure, there are limits to such externalities: The merchant's refusal to accept a card makes her business less attractive to consumers, implying a loss in goodwill; conversely if cardholders want to use cards that are very costly to the merchant, the latter always has the option of rejecting it[18]. Still, in a world in which the choice of payment method is unpriced[19], nothing guarantees that the end-users' decisions (acceptance, usage) are "socially right", in that they maximize joint user surplus.

Interestingly, the magnitudes of these externalities are determined by the IF. In the relevant range of IFs, one externality increases while the other decreases when the IF moves around. For example, suppose that the IF and consequently the merchant fee are sufficiently high that a card payment is more expansive for the merchant than a cash payment (the reader may wonder why the merchant then keeps accepting the card- more on this shortly). An increase in the IF raises the merchant fee, makes cards less attractive to merchants and reduces the fraction of shops that take the card, depriving cardholders of the ability to use their preferred payment method. Concurrently, those merchants who keep accepting the card are hurt more badly when cardholders use the card. One thus sees the prominent role of IFs and understands why they command so much attention from merchants and policymakers.

Finally, and in order to streamline the presentation, we will abstract from issuer and acquirer market power and later explain how relaxing this assumption affects the analysis. It is

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[16] When issuers and/or acquirers have market power they may pass through cost increases or reductions more or less than one-for-one. Then a change in the IF may affect the price level and not only the price structure. For an analysis of pass-through in one- and two-sided markets, see the papers by Weyl and Fabinger, including (2009).

[17] This is more broadly a feature of "two-sided markets" (see e.g. Armstrong 2006, Caillaud-Jullien 2003, Evans 2011, Rochet-Tirole 2003a, 2006b, and Weyl 2010).

[18] Or of surcharging for card purchases when this is allowed and does not create high transaction costs.

[19] Even if it is priced (surcharging), imperfect information about card acceptance and about surcharging may still make the competitive outcome inefficient.

generally considered that the acquiring industry, despite some concentration, is in a number of countries rather competitive[20]. Acquiring services are pretty close substitutes; because merchants are relatively well informed and eager to shop around for the lower fee, this segment of the industry in countries with competitive acquiring is rather commoditized. By contrast, the issuing side, despite much entry and numerous competitors may be less competitive in the short run.

IV.   Merchants' demand for card payments

IV.1 Two benchmarks

There is much confusion about the measurement of how much merchants are "willing to pay for a card payment", that is about their demand for card payments. Dispelling this confusion requires defining the alternative to a card payment: would the payment be made through "cash" (broadly construed to include cash and checks, the traditional means of payment) instead? Or would there be no transaction and no payment at all?

Even focusing on cash substitution, measuring the merchants' willingness to pay also requires making a distinction between:

- The net benefit that merchants enjoy when the customer uses a card rather than cash,
- How much they are willing to pay once they *further* take into consideration their desire to attract the customer.

The two notions coincide when the consumer enters to the shop without knowledge of its card acceptance policy, stands captive at the cash register (is confronted with the set of payment options dictated by the merchant), and is able to pay by cash (or check). Hence the terminology of the "tourist test" coined in my 2006a paper with Jean-Charles Rochet, a test which was much discussed in the regulatory hearings at the European Commission and at the Federal Reserve Board: "does the IF level lead to a merchant fee that would induce the merchant to turn down the card for a tourist who has cash, assuming that the merchant had this discretion?".

In general though, the second notion exceeds the first. Consumers may inquire into whether the shop takes the card before going to or entering the shop; or else consumers may be repeat consumers. Either way, accepting the card makes the shop more attractive and results in extra sales. The merchant may then take the card even though she wished that, conditional on the customer making a purchase, that purchase be made through an alternative means of payment such as cash or check; put differently, the merchant is willing to pay the high level *ex ante* (before the customer decides whether to visit the store) but not *ex post* (once the customer is captive). It is clear for example that merchants' acceptance of American Express cards at fees of 3 or 4% of the transaction (as was the case for a long time) was motivated by the desire to

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[20] Acquiring is less competitive in countries with monopoly acquiring such as Portugal, though. And when competition in acquiring is the rule, it is less intense for small than for large merchants: smaller merchants shop less around, and furthermore acquirers must verify their creditworthiness. See Schmalensee (2002) for some implications of imperfect acquiring competition.

attract the (generally well-to-do) customers who carried American Express cards rather than by a demand for economizing on the cost of cash transactions, however high this cost may be. Table 1 lists various elements that enter the narrow and broad concepts.

Let S denote the cost savings, and A the attractiveness benefit. Let c_a denote the cost of the transaction for the acquirer. An IF equal to $S- c_a$ leads to a merchant fee equal to S once competitive acquirers have added their acquiring cost to the IF. The merchant is then ex post indifferent between a cash payment and a card payment. By contrast, in order to attract a customer she will accept merchant fees up to $S+A,$ that is take cards for which the IF does not exceed $S+A- c_a$.

Merchant's willingness to pay

Narrow concept: S Merchant's net benefit from card usage (tourist test)	Broad concept: S+A Inclusive of attractiveness benefit
1. *Cash substitution*: card usage • Eliminates handling/depositing cost • (If network offers payment guarantee) eliminates cost of fraud (counterfeit money, invalid checks) • Reduces risk of holdup in store and employee theft, and economizes cost of armored vehicle transfers (when cash is substitute) • Reduces delay at counter (mainly when check is substitute) • Reduces float/ speeds up crediting of merchant's bank account (relative to a check) • Provides merchant with value-added services; e.g., facilitates tracking of consumer purchases/ reporting services 2. *Missed sales*	Narrow concept, *plus* 1. *Cash substitution*: card provides cardholder with • Convenience benefit of card usage for consumer (no need to go to ATM, or if large amount to bank branch) • Interest-free period for consumer (differed debit cards) • Flexibility in managing cash balance (credit cards) • Payment traceability 2. *Missed sales*

Table 1 : Defining merchant's willingness to pay for basic card service.

The first entry in the narrow and broad concepts is usually referred to as "cash substitution", although "cash" should obviously be taken to mean "cash and checks"; its ingredients are straightforward. By contrast, the second, "missed sales", entry in the narrow and broad concepts requires some explanations.

Suppose, first, that a customer in the shop does not have enough money in his bank account to purchase the good or service immediately. Either the purchase was unforeseen or the

transaction costs of asking for an overdraft facility at his bank were perceived as high. Were the merchant not to accept credit cards, the transaction would not take place, generating a loss for the cardholder, but also for the merchant, who would then lose the (usually substantial) markup on the retail good[21]. The avoidance of missed sales is therefore an important benefit for the merchant. There is indirect evidence that this benefit may be sizeable: for durable goods, large merchants often subsidize credit on their own despite the likely inefficiencies involved (such as additional transaction costs stemming from a new loan contract and the multiplication of the consumer's creditors, making the surveillance of consumer solvency more difficult).

Even for debit cards, there may not be any possibility of payment by check or cash, resulting in missed sales. For a brick and mortar outlet, the (time pressed) customer may have no checkbook with him and no ATM easily accessible; or the shop (flower shop for instance[22]) may be reached by phone. More importantly still, e-commerce is vastly facilitated by the use of electronic payments. Cash or even checks really cannot easily substitute for cards for online purchases.

Either way, the substitute for a card transaction in such situations is no transaction at all rather than a cash transaction.

The possibility of missed sales, which seems quite important for the parties in practice, has unfortunately been underexplored in the economics literature, which focuses on the cardholders' choice of merchant and on the joint determination by cardholders and merchants of the payment instrument through which they will transact[23]. Thus missed sales is an important topic of reflection in the agenda of decision-makers and academics (theory, empirics); but we can make a few tentative points nonetheless.

The socially relevant question is whether end-users (cardholders, merchants) exert externalities on each other, and if so how we can induce them to internalize these externalities. Put differently and anticipating somewhat, one should ask (a) what those externalities are, and (b) how the IF can be used to make the parties internalize the externalities they impose on each other.

A higher IF on credit cards for example leads to cheaper credit cards for the consumers and encourages them to hold and carry such a card. This creates a benefit for the merchant, which enters the narrow definition. The possibility of missed sales also enters the extra, attractiveness term of the broad definition; for, suppose that a consumer holds a credit card and, having insufficient liquidity on his bank account, contemplates a credit purchase at the merchant. Such a purchase is infeasible- or costly to implement for the consumer- if the

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[21] If the customer instead leaves the shop, obtains some credit from his bank or a friend, and comes back to the shop to purchase the good or service, there is also a social cost, but of a different nature, since the cost is borne by the consumer and therefore fully internalized by him.

[22] Some readers may also remember the transaction costs and delays involved when buying by phone from discount retail outlets and sending a check to pay for the goods.

[23] A notable exception is Rochet-Wright (2010).

merchant turns down credit card. So credit card acceptance contributes to the merchant's attractiveness.

Our treatment below will be couched in terms of cash substitution, but as noted above, missed sales matter and are not to be ignored.

IV.2 Network choice of IF

Next, we can inquire into what IF a payment card network would like to set. Suppose that the network aims at maximizing card volume[24]. Because a higher IF makes card usage more attractive to cardholders, the network should set the highest possible IF, i.e. the highest IF consistent with the merchants' not rejecting the card. This is where our two benchmarks come into play. First, the IF can in no circumstance exceed $S+A- c_a$, as this would always lead merchants to turn down the card. Conversely, any IF below or equal to the tourist test level $S- c_a$ always leads to merchant acceptance, since card transactions then minimize the cost of transactions for the merchant and furthermore card acceptance may attract new customers.

Where in the interval [$S- c_a$, $S+A- c_a$] will the network set its IF? The answer to this question hinges on two factors:

- *Consumer information about card acceptance*: suppose all consumers are "tourists" in the sense that they are unaware of card acceptance policies when deciding where to shop. Then the network cannot charge an IF above the tourist test (or cash substitution) level $S- c_a$. By contrast, with well-informed consumers, the IF can be set at $S+A- c_a$ without inducing merchants to reject the card.
- *Cardholders' number of cards/systems*: suppose that consumers have, say, two cards in their pocket[25], one issued by a member of the Visa network and one issued by a MasterCard member. They are then said to "multi-home". If the Visa network charges a higher IF than the MasterCard network, the merchant finds Visa cards more expensive than MasterCard's and stop accepting Visa cards whenever the Visa merchant fee exceeds S.[26] Suppose that attractiveness is a concern for the merchant, and so the merchant internalizes the customer's net benefit from card transactions[27]; the merchant then aims at inducing a choice of payment method that maximize not her

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[24] As shown in the literature, this assumption is indeed validated under reasonable assumptions for either a non-profit association (as Visa and MasterCard were until the last decade) controlled by issuers or for a for-profit system.

[25] More than 50% of American consumers in 2006 had multiple cards (that may belong to the same network, though). Most however made use of a single one, using the other(s) as insurance against a technical problem or non acceptance by the merchant. That is, "multi-homing" in membership is much more prevalent than "multi-homing" in usage (Rysman 2006).

[26] See e.g. Rochet-Tirole (2006a) and especially Guthrie-Wright (2007).

[27] In the case of "tourists" (as defined above), card acceptance plays no role in attracting a customer. The merchant then aims at minimizing cost and at best takes only cards that reduce her cost of transacting with the customer. When cardholders multi-home, though, the merchants turn down cards even when the latter allow them to economize on cost (the merchant fee lies below S). System competition then results in an inefficient IF strictly below the tourist test and equal to the level which maximizes expected merchant cost savings from cash substitution.

own direct benefit but the joint surplus of the merchant and the customer[28]. The closer the merchant fee is to the merchant's cost savings S, the smaller the externality of the customer's choice of payment method on the merchant, and thus the better the customer's decision from the point of view of the joint surplus.

The importance of multiple-card-holding is highlighted by the downward pressure on American Express's merchant fee upon the introduction of no-fee-cards in the US in the early 90's[29]. Numerous MasterCard and Visa cards were offered, that involved no yearly fee. American Express cardholders could costlessly use such cards as a backup for their Amex card and so merchants were less reluctant to turn down the Amex card, which carried very high merchant fees[30].

Note, finally, that system competition brings IFs down only if cardholders multi-home on multiple systems. If cardholders hold a single card or hold several cards on the same system (e.g. several Visa cards), system competition exerts no pressure on the IF, as only the cardholder has a choice. The merchant has no choice but accepting the cardholder's system offer if she wants to transact by card with the cardholder. This situation is known as the "competitive bottleneck" case in the economic literature.

To sum up, consumer information about the merchants' card acceptance policies drives the IF up and away from its tourist test level. By contrast, the consumers' holding cards from multiple systems drives the IF down towards its tourist test level.

V. What does economics say about IF regulation and is current regulation economically sound?

V.1 The tourist test as a benchmark for regulation

In an industry fraught with externalities there is no guarantee that private decisions achieve a socially satisfactory outcome. Indeed in the simple world described so far, it is easily seen that private interests can only lead to an IF, and consequently a merchant discount, that are higher than what society would desire. A basic economic precept is that welfare optimization requires economic agents not to exert externalities on each other. Suppose that the IF is set at its tourist test level. Then the merchant by definition is indifferent as to the choice of payment

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[28] This joint surplus is called "total user surplus" in Rochet-Tirole (2006a), to which we refer for the derivations.

[29] As explained above, American Express is a three-party system, and therefore has no formal interchange fee (the shadow IF is equal to its merchant fee minus the cost of acquiring). But the reasoning is the same as for four-party systems since the merchant is concerned about her own cost and her attractiveness, and not about the black box of the issuing and acquiring industry per se.

[30] A well-known illustration is the Boston fee party. According to the Wikipedia American Express entry:
"However, in 1991, several restaurants in Boston started accepting and encouraging the use of Visa and MasterCard because of their far lower fees as compared to American Express' fees at the time (which were about 4% for each transaction versus around 1.2% at the time for Visa and MasterCard). A few even stopped accepting American Express credit and charge cards. The revolt, known as the "Boston Fee Party" in reference to the Boston Tea Party, quickly spread nationwide to over 250 restaurants across the United States, including restaurants in other cities such as New York City, Chicago, and Los Angeles. In response, American Express decided to reduce its discount rate gradually to compete more effectively and add new merchants to its network such as supermarkets and drugstores. Many elements of the exclusive acceptance program were also phased out so American Express could effectively encourage businesses to add American Express cards to their existing list of payment options."

method by the consumer; there is therefore no externality and the consumer makes the socially correct decision. Thus <u>in the simple world considered so far and in the absence of other distortion (such as issuer or acquirer market power) the socially optimal IF is equal to its tourist test level</u>.

This reasoning assumes that merchants have the same cost savings from card payments S. When merchants differ in their cost savings, the proper generalization of this rule (still assuming that there is no market power) is that the cardholder internalizes the average cost savings among merchants who take the card[31]. This rule implies that at the social optimum those merchants who receive the lowest cost savings (less than average) among those who take the card will fail the tourist test; for them accepting the card increases cost. To take an example, suppose that there are three categories of merchants, with card cost savings equal to 1, 2 and 3% of the transaction respectively and there are equal numbers of each category. The socially optimal IF is then 2%. This requires that merchants attribute a value of at least 1% to attractiveness, so that the category with only 1% cost savings is kept on board when the IF is 2%.

Can the system-optimal IF exceed its socially optimal level? The answer is a clear "yes". As we just saw, the merchant may reluctantly take a cost-increasing card so as to attract customers. This attractiveness concern may in theory result in too many card transactions (Rochet-Tirole 2002), justifying John Vickers (2005)' use of the "must-take card" terminology.

Section VII will qualify this analysis by pointing out that in the presence of issuer or acquirer market power or of a subsidization of checks and cash, the socially optimal IF exceeds the level given by the tourist test. At this stage let us focus on the <u>tourist test level as a conservative benchmark</u> for the socially desirable IF.

V.2 How does the economics recommendation compare with actual policy?

As we noted, European regulators have endorsed the tourist test methodology[32].

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[31] See Rochet-Tirole (2006a). An early analysis of unobserved merchant heterogeneity is due to Schmalensee (2002).

[32] In a <u>European Commission memorandum</u>, it adds some caveats in answering the question, "will any MIF that satisfies the 'tourist test' be automatically compliant with Article 81 (3) EC Treaty?":

"The 'tourist test' provides a reasonable benchmark for assessing a MIF level that generates benefits to merchants and final consumers. It determines a MIF that allows the promotion of efficient payment instruments, while at the same time preventing that the MIF exploits business-stealing effects to the detriment of the scheme's users, which would lead to an inefficient promotion of payment instruments that impose invisible costs on consumers. However, the general applicability of the 'tourist test' for the purposes of Article 81 (3) depends on the specifics of the markets at hand. Some (non-exhaustive) cautionary examples are listed below:

1. While a MIF at appropriate levels makes the use of efficient payment instruments more attractive to consumers, other (less-restrictive) mechanisms may do so as well in some markets. For instance, this is the case if merchants themselves can be expected to efficiently incentivize the use of less costly payment instruments by applying rebates to those means of payment. In this case a MIF may not be indispensible, as direct incentives given by merchants may internalize network externalities between merchants and users of payment instruments more directly.

By contrast, the methodologies proposed by American and Australian regulators are broadly similar in that they are based on the issuer's cost. For instance, the Dodd-Frank act prescribes an IF that is "reasonable and proportional to the cost incurred by the issuer with respect to the transaction"[33], namely the incremental cost of authorization, clearance and settlement. The "reasonable and proportional" phrasing allows much flexibility in the interpretation of this recommendation, making any exegesis necessarily controversial. But for the sake of the argument we can assume that it will be interpreted as an IF regulation at a level equal to the issuer's variable cost associated with the processing the transaction[34].

The issuer cost (c_i) to be used as a benchmark for the regulated IF unfortunately bears little relationship with the theoretically correct level, which focuses on the acquirer/merchant side rather than on the issuer side.

While economics tells us to take cost-based IF regulations with circumspection, it is sometimes argued that issuer cost is easier to measure than merchant benefit, which is more heterogeneous. This is probably correct and indeed, as a general point, one should be wary of policy recommendations that are based on hard-to-measure variables. This being said, merchant benefits are measurable, and there have been attempts at providing such measures[35]. The point is that given the enormous amounts of money at stake it would be reasonable to conduct a couple of studies measuring benefits of specific classes of merchants and to use reasonable rules of thumb in order to extrapolate for other classes.

VI. Regulation-induced industry-structure distortions: some unintended consequences of IF control

Market forces are not easily suppressed and we should expect that as the dust settles on a strict IF regulation, this regulation will be evaded, possibly in inefficient ways.

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2. When a payment card would reach universal usage in a market even without MIF, the need to promote the issuing of such a card in terms of network effects would vanish.

3. More generally, there must be a reasonable channel through which interchange fees can promote the use of cards. With respect to debit cards, the reward programs for such cards (which directly incentivise usage) typically do not exist and that cardholding across Member States is already widespread (but not complete). Therefore, the DG Competition does not consider that possible future increases of the 'tourist test' estimation for debit cards would necessarily justify an increase in the debit card MIF, unless payment card associations can ensure that the banks receiving such a higher MIF have installed appropriate cash-back programs for debit cards that could directly incentivise a wider use of debit cards on a per-transaction basis.

4. Conversely, circumstances may in principle arise under which justifications for higher MIFs could be demonstrated by payment card associations. However, significant objective evidence would be needed to establish that this is the case."

[33] See new section 920 of the Electronic Fund Transfer Act.
[34] In its December 13, 2010 recommendation, the Board of Governors of the Federal Reserve System's staff recommends using an average cost measure as a means to calculate incremental cost.
[35] See e.g. Garcia-Swartz (2006a, b) and Layne-Farrar (2011). Also, "the Commission's competition department has commissioned a study with a view to collect data in order to improve the factual basis for the assessment of what level of MIF would be in accordance with the tourist test" (European Commission memorandum).

VI.1 Evading regulation through migration to three-party systems

A puzzle regarding the last two decades of antitrust enforcement in the payment industry is the sole focus on open systems. Such a focus tilts the industry's business model in favor of three-party systems for no clear reason. Whatever regulation (or lack thereof) one advocates, neutrality with respect to business organization should be the rule, so as to let the most efficient forms emerge.

In reaction to downward pressure on IFs, cardholders and issuers, who benefit from higher IFs so long as merchants keep accepting the card, have an incentive to migrate toward card payment schemes that put more of the burden on the merchant. A case in point is Australia where in the wake of the mandated decrease in the IF, 3 of the top 4 Australian banks signed up agreements to issue American Express or Diners Club cards. IF regulation therefore induces cardholder migrations toward three-party systems that offer them a better deal in the allocation between merchants and cardholders.

Substituting merchant fee regulation for IF regulation would enable the proponents of regulation to maintain a level-playing field among competing organizational forms. But of course, this call for organizational-form neutrality does not per se imply that regulating three-party systems is optimal. As is often the case in second-best analysis, adding a distortion need not reduce welfare when another distortion is in place: If proposed four-party system regulation overshoots and excessively constrains the IF, the issuers' ability to evade regulation by migrating to three-party systems could be desirable.

VI.2 Preferred merchant programs

In the previous regulatory evasion, issuers either joined an existing and previously closed system as licensees or started their own closed system. But there is no need to quit a four-party system in order to re-create a high IF when its level is formally constrained by regulation. A large issuer (or a consortium of issuers) can launch a preferred merchant program. This program works as follows: the card offers low benefits and functions as an ordinary card at non-affiliated merchants; cardholders enjoy extra benefits when they shop at merchants affiliated with the program. It also signs up affiliated merchants, who then either pay a fee over and beyond the IF to the issuer for each transaction (if the issuers provide the reward), or offer direct cash rebates to cardholders, on the grounds that being part of the program brings customers to the merchant.

Preferred merchant programs are on the rise. Citi has a program called the Thank You Rewards Program that includes selected merchants and offers specific benefits tied to those participating merchants. Chase has a similar program called Ultimate Rewards. MasterCard just rolled out the MasterCard MarketPlace which again offers specific rewards tied to participating merchants.

Through a preferred merchant program, an issuer, a group of issuers, or the system itself can thus increase the *effective IF*, equal to the sum of the regulated IF and the extra fee or direct

cash rebate demanded from affiliated merchants[36]. Furthermore, the more stringent the regulation (the lower the regulated IF), the higher the resulting effective IF![37]

In a nutshell, issuers can piggyback on a regulated four-party system and, through a preferred merchant program, raise the effective IF. This probably implies some welfare losses compared to laissez-faire since merchants contract with (conceivably a small number of) issuers as well as the system, and consumers need to be aware of, and remember the list of affiliated merchants (so instead of just knowing whether the merchant takes say the basic Visa card, they will need to also know whether she takes her issuer-specific premium card).

Finally, besides issuers or the system, an association of merchants may alternatively offer a card that contains reward programs. Again the multiplication of actors checking the creditworthiness of consumers may represent an inefficient bypass of IF regulation.

VII. Why the tourist test is probably a conservative estimate for regulatory purposes

This section reviews two arguments suggesting that the tourist test yields a conservative estimate of the socially desirable IF.

VII.1 Issuer and acquirer market power

Suppose now that, as is likely, issuers make a profit at the margin on card transactions. That is, the IF that they receive from acquirers more than offsets their issuer variable cost plus whatever benefit they pass through to cardholders (cash-back bonuses, frequent flyer miles, etc.). An increase in the IF, provided merchants are kept on board, boosts issuer profits.

The mandate of antitrust authorities is often interpreted as one of advocacy for consumer interests; the translation in our two-sided market context is that authorities should focus on the impact of their policies on end users (cardholders plus merchants), and thus on total user surplus.

Economists' concept of social welfare more broadly includes profits. With this broader concept of social welfare and assuming that the acquiring sector is perfectly competitive, the internalization argument implies that the socially optimal IF is equal to its tourist test level augmented by the issuers' markup[38].

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[36] I here assume that cardholders are aware of merchant card acceptance policies. IF regulation is more effective if cardholders are "tourists", but we know then that regulation is always dominated by laissez-faire in that case.

[37] A more stringent regulation lowers total user surplus and makes the card less appealing to the merchant when considering attracting consumers. This makes the merchant more likely to accept high effective IFs. Because it maximizes joint user surplus, the tourist test level is not subject to such arbitrage by preferred merchant programs.

[38] As usual, the existence of an issuer markup above issuing cost does not imply that the issuing industry is not competitive from a long-run perspective. It may be that the markups cover the fixed costs associated with the issuing activity.

There is substantial debate as to whether antitrust authorities should factor profits into the computation of social welfare (they rarely do[39]). Take issuer profits. If the profits associated with cardholders' installed base are dissipated through wasteful advertizing expenditures to "acquire" cardholders, profits should not enter social welfare calculations. By contrast, profits also drive technological and pricing innovations as well as new entry[40], eventually benefitting cardholders[41]. Indeed from a theoretical viewpoint there is a continuum of situations that vindicate the various IFs between the narrow and broad concepts depending on what fraction of profits are dissipated and what fraction leads to enhanced cardholder welfare. Ultimately what fraction of profits should be factored into the computation of the IF is an empirical question, which we won't attempt to resolve here. But there is no question that not including any leads to a conservative estimate of the desirable IF.

VII.2 Subsidized competing means of payment

The analysis assumed that alternative payment methods (cash, checks) are fairly priced. This however need not be the case. In some countries, banks are not allowed to charge for the costs they incur on checks; in this case, checks are "subsidized" in that their cost is recovered through cross-subsidies from other banking activities. Checks and cards then wage unfair competition. Similarly, merchants may prefer cash for non-avowable reasons (tax evasion). Cash is then unduly favored.

Basic economics teaches us that when two goods are substitutes and one of them is "subsidized", in that it does not pay some social cost it imposes on society, the other good should itself be "subsidized" so as to restore a level-playing field and prevent a wrong allocation of resources. This has long been the standard argument in favor of subsidizing public transportation to offset the unfair advantage enjoyed by the automobile when it does not pay for its congestion or pollution cost.

The desirable response would be to address this regulatory failure directly by letting checks be priced and by curbing tax evasion; but if political opposition or monitoring costs make such a direct correction infeasible, then favoring card usage by raising the IF above its tourist test level is the second-best policy response.

VIII.   Concluding thoughts

Let us summarize the main insights:

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[39] In this respect, competition policy takes a somewhat different approach from intellectual property law, which views patents and other profit-generating IP protection institutions as an inefficient, but key instrument for providing incentives for innovation.

[40] Note that we here take a long-term perspective. In the short-term, profits are just rents that go to investors. Accounting for profits raises a different interrogation when one takes the short-term perspective: if investors are average citizens they should be fully accounted for. With well-to-do investors and redistributive concerns, only a share of profits should be included into social welfare.

a) *Understanding how IFs are set in the absence of regulation*
- Four-party systems set their IFs, and three-party systems their merchant fees, with an eye on what merchants can bear. Because their profits grow with card volume, they have an incentive to charge high IFs/merchant fees, and to induce their cardholders to use the card.
- Merchant demand for card usage can be defined in two ways: narrow (the net benefit for the merchant: how much they directly save when a card payment substitutes for a cash or a check payment, as well as the enablement of transactions which otherwise would not occur) and broad (a concept that further includes the cardholders' perceived benefit from card usage). The narrow concept is appropriate in the case of a consumer who does not need to be attracted through card acceptance (the hypothetical "tourist"), while the broader concept applies when the merchant views her card acceptance policy as a means to attract consumers to her shop. What the merchants can bear lies between these two benchmarks.
- System competition puts downward pressure on IFs only if individual cardholders hold cards on different systems. Under full "multi-homing" merchants cannot be charged more than their net benefit.
- Three-party systems use an implicit IF, defined as the difference between the merchant discount and the acquiring cost.

b) *Implications for policy-making*
- Regulated IFs should not lie below the level set by the "tourist test", which reflects the first benchmark; that is, the IF should be at least equal to the difference between the merchant's benefit from card usage and the acquiring cost.
- This level however probably is a conservative estimate of the socially desirable IF for two reasons:
  - It does not reflect industry profit and its long-run impact on entry, innovation and end-user welfare.
  - It does not reflect the negative social externalities exerted by alternative means of payment (tax evasion for cash, subsidized use for checks).
- Regulation has hitherto been misguided in that it favors closed, three-party systems over open, four-party ones. There is absolutely no economic reason for treating the two asymmetrically. Antitrust authorities should not push the industry toward a particular organizational form, but rather should let the most efficient ones emerge.

A blind application of basic economic precepts is particularly hazardous in two-sided markets. This observation however does not imply that "anything goes" in the matter of policy design. Modern economics does suggest a framework for thinking through policy-making in this area. It is my hope that this note has helped clarify the underlying principles.

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Payment card regulation and the use of economic analysis in antitrust

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A key input of our modern economies, payment cards are ubiquitous; debit and credit cards offer a wide range of alternatives to cash and checks to operate brick and mortar, e- and mobile phone, and P2P payments. The contours of the industry are rapidly changing.

The payment card industry is also becoming one of the most heavily regulated industries in some parts of the world. The US and Europe, as well as a number of other jurisdictions across the world, have been or are in the process of regulating, inter alia, the network-determined payment made by the merchant's bank (called the acquirer) to the cardholder's bank (the issuer). This «Interchange Fee» has been the object of much controversy and the theoretical underpinnings of its regulation are still debated. The primary object of this note is to clarify the considerations that should be brought to bear on the determination of regulated fees. It argues that some broadly contemplated regulatory methodologies bear only limited resemblance with economically sound precepts. Finally, it derives some implications of these regulations for the likely evolution of the payment card industry.

Avec le partenariat de :