Volume 10 | Number 2 | Autumn 2014

Card Surcharges and Cash Discounts: Simple Economics and Regulatory Lessons

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The role of payment cards in modern economies can hardly be underrated. In 2013, debit and credit card transactions represented roughly half of all consumer payment transactions in Western Europe, and accounted for more than 45% of all payment transactions in the United States.[2] The payment card industry has faced intense antitrust scrutiny on both sides of the Atlantic, partly in response to the merchants' recurrent complaints about high transaction fees. In the past, regulation has mainly targeted the fees imposed by payment card networks. For instance, the most commonly used regulatory instrument caps the "interchange fee," which is the payment made by the merchant's bank (called the acquirer) to the cardholder's bank (the issuer). This interchange fee in turn impacts the merchant fee, which has sparked the controversy in the first place. The last few years have witnessed a renewed interest in policies allowing merchants to differentiate price according to payment choice. Absent public regulation on the matter, payment systems (open systems such as Visa and MasterCard, but also closed systems such as Amex, PayPal, and Google Wallet) have prohibited merchants from levying surcharges on their own payment method (the so called "no surcharge rule"). Arguably, one natural alternative to traditional regulation of interchange fees is to let merchants price discriminate as a function of payment method, allowing them to pass through to consumers any excessive merchant fees. The primary object of this note is to shed light on this debate, and clarify how optimal regulation of cash discounts/card surcharges by merchants is related to traditional modes of regulation of merchant fees.

I. INTRODUCTION

Merchants often offer consumers a variety of payments means, such as cash, credit/debit cards, and, in the case of online shopping, internet-based payment instruments, such as PayPal, Google Wallet, and Bitcoin.

Different payment methods entail different costs and benefits for consumers and merchants. When merchant fees are high and consumer subsidies for card usage are generous (for instance, in the form of miles or cash-back programs), consumers and merchants tend to disagree on their preferred payment method. In this context, at the point of sale, consumers typically prefer paying by card, whereas merchants may prefer payments by cash.

Under "price coherence" or "uniform pricing" (that is, pricing that does not reflect the payment method), consumers typically do not take into account the effect of their choice of payment method on merchant costs. Arguably, one natural way to make consumers internalize this externality is to allow merchants to make prices contingent on the payment method chosen by consumers. By using monetary incentives that favor their most preferred payment method, merchants can steer consumers towards paying in the "right way."

Yet, for a long time and in most countries, the possibility of price discriminating according to payment method was not granted to merchants. Card schemes enforced a rule prohibiting merchants from surcharging

card transactions—the so-called no-surcharge rule ("NSR"). Remarkably, however, this rule does not prevent merchants from offering cash discounts.

This asymmetry is puzzling for economists: When consumers are perfectly informed about the merchant's card policy, the difference between cash discounts and card surcharges is semantic. After all, the merchant can always redefine retail prices and interchangeably label the difference between cash and card payments as either a discount or a surcharge. This observation comes at odds with the fact that public authorities and business executives do not see discounts and surcharges as equivalent, as the recent and intense antitrust litigation on this matter attests.

THIS OBSERVATION COMES AT ODDS WITH THE FACT THAT PUBLIC AUTHORITIES AND BUSINESS EXECUTIVES DO NOT SEE DISCOUNTS AND SURCHARGES AS EQUIVALENT, AS THE RECENT AND INTENSE ANTITRUST LITIGATION ON THIS MATTER ATTESTS.

These issues are not limited to traditional payment card networks. A large variety of new payments instruments, such as PayPal, Amazon Payments and Google Wallet were recently developed to support internet and mobile-phone payment transactions. Merchants who accept these new payment methods are also contractually obliged to practice price coherence.[3] As card payment platforms had done earlier, online payment platforms try to foster the use of their payment instrument by eliminating merchant resistance in the form of discriminatory pricing.

In this note, we report on a framework for the study of payment-method-based price discrimination. We deliver insights on the platform's fee structure and the merchants' behavior under various alternative policies regarding cash discounting and card surcharging. We also draw normative prescriptions, and discuss optimal regulation.

We start by reviewing how authorities in different countries regulate payment-method-based price discrimination. We will then discuss a framework for the study of cash discounts and card surcharges, and flesh out the main economic forces that should drive regulation on this matter. We conclude by describing a number of positive predictions and normative implications of our analysis.

II. SOME INSTITUTIONAL BACKGROUND

A. United States

Whereas cash discounting was always allowed, card surcharging was long forbidden in the United States by payment card platforms.

Changes in regulation regarding surcharging took place very recently. Following a class-action lawsuit filed by merchants and trade associations in 2005, the United States District Court for the Eastern District of New York approved in January 2013 a settlement proposed by Visa and MasterCard.[4] Visa and MasterCard

agreed to alter their credit card surcharging rules, including the ability for merchants to surcharge certain credit card transactions. Surcharging is nonetheless still prohibited on any debit card or pre-paid card transactions.

NOTWITHSTANDING THE RECENT CLASS ACTION SETTLEMENT ON THE MATTER, THE LEGAL GROUNDS FOR SURCHARGING VISA AND MASTERCARD CREDIT CARD TRANSACTIONS REMAIN UNCLEAR FOR MERCHANTS.

Notwithstanding the recent class action settlement on the matter, the legal grounds for surcharging Visa and MasterCard credit card transactions remain unclear for merchants. This is so mostly because of 1) a variety of state laws than ban surcharging and 2) the often conflicting interaction between private contract obligations and social regulation.

First, the new rules require merchants to (i) notify the card scheme of their intent to surcharge at least 30 days prior to implementing their surcharging policy; (ii) cap surcharges to the costs incurred to accept cards (and in any event, no greater than 4 percent per transaction); and (iii) disclose their surcharging practices to customers at the point of entry, the point of sale, and on the receipt.

Second, the class-action settlement does not override state law. Currently, there are laws limiting surcharging in California, Colorado, Connecticut, Florida, Kansas, Maine, Massachusetts, Oklahoma, Texas, and Utah. Thus, before surcharging, a merchant must verify that surcharging is permitted in the state in which the transaction is made.

Last, the contracts signed with other credit card companies may impact a merchant's ability to surcharge Visa and MasterCard transactions. For instance, in order to surcharge a Visa credit card transaction, the merchant is obliged to do likewise on any transaction with any other credit card charging an at-least-as-high merchant fee. In parallel, the contractual rules of American Express, until recently, required that, whenever practiced, card surcharges have to be the same on all types of cards. Because Visa explicitly prohibits surcharges on debit cards, in such a case the merchant cannot surcharge any card.

On February 2014, American Express accepted a settlement agreement in a separate class of lawsuits that specifically addressed the ability of merchants to surcharge consumers using an American Express card. According to this agreement, merchants will have the option to surcharge American Express credit card transactions, even if they do not surcharge prepaid and debit card transactions. As of the date of this writing, Court approval was still pending to ratify this agreement.

B. European Union

In the European Union, the Payment Services Directive 2007/64/EC explicitly states that merchants can surcharge and/or offer a discount for the use of a given payment instrument. However, Member States were authorized to prohibit or limit surcharging on their territory. Whereas discounts are allowed everywhere in the European Union, the Member States policies toward surcharging vary significantly: As of today, 12 Member

States allow surcharging,[6] 14 prohibit it,[7] and 1, Denmark, allows surcharging for credit card but not for debit card. Some of the States that ban surcharges justify this prohibition by arguing that the no-surcharge rule encourages consumers to switch away from cash-based transactions to more efficient payment instruments.

When authorized, surcharging is nonetheless restricted by the European Consumer Rights Directive 2011/83/UE (article 19), in effect since June 13, 2014, that states that above-cost surcharges will be prohibited for all payment methods.

In 2012, the European Commission conducted a survey of surcharging practices in some European countries (Belgium, Denmark, Finland, France,[8] Germany, Ireland, Netherlands, Spain, and the United Kingdom). The survey results show that surcharging is an expanding practice, although not yet pervasive in all sectors. The countries with the highest share of surcharging merchants were Ireland (15 percent), the United Kingdom (14 percent), and the Netherlands (10 percent). The survey also found that surcharging practices in 2012 were more prevalent than in 2009 in almost all countries. For instance, in Denmark, 9 percent of merchants were surcharging in 2012, but only 5 percent did so in 2009. The travel/hotel sector was notably prone to surcharging: The average proportion of surcharging merchants added up to 26.9 percent in the United Kingdom and 34.8 percent in Ireland. Airlines, especially low-cost ones, are also particularly adept at "surprising" their customers with card surcharges at the point of sale.

More recently, in July 2013, a proposal for a new directive on payment services advocated that surcharging and discounting be *allowed* on payment instruments that are not subject to interchange fee regulation (these are closed systems, such as American Express), but *prohibited* on payment instruments that are subject to interchange fee regulation (such as Visa and MasterCard). Currently, this proposal is being discussed at the European parliament and the European Council of Ministers.

C. United Kingdom

The United Kingdom passed a law on February 28, 1991 that prohibited any payment card platforms from restricting the merchants' ability to surcharge consumers for card transactions.

In the first years following this law, surcharging remained a rare practice. Only one big company, Ikea, charged customers with a 0.70£ fee for card payments, whereas most of the small retailers remained committed to uniform pricing. Over the years, however, many firms in the entertainment and travel/hotel industries have adopted surcharging practices. For example, as of 2010, most airlines companies levied credit card surcharges of up to £10.

The Office of Fair Trading ("OFT") estimated that consumers spent around £300 million in card surcharges in 2010 in the airline sector alone. An OFT's consumer survey conducted in 2010 found that 87 percent of consumers objected to extra charges for credit cards and 91 percent objected to extra charges for debit cards.

A super-complaint[9] against excessive credit card surcharging was launched in 2011. It raised several issues: First, surcharges are often concealed from consumers before the point of sale. Second, surcharges do not appear to reflect the merchants' costs of card transactions. Third, many consumers do not have access to surcharge-free methods.

The OFT upheld the 2011 super-complaint, and promulgated a ban on excessive card charges that came into force on April 2013. Since then, merchants have been forbidden to charge customers more than what it costs them to process the payment. The attributable costs can include direct costs beyond the merchant service charge, such as (i) point of sale devices; (ii) risk management; (iii) charges for reversing or refunding a payment; or (iv) payments for services from intermediaries who provide equipment, fraud detection, and processing services for card payments.

IN SPITE OF THE NEW LEGISLATION, THERE IS A SENSE THAT MOST SURCHARGING COMPANIES ARE STILL EXPLOITING THEIR CUSTOMERS WITH INEFFICIENTLY HIGH CARD TRANSACTION FEES.

In a parallel development, in July 2012, the OFT ruled that airline companies should eliminate debit card surcharges for airline tickets purchased online.

In spite of the new legislation, there is a sense that most surcharging companies are still exploiting their customers with inefficiently high card transaction fees. Consumer associations are nowadays trying to monitor the implementation of the OFT decisions to make sure that companies stick to the rules.

D. Australia

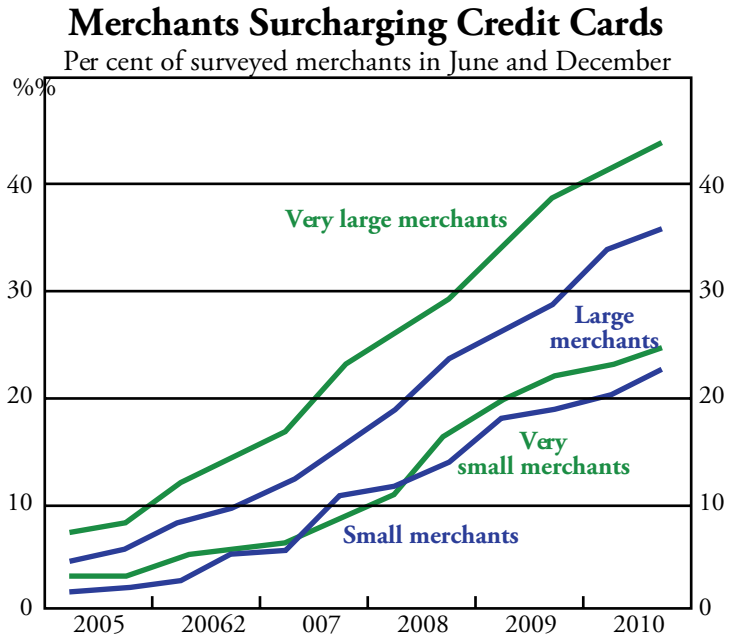
In the early 2000s, the Reserve Bank of Australia ("RBA") voiced concerns about the efficiency of its card payments system. Its main worry was that inefficiently high interchange fees were used to subsidize consumer reward programs, thus leading to overuse of card payment instruments.

In 2003, the RBA introduced reforms to the card payment market; it reduced interchange fees and prohibited the no-surcharge rule. This second measure came into force in 2003 for MasterCard and Visa credit cards, and in 2007 for debit cards. Figure 1 below illustrates the evolution of card surcharging in Australia since 2005.

HIS STUDY BROUGHT TO LIGHT MANY INSTANCES WHERE SURCHARGES WERE WELL ABOVE ACCEPTANCE COSTS, OR WHERE A SINGLE "BLENDED" SURCHARGE WAS APPLIED ACROSS SEVERAL CARD SCHEMES

Following the first years after the reforms, the Board considered these policies to be successful in reducing merchant fees. However, in 2010, the RBA conducted a study on consumer payment behavior that led to a reconsideration of the above policies. This study brought to light many instances where surcharges were well above acceptance costs, or where a single "blended" surcharge was applied across several card schemes (even though merchants' acceptance costs were significantly different across cards).

Figure 1: The Evolution of Card Surcharging in Australia.[10]



In June 2012, the RBA conceded the necessity of reviewing its surcharging policies: "In recent years... some surcharging practices that potentially distort price signals—such as surcharging in excess of card acceptance costs—have become more widespread."

The RBA then issued new rules, that took effect on March 18, 2013, allowing credit card companies to limit merchant's surcharges to "the reasonable cost of acceptance," which includes—but is not limited to—the merchant service fee. According to RBA data, this reasonable cost of acceptance should be, on average, less than one percent for merchants processing transactions through Visa and MasterCard, and about two percent for American Express and Diners Club.

Some enforceability problems were noted recently. First, the costs incurred by merchants are not observable by the card platforms. Second, and most importantly, card platforms are often reluctant to impose penalties on merchants, who may then switch to competing card platforms that are more lenient in enforcing the surcharging cap regulation.

One year after the introduction of these new rules, Choice, a prominent advocate of consumer rights in Australia, commissioned a new survey. The data revealed that Australians pay an estimated $800 million in credit card surcharges annually (an average of $100 per Australian household), mostly to airlines. Indeed many companies (in particular airlines) continue to use card fees as a way of raising additional revenue from consumers. The survey also found that close to half of Australians who reported paying a credit card surcharge claim were not being offered (or made aware of) an alternative, surcharge-free, payment method. Choice concluded that "the serial offenders won't stop slapping on extra charges until effective monitoring and enforcement is in place."

E. Canada

Prompted by intensive lobbying by merchant associations, Canadian authorities are currently considering lifting the no-surcharge rule. On the opposing side, the Consumers Association of Canada released in 2010 the results of a survey that found that 84 percent of Canadians do not approve of card surcharging. Notwithstanding strong consumer opposition, the Competition Bureau brought to the Competition Tribunal a complaint sponsored by major Canadian retailers against the no-surcharge rule. The Tribunal dismissed this complaint in July 2013 and suggested that the government act through regulation. No further action has been undertaken since then, and surcharging remains forbidden. It can, however, be noted that under the Code of Conduct for the Credit and Debit Card Industry in Canada, merchants may offer cash discounts.

NOTWITHSTANDING STRONG CONSUMER OPPOSITION, THE COMPETITION BUREAU BROUGHT TO THE COMPETITION TRIBUNAL A COMPLAINT SPONSORED BY MAJOR CANADIAN RETAILERS AGAINST THE NO-SURCHARGE RULE

III. MISSED SALES, CASH DISCOUNTS, AND CARD SURCHARGES: AN ANALYTICAL FRAMEWORK

The abundance of consumer complaints about exploitive card surcharging is common to all international experiences with surcharging authorization. Typically, card surcharges are only announced at the point of sale, after consumers incurred significant shopping costs.[11]

We take this observation as the key building block of our analysis of payment-method-based price discrimination.[12] Accordingly, we assume that consumers observe listed prices, but do not know the merchant's policy toward surcharging or discounting payment instruments, when they decide whether to visit the store (or browse the website, in the case of online merchants). This assumption is natural in industries characterized by one-time (or infrequent) shopping—such as travel (e.g., airlines and gas stations), tourism, and various retail/service sectors (e.g., durable goods). More broadly, this assumption is likely to hold whenever consumers have bounded memory or are rationally inattentive regarding past purchasing experiences.

Importantly, under this assumption, the payment platform cannot charge the merchant for the increased attractiveness stemming from card acceptance, which is the foundation for the traditional "must-take-card" argument that has been the centerpiece for many antitrust lawsuits on the interchange fee.[13] As we shall demonstrate, the assumption of imperfect information is key to understanding why consumers and merchants do not view cash discounts and card surcharges as equivalent.

THE ASSUMPTION OF IMPERFECT INFORMATION IS KEY TO UNDERSTANDING WHY CONSUMERS AND MERCHANTS DO NOT VIEW CASH DISCOUNTS AND CARD SURCHARGES AS EQUIVALENT.

An important benchmark for the regulation of merchant fees is the so-called "tourist test."[14] This test is said to be satisfied whenever the merchant fee does not exceed the merchant's convenience benefit of a card

payment, also called the avoided cost. That is—conditional on the customer being at the point of sale and willing to pay regardless of the payment method—the merchant is happy to have the customer pay by card.

The reference to a tourist captures the idea that there is no repeat purchase, and so accepting the card does not bring about any benefit from the customer being more willing to return to the store because he now knows that cards are accepted. A must-take card is then a card that merchants are willing to accept even when the merchant fee exceeds the convenience benefit of card transactions (i.e., the tourist test is violated). Holding constant the platform's profit margin per transaction, social welfare is maximized if, and only if, the tourist test is satisfied with equality. This test was recently adopted by the European Commission as the benchmark for setting interchange fees.

A. Missed Sales

A missed sale occurs when the customer is in the shop and eager to buy, has a high inconvenience cost of paying by cash, and is discouraged by either a high card surcharge or an outright rejection of the card.

Importantly, absent card surcharges or cash discounts, missed-sales concerns generate must-take cards. That is, merchants will accept the card even when the merchant fee exceeds their convenience benefit of card payments. The reason is that, when merchant markups are high, if consumers expect the merchant to accept cards, the volume of missed sales that would result from card refusal is high enough to induce the merchant to indeed accept card transactions.

The importance of missed sales is underscored by the empirical work of Wilko Bolt, Nicole Jonker, & Corry van Renselaar.[15] Using survey data from the Netherlands, they document that five percent of consumers reported leaving a merchant's store without purchasing when faced with card refusal or steep card surcharges. Given the relative magnitude of markups and merchant fees, such a fraction is likely to raise a significant concern for merchants.

B. Cash Discounts and Card Surcharges

When consumers imperfectly observe the merchant's discount/surcharge policy, cash discounts are a giveaway to consumers who already are in the shop and have cash. By contrast, card surcharges hold up the consumer, who has mad e the specific investment to come to the store and inspect wares.

WHEN CONSUMERS IMPERFECTLY OBSERVE THE MERCHANT'S DISCOUNT/ SURCHARGE POLICY, CASH DISCOUNTS ARE A GIVEAWAY TO CONSUMERS WHO ALREADY ARE IN THE SHOP AND HAVE CASH.

The merchant's optimal cash discount (card surcharge) balances the marginal revenue from steering customers to pay by cash and the marginal costs (gains) directly generated by the discount (surcharge). Cash discounts/card surcharges are optimal for the merchant if, and only if, the merchant fee, denoted by **m**,

exceeds a price discrimination threshold. The price discrimination threshold is lower for a card surcharge, which brings in additional revenue to the seller, than for a cash discount, which benefits customers. As a result, card surcharges occur even when the tourist test is met, while cash discounts only occur if the merchant fee is sufficiently above the tourist test level.

In Figure 2, which illustrates this point, $\mathbf{b_S}$ denotes the merchant's convenience benefit, i.e. the net benefit for the merchant of a payment by card relative to a payment by cash. The merchant fee levels $\mathbf{m_1}$ and $\mathbf{m_2}$ denote the price discrimination thresholds associated with card surcharging and cash discounting, respectively. Merchants levy card surcharges provided the merchant fee m is higher than the threshold $\mathbf{m_1}$, which is lower than the tourist test level $\mathbf{b_S}$. In turn, merchants offer cash discounts when the merchant fee m is higher than the threshold $\mathbf{m_2}$, which is higher than the tourist test level $\mathbf{b_S}$. The difference between $\mathbf{m_1}$ and $\mathbf{m_2}$ reflects the fact that, relative to card surcharges, cash discounts are a costly way of steering consumers to pay by cash. As a result, the merchant always prefers a card surcharge to a cash discount when given the choice between the two.

Figure 2: Discount and Surcharge Behavior by Merchants.

	Tourist test satisfied		Tourist test violated
Merchant discount m	m_1	b_S	m_2
Cash discount?	No		Yes
Card surcharge?	No	Yes	

Price discrimination then leads us to define *effective* merchant and cardholder fees, which are the fees that merchants and consumers effectively pay once the merchants' corrective discounts or surcharges are factored in; under a surcharge the effective merchant fee can be positive or negative even when the original merchant fee is positive. Because merchants use card surcharges as a price discrimination device (screening consumers with different costs of cash payments), the merchant always "overshoots" in the surcharge, leading to an effective merchant fee that strictly satisfies the tourist test. In contrast, because cash discounts are a costly gift to consumers, the merchant always "undershoots" in the discount, leading to an effective merchant fee that strictly violates the tourist test.

BECAUSE MERCHANTS USE CARD SURCHARGES AS A PRICE DISCRIMINATION DEVICE (SCREENING CONSUMERS WITH DIFFERENT COSTS OF CASH PAYMENTS), THE MERCHANT ALWAYS "OVERSHOOTS" IN THE SURCHARGE, LEADING TO AN EFFECTIVE MERCHANT FEE THAT STRICTLY SATISFIES THE TOURIST TEST.

These predictions are broadly consistent with available evidence. Using consumer and retailer survey data from the Netherlands (where both cash discounts and card surcharges are legal), Wilko Bolt, Nicole Jonker, & Corry van Renselaar show that about 22 percent of Dutch retailers practice card surcharges, while no retailers in their sample practice cash discounts.[16] They also provide empirical support for abusive surcharges by reporting an average debit card surcharge of 2.3 percent among merchants who surcharge. As merchant fees are around one percent for debit cards, the effective merchant fee faced by these merchants is, on average, negative.

Card surcharges are, for instance, commonplace for low-cost online bookings, in which customers sink a substantial time cost only to find out in the last (payment) step that a surcharge is levied. Moreover, the industries where credit card surcharges are most often experienced are air travel, holiday travel, restaurants, taxis, and gas stations. These industries exhibit one-time or infrequent shopping, and appear to fit well the assumption that consumers have imperfect information regarding the merchant's cash/card policy. By contrast, cash discounts are rarely observed in these industries.

C. Platform Fees When Cash Discounts/Card Surcharges are Allowed

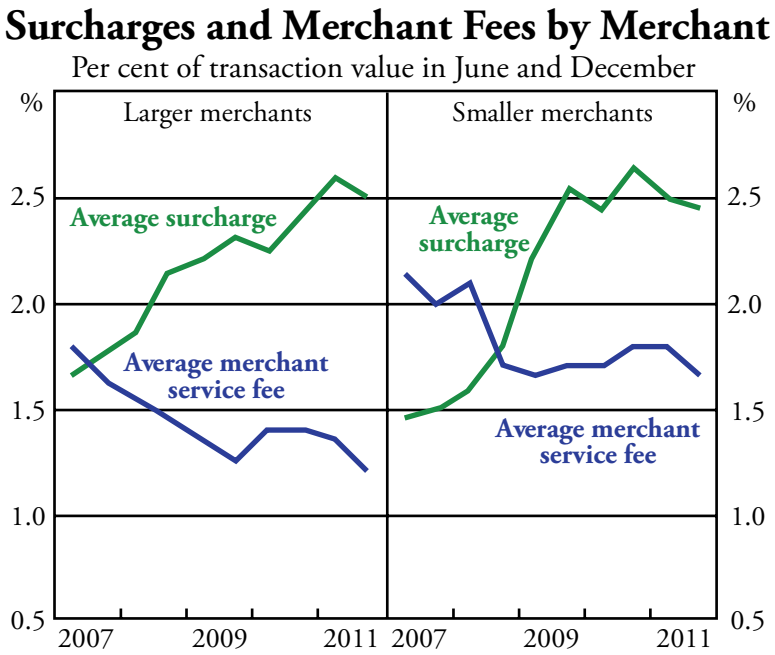
How does the platform optimally adjust its fee structure in response to laws allowing merchants to practice cash discounts/card surcharges?

HOW DOES THE PLATFORM OPTIMALLY ADJUST ITS FEE STRUCTURE IN RESPONSE TO LAWS ALLOWING MERCHANTS TO PRACTICE CASH DISCOUNTS/CARD SURCHARGES?

Consider first the case of card surcharges. Because of the merchant's surcharging behavior, permitting card surcharges has the same effect as that of an upper bound on the effective merchant fee that the platform can implement. The reason is that the merchant, by surcharging card transactions, has full control over his effective merchant fee. As the merchant "overshoots" in surcharges relative to efficiency (in order to extract more rents from consumers), the platform is unable to implement an effective merchant fee at or above the tourist test level. As a consequence, permitting card surcharges leads to an inefficiently low volume of card transactions.

Relatedly, interchange fee regulation and permitting surcharging are substitute instruments. Take the 2003 reduction in the interchange fee mandated by the RBA. For credit cards, the three bank associations, which had set the interchange fee at around 0.95 percent of the transaction value, were forced to reduce their interchange fee to around 0.55 percent. This reduction was concomitant with a regulation authorizing surcharging. Our analysis predicts that, with some caveats, a partial decrease in the interchange fee might have occurred anyway in reaction to the introduction of surcharging.[17] Figure 3 illustrates this point.

Figure 3: Surcharges and Merchant Fees[18]



In terms of welfare, lifting the no-surcharge rule substitutes one inefficiency (underuse of cards due to inefficiently high card surcharges) for another (overuse of cards due to low merchant resistance under uniform pricing). Therefore, welfare can either decrease or increase, depending on the level of merchant fees under uniform pricing. If this level is high, lifting the no-surcharge rule increases social welfare, but decreases it otherwise.

By contrast, allowing cash discounts is unambiguously welfare enhancing. As in the case of card surcharges, allowing cash discounts has the same effect as that of an upper bound on the effective merchant fees that the platform can implement. Because merchants "undershoot" in discounts relative to efficiency, this upper bound is strictly above the tourist test level. As a result, cash discounts reduce, but do not eliminate, an inefficiently high volume of card transactions. Welfare strictly increases with cash discounts if the upper bound is binding for the platform's problem in a world of uniform pricing. If this upper bound is slack, allowing for cash discounts affects neither the platform nor the behavior of the merchant (who does not find it profitable to practice cash discounts).

BY CONTRAST, ALLOWING CASH DISCOUNTS IS UNAMBIGUOUSLY WELFARE ENHANCING.

D. Are Regulatory Surcharging Caps Adequate?

Traditionally, policy discussions on the no-surcharge rule have focused on the discrete choice between *laissez-faire* (i.e., no restrictions on surcharging) and outright prohibition, with the payment systems typically enacting rules prohibiting surcharges and authorities occasionally striking down these rules. Lately, though, the European Union, the United Kingdom, and Australia all have proposed variations on the idea that surcharges

should be limited to some variant of the notion of "cost of acceptance," which includes the merchant fee plus possible various other costs.

As it turns out, any surcharge cap equal to or exceeding the merchant fee level is too lenient for the merchant. The optimal surcharging cap should equal the difference between the nominal merchant fee and the convenience benefit of card payments faced by the merchant ($\mathbf{m - b_S}$ in the notation of Figure 2). By capping surcharging this way, merchants can pass through to consumers any excessive merchant fee, but are prevented from exploiting consumers at the point of sale. In particular, the cost-based surcharging cap currently under consideration by regulators is optimal only in the unlikely event that the merchant's convenience benefit from card acceptance is zero.

AS IT TURNS OUT, ANY SURCHARGE CAP EQUAL TO OR EXCEEDING THE MERCHANT FEE LEVEL IS TOO LENIENT FOR THE MERCHANT.

There is an obvious caveat to the applicability of surcharging caps. Setting the "right" surcharge cap requires that the regulator knows the merchant's convenience cost of cash benefits. This knowledge is not easily available to regulators, and its measurement is subject to debate—as the recent experience of interchange fee regulation according to the tourist test attests.

Antitrust authorities are contemplating an alternative antidote to excessive surcharges, "mandated transparency," in which the merchant would be obliged to post the level of surcharge together with the price.

Transparency regulation in principle has the potential of forcing the merchant to commit to a card surcharge, therefore eliminating hold-ups for attentive consumers. However, this regulation faces its own difficulties. First, there are considerable menu costs for the merchant, who needs to post the surcharges for the different types of cards he accepts (debit/credit, various card associations and proprietary systems) next to the price or, more realistically, as a general policy displayed prominently in the store. Furthermore, inattentive consumers may overlook the card surcharging announcement, or be overloaded by its information. For instance, consumers may enter the shop thinking of a purchase for which they have enough cash and then discover that they want to buy a more expensive or an additional item.

Another issue is that price publicity may not come from the merchant. For example, the product manufacturer may run a national advertising campaign, where it is infeasible to disclose the policies of all retailers carrying the product. A similar issue arises when the consumer learns the retailer's price through a price-comparison engine; as is well-known such comparisons are multidimensional as they depend on the type of purchase/consumer. So, if websites pick the price for the bare-bones product (including a payment by cash) as they often do, there is still an element of hold-up in the retailer's choice of

IN THE END, NEITHER SURCHARGE CAPPING NOR MANDATORY TRANSPARENCY IS A PERFECT REGULATORY RESPONSE TO THE INEFFICIENCIES ATTACHED TO SURCHARGING, AND WE THEREFORE CAN THINK OF THE TWO REGULATIONS AS COMPLEMENTS.

surcharge. In the end, neither surcharge capping nor mandatory transparency is a perfect regulatory response to the inefficiencies attached to surcharging, and we therefore can think of the two regulations as complements.

IV. CONCLUSIONS

Let us summarize our main insights. The main positive implications of our analysis are:

1. Missed-sales concerns generate must-take cards. That is, merchants will accept the card even when the merchant fee exceeds their convenience benefit of card payments.

2. Surcharging always generates too few card transactions, both from the point of view of the payment platform—which therefore prefers to prohibit surcharging— and from the point of view of the social planner.

3. In response to laws allowing card surcharging, effective merchant fees decrease and effective cardholder fees increase. Moreover, if surcharges involve any extra convenience cost for merchants, the payment platform should optimally choose merchant and cardholder fees in a way that surcharges do not occur. Consequently, public regulations authorizing card surcharging do not generate much actual surcharging.

In turn, the main normative implications of our analysis are:

1. Surcharges should be banned when the merchant fee is regulated optimally.

2. Allowing card surcharging increases social welfare if, and only if, the merchant fee under uniform pricing much exceeds the tourist test level.

3. If the no-surcharge rule is lifted, interchange fee (or merchant fee) regulation is detrimental to welfare. Regulation should focus on merchants' behavior, rather than on the platform's behavior.

4. If surcharging is to be allowed, the optimal cap is equal to the merchant fee minus the merchant's convenience benefit from card payments. Recent cost-based regulations allow merchants to charge too much.

5. Mandated transparency regulation eliminates hold-ups for attentive consumers; however, it (i) may not be feasible (as when the consumer learns a price through a national advertising campaign or a price comparison engine), (ii) may involve transaction costs for the merchant, (iii) does not address the existence of inattentive consumers, and (iv) does not prevent inefficient surcharging if the consumer's willingness to pay is correlated with his desire to use the card (as we argue is likely to be the case). Thus transparency is not a perfect regulatory response to the inefficiencies attached to surcharging, and the two regulations may well be complementary. ▲

[1] Jean Tirole is Chairman of the Board of the Jean-Jacques Laffont Foundation at the Toulouse School of Economics, scientific director of the Industrial Economics Institute (IDEI) in Toulouse, and the winner of the 2014 Nobel Memorial Prize in Economic Sciences. Renato Gomes is Assistant Professor at Toulouse School of Economics. His current research focus on Industrial and Public Economics, in particular non-linear pricing, two-sided markets and taxation. Hélene Bourguignon is Managing Consultant at MAPP, a consultancy based in Paris and Brussels.

[2] Source: MasterCard Advisors analysis, 2013.

[3] Regarding Paypal, its *User Agreement for PayPal Services* sates that merchants "shall not impose a surcharge or any other fee for accepting PayPal as a payment method". Merchants "may charge a handling fee in connection with the sale of goods or services as long as the handling fee does not operate as a surcharge and is not higher than the handling fee you charge for non-PayPal transactions". In turn, the *User Agreement Policies* of Amazon Payments states that "Except as permitted by Network Rules or applicable law, you will not (a) establish limits below which you will not accept a Card, (b) assess a surcharge for the use of a Card in connection with any transaction" (*see* https://payments.amazon.com/help/Personal-Accounts/User-Agreement-Policies/User-Agreement). Finally, the *Terms of Service - Seller of Google Wallet* states that in its paragraph 2.4 item (c) that "Unless expressly permitted in writing by GPC, Seller may not add any Service use surcharge to a Payment Transaction" (*see* https://wallet.google.com/legaldocument?family=0.sellertos).

[4] This settlement would allow merchants in the United States to impose surcharges on card transactions. The agreement passed on January 27, 2013 (Payment card interchange fee and merchant discount antitrust litigation, No. 05-MD-1720 (JG) (JO), United States District Court & Eastern District Court of New York). The final approval by the U.S. District Court for the Eastern District of New York took place on December 13, 2013.

[5] Article 52-3: "The payment service provider shall not prevent the payee from requesting from the payer a charge or from offering him a reduction for the use of a given payment instrument. However, Member States may forbid or limit the right to request charges taking into account the need to encourage competition and promote the use of efficient payment instruments."

[6] Belgium, Estonia, Finland, Germany, Ireland, Malta, Netherlands, Poland, Slovakia, Slovenia, Spain, United Kingdom.

[7] Austria, Bulgaria, Cyprus, Czech Republic, France, Greece, Hungary, Italy, Latvia, Lithuania, Luxembourg, Portugal, Romania, Sweden.

[8] France is a special case. While surcharging is officially prohibited, some merchants were nevertheless applying surcharges. So the objective of the survey was to find out how extensive this practice was.

[9] A super-complaint is a complaint made in the UK by a state-approved 'super-complainant'/watchdog organization on behalf of consumers, which was fast-tracked to a higher authority such as the Office of Fair Trading (prior to its dissolution on 1 April 2014). The official body now in charge of general consumer protection super complaints is the Competition and Markets Authority.

[10] Source: Reserve Bank of Australia and East & Partners, Australian Merchant Acquiring and Cards Markets: Special Question Placement Report prepared for the Reserve Bank of Australia.

[11] In the case of a brick-and-mortar merchant, shopping costs includes finding and going to the shop, inspecting or trying the good, thinking about potential usage, size and model, loss aversion, etc. In the case

of online merchants, shopping costs stem from the nuisance of completing the usually numerous steps before card surcharges are revealed. In economic parlance, we say that consumers are "held up" at the point of sale by merchants.

[12] For a formal treatment of these issues, see Hélène Bourguignon, Renato Gomes, & Jean Tirole, *Shrouded Transaction Costs*, TSE & IDEI mimeo.

[13] On this point, *see* Jean-Charles Rochet & Jean Tirole, *Cooperation among Competitors: Some Economics of Payment Card Associations,* 33(4) Rand J. Econ. 549-570 (2002); John Vickers, *Public Policy and the Invisible Price: Competition Law, Regulation and Interchange Fee,* Proceedings—Payments System Research Conferences, *available at* http://www.kansascityfed.com/publicat/pscp/2005/Vickers.pdf; and Julian Wright, *Why Payment Cards Fees Are Biased Against Retailers?,* 43(4) RAND J. Econ. 761-780 (2012).

[14] See Jean-Charles Rochet & Jean Tirole, *Must-Take Cards: Merchant Discounts and Avoided Costs,* 9(3) J. Eur. Econ. Ass'n. 462-495 (2011).

[15] Wilko Bolt, Nicole Jonker, & Corry van Renselaar, *Incentives at the counter: An empirical analysis of surcharging card payments and payment behaviour in the Netherlands*, DNB Working Paper No. 196, (2008).

[16] *Id.*

[17] We are cautious in this statement for two reasons. First, the 0.95 percent rate probably was lower than the associations' desired interchange fee as they may have (unsuccessfully) tried to avoid regulation. Second, merchants in Australia often demand a "blended surcharge." As Amex and Diners Club charge substantially higher merchant fees, the level of the interchange fee has less impact on the surcharge than is predicted by our theory. Overall, only five percent of transactions in Australia involve a surcharge. Also consistent with the theory is the fact that reward cards have become less attractive in Australia.

[18] Source: Reserve Bank of Australia and East & Partners, Australian Merchant Acquiring and Cards Markets: Special Question Placement Report prepared for the Reserve Bank of Australia.