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Perfect surcharging and the tourist test interchange fee

Zenger, Hans

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Hans Zenger[†][‡]

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Abstract

Two widely discussed pricing benchmarks in the literature on payment cards markets are the "tourist test" interchange fee (Rochet and Tirole, 2010), which internalizes usage externalities in payment card markets, and "perfect surcharging" by merchants (Rochet and Tirole, 2002). This paper shows that these benchmarks are allocatively equivalent. Implications for the regulatory treatment of interchange fees and no-surcharge rules are discussed.

JEL classification: G21, L31, L42

Keywords: Interchange fees; Two-sided markets; Surcharging; Tourist test

1 Introduction

Payment card associations like VISA and MasterCard have been the subject of antitrust investigations around the world, including the U.S., the European Union and Australia. The focus of these investigations has often been the interchange fee, a per-transaction transfer from acquiring banks (who provide merchants with access to card networks) to issuing banks (who issue payment cards to consumers). Interchange fees are either collectively set by the banks that participate in a card payment network or by card payment associations themselves.

A large literature starting with Baxter (1983) has been assessing the welfare effects of collectively determined interchange fees, including Rochet and Tirole (2002, 2010), Wright (2003, 2004) and Guthrie and Wright (2007). What this literature shows is that privately and socially optimal interchange fees often diverge. These results are derived under the assumption that merchants cannot surcharge more costly payment instruments, either because of transaction costs of price differentiation or because of a no-surcharge rule imposed by payment card associations.

Perfect surcharging of more costly payment instruments is an interesting benchmark, because it would make two-sided payment card markets one-sided in the sense of Rochet and Tirole (2006). Rochet and Tirole (2006) define two-sided markets as markets where not only the price *level* but also the price *structure* across the two sides of the market has allocative implications. As Rochet and Tirole (2002) and Gans and King (2003) have shown, interchange fees (which determine the price structure in payment card markets) become neutral if merchants surcharge more costly payment instruments without frictions. In other words, perfect surcharging makes payment card markets one-sided.

However, even for the most expensive payments cards, surcharging very rarely occurs in prac-

tice although no-surcharge rules are prohibited by law in some countries.[1] One reason for this may be the existence of transaction costs of surcharging (Rochet and Tirole, 2003). Due to this market imperfection, interchange fees have real allocative effects even where no contractual restrictions on surcharging are imposed. The absence of frictionless surcharging may therefore give rise both to a need for an interchange fee to achieve the most efficient market outcome and to a danger that excessive interchange fees are set from the perspective of social welfare.

Based on previous results derived in the literature, Farrell (2006) has proposed what has later been termed the "tourist test" (or "avoided cost test") as the appropriate benchmark for antitrust assessment. This is the interchange level that renders merchants indifferent between different means of payment. As Wright (2003) had shown earlier, the tourist test fee internalizes usage externalities and (in the special case of perfectly competitive banks) maximizes social welfare. Rochet and Tirole (2010) extend Wright's results by providing extensive welfare analysis for a range of different scenarios.[2] They show that in principle, a social planner could use the interchange fee not only to internalize usage externalities (as the tourist test does), but also to affect the relative exercise of market power on the two sides of the market. Rochet and Wright (2010), however, advise against such targeted price regulation, not least because of the large informational requirements it presupposes. Instead, as Farrell (2006), they propose use of the tourist test as a conservative regulatory benchmark.[3] Besides this attention the tourist test has received from economic theory, it has also received significant attention in banking and policy circles. Indeed, in the follow-up of an antitrust procedure against MasterCard's interchange fees, the company recently proposed and implemented a cap on its European cross-border interchange fees which is

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[1] See Bolt, Jonker and van Renselaar (2010) for recent empirical evidence on surcharging from the Netherlands.

[2] For instance, they show that in case the cost pass-through of issuers does not exceed the cost pass-through of acquirers, increases of the interchange fee above the tourist test level reduce the total surplus of users.

[3] Note that Rochet and Wright (2010) define the tourist test with respect to store credit rather than cash, because they consider the former a more appropriate counterfactual for credit cards.

based on the tourist test, to seek compliance with competition law.[4]

Building on the results in the previous literature, the purpose of this paper is to show the following: the two benchmarks described above (the tourist test fee and perfect surcharging of merchants) are allocatively equivalent. That is, the tourist test fee simulates as a second-best tool the market outcome that would arise if no frictions existed that would obstruct merchants from passing on correct price signals to their customers (given an arbitrary level of the interchange fee). This equivalence result holds irrespective of the level of bank competition in the issuing market and independent of the size of the corresponding issuing pass-through of the interchange fee to cardholders.

The paper is organized as follows. Section 2 sets up the model, which follows the seminal description of payment card markets by Rochet and Tirole (2002). Section 3 derives the result of the equivalence of perfect surcharging and the tourist test fee. Section 4 discusses the result in the context of previous assessments of surcharging. Section 5, finally, concludes.

2 The Model

Consumers. Consumers want to buy one unit of a homogeneous good either with cash or a payment card. Given the cardholder fee f, demand for cards is given by $D(f)$ with $D'(f) \leq 0$.

Issuers. Issuing banks set the cardholder fee f. A card transactions generates a net cost of $c_I - a$ for the issuing bank, where c_I is the per-transaction cost of issuing and a denotes the interchange fee, a transfer from the acquiring bank. Given this cost level, issuers compete in prices, leading to some (symmetric) equilibrium cardholder fee $f^*(c_I - a)$ with $f' > 0$. As in Rochet and Tirole (2002) we assume issuing profits to be decreasing in cost.

Acquirers. Acquirers are assumed to be perfectly competitive. Thus, given per-transaction costs c_A, they set the merchant service charge (the price merchants pay to acquirers for executing a transaction) at $m = c_A + a$.

Merchants. There are two merchants, engaging in Hotelling competition. Consumers have a sufficiently large willingness to pay for the good. They are located uniformly on a segment of measure one and incur transportation costs of t per unit of distance. Merchants are located at the two ends of the segment. Each merchant $i = 1, 2$ sets prices p_{cash}^i for cash payments and p_{card}^i for card payments (which are constrained to be identical in case surcharging is not possible). As Rochet and Tirole (2002), we will restrict attention to interior solutions of the merchant pricing subgame. Both merchants have marginal costs of production d and enjoy a benefit of b per card transaction. Merchants can decide whether or not to accept cards.

Timing. The timing is as follows.

Stage 1: The interchange fee a is set by issuing banks or a social planner.

Stage 2: Issuers set cardholder fees f, consumers choose whether to purchase a card, merchants decide whether to hold cards and then set retail prices p_{cash}^1, p_{card}^1, p_{cash}^2, and p_{card}^2.

Stage 3: Given retail prices and merchants' card acceptance decisions, consumers decide where to buy the good and whether to use a card or cash.

Rochet and Tirole (2002) show that there is complementarity in merchants' card acceptance decisions; either both merchants accept or both reject payment cards. If surcharging is not possible, the (common) equilibrium price p^* in the merchant pricing game is characterized by

$$p^* = d + t + D[f^*(c_I - a)](c_A + a - b). \tag{1}$$

This is the usual Hotelling price consisting of the sum of marginal costs and transportation costs. Here, marginal costs are production costs d plus the expected costs of card payments, which consist of the fraction of the population $D(\cdot)$ that holds cards and the net per-transaction cost $c_A + a - b$.

If surcharging is possible, on the other hand, merchants will ask for prices

$$p^*_{cash} = d + t \tag{2}$$

and

$$p^*_{card} = d + t + c_A + a - b. \tag{3}$$

Again, these prices reflect marginal cost plus transportation costs, given a consumer's choice of payment instrument.

3 Equivalence of surcharging and tourist test fee

Following Rochet and Tirole (2010), Wright (2003) and Farrell (2006), the tourist test fee is defined as follows.

Definition 1 *The tourist test fee $a_T = b - c_A$ is the level of the interchange fee that makes merchants indifferent between card and cash payments.*

The following proposition demonstrates that any surcharging equilibrium with an arbitrary interchange fee a' is equivalent to the no–surcharging equilibrium where the interchange fee is set at the tourist test level a_T. This equivalence result holds irrespective of the level of bank competition in the issuing market and independent of the size of the corresponding pass-through

of the interchange fee to cardholders.

Proposition 1 *Suppose there are no transaction costs associated with surcharging. Then, for an arbitrary interchange fee a', lifting the no-surcharge rule is equivalent to setting the interchange fee at the tourist test level.*

Proof. Denote the cardholder fee that banks charge if surcharging is possible by $F^*(c_I - a')$. We will first compare two scenarios. Scenario 1 is the situation where surcharging is possible and the interchange fee is set at the tourist test level $a_T = b - c_A$. Scenario 2 is the situation where surcharging is not possible and the interchange fee is also set at the tourist test level. In scenario 1, we have $p^*_{card} = p^*_{cash} = d + t$ from (2) and (3). There is price-coherence, because the interchange fee is set such that merchants are indifferent among payment instruments. What is more, the retail price in scenario 1 exactly matches the retail price in scenario 2, where $p^* = d + t$ as $c_A + a - b = 0$. Because there is effectively no surcharging in scenario 1, it must be that issuing banks set the cardholder fee in scenario 1 at the same level as in scenario 2, that is $F^*(c_I + c_A - b) = f^*(c_I + c_A - b)$. In summary, all agents are unaffected by a change from scenario 1 to scenario 2. But since Proposition 6 in Rochet and Tirole (2002) shows that the level of the interchange fee is neutral if surcharging is possible, the surcharging equilibrium must *always* be equivalent to scenario 2, not only if the interchange fee is set at the tourist test level. Hence, the proposition follows. ∎

4 The welfare effects of surcharging

Besides showing the equivalence of the tourist test fee and frictionless surcharging, this paper allows assessing the welfare implications of surcharging in payment card markets. As Rochet and Tirole (2002) have shown, surcharging may either increase or decrease social welfare compared to

a situation where a no-surcharge rule is in place and the interchange fee is set by the payment card association. The above result explains why this is the case and when one or the other outcome will arise. Following Rochet and Tirole (2010) the privately optimal interchange fee a_P is larger than the tourist test fee a_T. The socially optimal interchange fee a_S is contained in the set that is bounded by the tourist test fee and the privately optimal fee, that is $a_S \in [a_T, a_P]$. a_S is decreasing in the degree of competition in issuing, as a larger interchange fee acts as a subsidy to counter the output restriction of cards that arises if issuing banks have market power (Vickers, 2005). If issuing competition is perfect, $a_S = a_T$. In that case, lifting the no surcharge rule must increase welfare. On the other hand, if there is an issuing monopoly, a_S may or may not reach a_P at the other extreme of the set, depending on the parameters. Hence, the surcharging equilibrium will always improve welfare relative to the privately optimal fee without surcharging whenever competition in issuing is sufficiently strong. If issuing competition is weak, on the other hand, the surcharging equilibrium may or may not improve welfare with respect to the privately optimal fee without surcharging, depending on whether the socially optimal fee is closer to the tourist test fee, or whether it is closer to the privately optimal fee.

5   Conclusion

This paper has analyzed the relation between two interchange benchmarks, which are widely discussed both in academic research and regulatory practice: the tourist test and perfect surcharging. It turns out that these benchmarks are allocatively equivalent. This has two implications. First, the result shows that the tourist test mimics as a second-best mechanism the market outcome in the absence of transaction costs that inhibit merchants from differentiating retail prices by means of payment. The tourist test therefore focuses on the market failure that is specific about payment cards markets (the lack of efficient internalization of network externalities that is induced

by frictions in surcharging), rather than additionally trying to steer bank market power through the imperfect means of interchange regulation. Second, the result allows a more intuitive assessment of the welfare effects of lifting no-surcharge rules. Indeed, whenever the transaction costs of surcharging are sufficiently small that surcharging is possible, the welfare implications of lifting no-surcharge rules can be conveniently and directly inferred from the welfare implications of the tourist test (e.g. along the lines of Rochet and Tirole, 2010).

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