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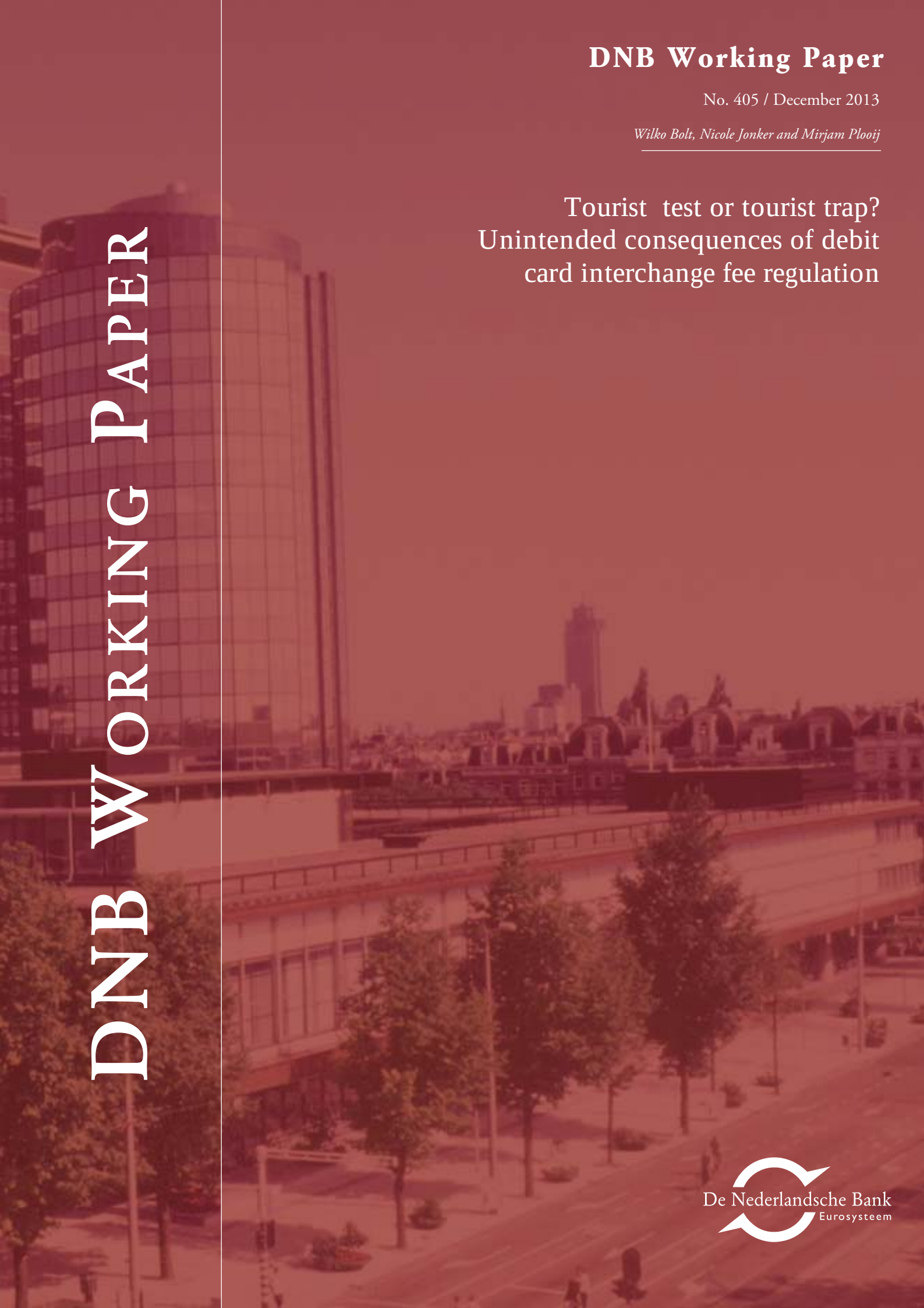

De Nederlandsche Bank
Eurosysteem

# Tourist test or tourist trap? Unintended consequences of debit card interchange fee regulation

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* Views expressed are those of the authors and do not necessarily reflect official positions of De Nederlandsche Bank.

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# Tourist Test or Tourist Trap?
# Unintended consequences of debit card interchange fee regulation

**December 2013**

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**Abstract**
*In this article we empirically analyze how the Tourist Test methodology affects the level of multilateral interchange fees (MIFs) for debit card payments over time. Using Dutch cost data for 2002 and 2009 we argue that this method leads to rising cost for merchants in the long run. The outcomes show that MIFs may increase from 0.2% to 0.5% of the transaction amount of an average debit card payment. If card acquirers would pass such an increase on to merchants by raising acquiring fees, merchants will face a considerable rise in operating costs. Our results indicate that an straightforward application of the Tourist Test methodology may not yield a suitable benchmark tool for interchange fee regulation, at least for countries such as the Netherlands with rising costs for cash and declining costs for debit card payments.*

**Keywords:** Debit cards, Tourist Test, Interchange fee regulation, Perverse effects
**JEL Classification:** L11, G21

## 1. INTRODUCTION

Multilateral interchange fees (MIFs) have been the target of several antitrust investigations by the European Commission in recent years and are the subject of an announced proposal for an EU Regulation. MIFs, which are charged by the cardholder's (issuing) bank to the merchant's (acquiring) bank, form an important part of the transaction fees paid by merchants to their banks. Concerns that excessively high MIFs could lead to inflated merchant fees have led to discussions that they should be regulated. One proposed method to set a benchmark for MIF levels is the Tourist Test (also known as 'merchant indifference

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test' or 'avoided-cost test'), developed by Rochet and Tirole (2007, 2011). This test indicates the MIF level for which merchants are indifferent in accepting cash or cards; i.e. this fee level ensures that merchants do not pay higher charges than the value of the net transactional benefits which card use gives them compared to cash.

This study presents estimates for the MIF level based on the Tourist Test methodology using recently collected cost data for the Netherlands. As part of the ECB cost study by Schmiedel, Kostova and Ruttenberg (2012), DNB collected cost information for 2009 for cash and debit card payments which was described in Jonker (2013). It presents the development of the social costs for cash and debit card payments for the Netherlands between 2002 and 2009. Together with information on the private costs for merchants, interchange fees for debit card payments have been calculated using the Tourist Test methodology. As far as we know, we are the first to apply the Tourist Test to empirical data, thereby showing the potential effects of using this test in practice. Note that the presented interchange fees in this article are fees derived from the theoretical literature. They are not used by Dutch banks. They use bilateral interchange fees for debit card payments which are not made public.

The Tourist Test has been approved by the European Commission in assessing MIFs set by Visa and MasterCard (MC). On 19 December 2007 the Commission prohibited the multilateral intra EEA fallback interchange fees set by MC for cross-border debit and consumer credit card payments. According to the Commission these MIFs were in breach of European Community Treaty rules on restrictive agreements. After extensive talks between MC and the Commission about MC's compliance with the antitrust rules MC announced on 1 April 2009 a number of undertakings. One of them concerned the methodology to set cross-border MIFs. MC used the Tourist Test methodology to calculate the amount of the revised temporary MIFs (Schwimann, 2008-09). The current average fee levels of 0.20% (0.30%) of the transaction amount for debit (credit) card payments were calculated by MC using cost information for the Netherlands in 2002, see Brits and Winder (2005), Belgium in 2003, see Banque Nationale de Belgique (2005), and Sweden in 2002, see Bergman, Guibourg and Segendorf (2007). The Commission agreed with this methodology and these

fee levels, but stated that they may be adjusted if for instance new data becomes available that reveals that the current fee levels are not adequate anymore.[2]

On April 2009 VISA received a State of Objections of the Commission. As a result of the State of Objections VISA announced on April 2010 that it would cap its weighted average intra-regional MIF for immediate debit card payments to 0.20% of the transaction value for four years, a level which the Commission judged to be consistent with the Tourist Test. The cap also holds for nine domestic markets.

In both the Visa and the MasterCard cases, the Tourist Test MIFs are much lower than the MIFs they used previously. However, in both cases the Tourist Test methodology has so far only been used one-off. If it were to be adopted as a regulatory benchmark, the methodology would have to be used repeatedly to recalculate maximum MIF levels based on new cost data.

Social costs for POS payments are influenced by changes in consumers' payment behaviour, as payment instruments differ in the costs agents in the payment chain incur to make them possible.[3] Between 2002 and 2009, there was a substantial shift in the Netherlands from cash to debit card payments. Other means of payment are hardly used. The number of debit card payments at the point-of-sale increased by 82% from 1.1 billion to 1.9 billion, and the value of the debit card payments rose by 65% from EUR 47 billion to EUR 76 billion. The number of cash payments declined from 7.1 billion to 4.6 billion, and their value from EUR 66 billion to EUR 58 billion. The move from cash to debit card payments resulted in substantial cost savings (Jonker, 2013). In 2009, the social costs borne by the central bank, the banking sector and merchants together for cash and debit card payments was EUR 2.405 billion, which is EUR 237 million less than the social costs in 2002 when it amounted EUR 2.642

[2] MasterCard brought an action before the General Court for annulment of the Commission's decision. In its judgment delivered on 24th of May 2012, the General Court dismissed that action and confirmed the Commission's decision.

[3] Social costs refer to the costs to society, reflecting the use of resources in the production of payment services; that is the total costs of production. These costs refer to the sum of the internal costs incurred by the Dutch central bank (DNB), merchants and the banking industry. Internal costs are proxied by the costs incurred by these market participants and transfers to other market participants related to cash or debit card payment. These other market participants include for instance the ACH Equens (formerly known as Interpay), cash-in-transit companies and telecom companies. Transfers to and from DNB, banks and merchants sort out in the social costs concept, and are therefore excluded.

billion. Merchants in particular realised substantial cost reductions, with their costs going down by almost 19%.

In this study, we show the effect of changes in payment costs on the level of the Tourist Test MIF. If the European Commission's (2013) aim is to reduce interchange fees and increase card acceptance among merchants and card usage by consumers, the question to be answered is: does the Tourist Test lead to lower MIFs or should competition authorities look for a different benchmark?

The remainder of this study is organised as follows: section 2 reviews related literature, while section 3 discusses the theoretic framework. Section 4 and 5 describe the used methodology and data collection, section 6 gives the estimation results; and section 7 discusses the potential effects on merchant and consumer fees. Finally, section 8 concludes with implications for policy and directions for further research.

## 2. REVIEW OF THE LITERATURE

In this section we first provide a review of the literature that appeared prior to Rochet and Tirole (2011) and then we discuss Rochet and Tirole (2011)'s Tourist Test for interchange fees for card payments.

The economic theoretical literature, starting with Baxter (1983), provides a rationale for the usage of interchange fees in two-sided markets. See e.g. Börestam and Schmiedel (2011), Verdier (2011) or Bolt (2013) for an up-to-date overview of the literature. The card payments market with consumers and merchants as two distinct groups of end users is an example of a two-sided market. Banks co-operate in a card network and set payment prices for both consumers and merchants to encourage card usage among consumers and card acceptance among merchants. Their goal is to maximise the card network's overall profits. The bank of one of the end users, usually the accepting party, may pay a so-called interchange fee to the bank of the other end user for every card payment. Banks use this fee to balance the demand for card services between the two types of end-users. The optimal balance depends on banks' costs and on the differences in the demand elasticities for card payments of consumers and merchants. The assumption that merchants are relatively less

price elastic compared to consumers is commonly used as a rationale to justify that acquiring banks pay interchange fees to issuing banks, thus raising merchant service fees for card payments and lowering consumer fees.

Others built on Baxter's model. They relax assumptions, such as the one concerning non-competitive behaviour among merchants (Rochet and Tirole (2002) or homogeneity among merchants (Schmalensee, 2002 and Wright, 2004). Rochet and Tirole (2002) introduce strategic behaviour by merchants in their theoretical two-sided card market model. They find that merchants who face competition may accept cards even when acquiring fees exceed the net merchant benefits. They do so in order to attract customers from competitors who do not accept cards (yet) or because they feel obliged to accept cards so as not to lose customers to card-accepting competitors. In such a market, the profit maximizing interchange fee for issuing banks may be higher than the socially optimal interchange fee, leading to the overprovision of card services. Vickers (2005) describes the outcome that merchants feel obliged to accept card payments out of competitive considerations as the 'must take cards' concern. This expression was adopted later on by Rochet and Tirole (2011). Wright (2004) builds on Baxter (2003) and introduces merchant heterogeneity in his model. He allows merchants in different sectors to reap different benefits from card acceptance. As a result, cards will be accepted in some sectors, but not in others. He focuses on variable acceptance costs. Unlike Wright, McAndrews and Wang (2008) consider both fixed and variable costs. They analyse the adoption of payment cards among merchants that differ in size or average transaction amount. They find that large merchants and merchants selling high-value products will be quicker to adopt the payment card than other merchants as card acceptance reduces their transaction costs compared to acceptance of cash only. As adoption costs fall over time due to economies of scale, other merchants will start accepting cards as well.

Rochet and Tirole (2007, 2011) introduce an interchange fee based on what they call the 'Tourist Test' or 'avoided-cost test' as an alternative benchmark for the issuer's cost for a card payment that is sometimes used by competition authorities.[4] Rochet and Tirole show that under certain conditions the interchange fee chosen by issuers may indeed exceed the

[4] See e.g. the European Commission in 2002 and 2007 for cross-border debit and credit payments in the European Union, the Reserve Bank of Australia in 2003, the Board of Governors of the Federal Reserve Bank in the United States in 2011 as part of the Durbin amendment, and see Börestam and Schmiedel, 2011, for a recent overview of national interventions in EU member states.

short-term socially optimal level. This affects market efficiency, because if the level of the interchange fee is set too high, and consequently the acquiring fee, a merchant who accepts card payments, may still decide to turn down a card payment of a non-repeat customer ("the tourist") with both cash and cards in his wallet. That way the merchant reduces his operating costs. However, from a social point of view it would have been better if this non-repeat customer had used his card. Rochet and Tirole propose an alternative benchmark for regulatory intervention, which is based on the merchant's avoided costs if a cash payment is replaced by a card payment. The acquiring fee passes the Tourist Test if and only if accepting the card for a payment does not increase the merchant's net operating cost compared to cash acceptance. Therefore, the interchange fee level should be set in such a way that it does not increase merchant's operating cost for a card payment (including the acquiring fee for card transaction) above his operating costs for a cash payment. The attraction of this benchmark is that card acceptance will not increase merchant's operating costs. As a consequence, the merchant who accepts cash and cards will not have an incentive to steer "the tourist" towards cash. Rochet and Tirole show that such a benchmark is legitimate if merchants are homogeneous and issuer margins are constant and one's aim is to maximize short-term total user surplus, but may yield false positives if the aim is to maximize social welfare. They also show that the test may yield false positives if e.g. cardholders' incentives are distorted or merchants are heterogeneous. Finally, they do not only examine the performance of the Tourist Test in the short term, but also in the long term by allowing issuer entry.

Rochet and Tirole's Tourist Test received quite some attention, in both the academic and the policy world. Zenger (2011) analyses the relation between two interchange fee benchmarks, i.e. the Tourist Test and perfect surcharging of more costly means of payment by merchants and shows that the two benchmarks are allocatively equivalent. Leinonen (2011) pays attention to the problem of the MIF and cash-cross subsidies on the issuing side. He doubts whether a MIF based on the Tourist will promote card usage and enhance cost efficiency, because the Tourist Test MIF "will result in all parties ( i.e. banks, merchants) being indifferent between cash and cards and thereby delay the realisation of the cost benefits of increased debit card usage".

## 3. THEORETIC FRAMEWORK

In this section we describe a theoretic framework for payment pricing that is largely based on Rochet and Tirole's (2011) "must-take cards" analysis. This framework provides a useful tool for analysing interchange fee setting and potential regulatory intervention (see also e.g. Bolt and Chakravorti, 2012; Bèdre-Defolie and Calvano, 2010; Rochet and Wright, 2010; Wright, 2012).

### 3.1 The Model

There are three types of agents—consumers, merchants, and banks. A continuum of consumers resides on the line segment between 0 and 1, with quasi-linear preferences. Consumers are willing to buy one unit of good sold (the "retail good") by each of the $R$ merchants who enjoy some market power. Let $v$ denote the value of the retail good purchased by cash, that is the consumption value net of all cash-related transactions costs. A consumer receives $v_0=v-p \geq 0$ from purchasing a unit good by cash at price $p$, and the merchant gets $p$ from this purchase. We assume that $v$ is large enough so that the aggregate demand for the retail good is constant and equal to 1.

To maximize their expected utility, consumers must decide whether to use cash or a payment card to buy a good. We assume that they know the retail price $p$ and card acceptance policy of the merchants before they enter the store. All consumers have a payment card. Consumers receive an additional (per-transaction) payoff $b_c-p_c$ if they pay by card rather than by cash. The cardholder fee $p_c$ is charged by the consumer bank. After retail prices are posted, consumers get to know their transactional benefit $b_c$ and once in the store they select their preferred payment method (cash or cards) accordingly. We assume *price coherence*: the merchant does not (or is not allowed to) charge different retail prices based on the payment method used by the consumer—i.e. the no-surcharge rule is imposed.[5]

Consumers differ with respect to their transactional benefits $b_c$ they receive from using their cards. Consumer *heterogeneity* is described by a probability density function $f_c(x)$, $-\infty \leq x \leq +\infty$, with corresponding cumulative probability function $F_c(x)$. Alternatively, we may

[5] There is a general tendency for retailers to stick to the setting of a single price regardless of the mode of payment (Rochet and Wright, 2010). For example, in the Netherlands where surcharging is allowed, only a small and diminishing fraction of retailers imposes surcharges on debit card payments (see also Bolt, Jonker and Van Renselaar, 2010).

interpret the benefit $b_c$ as the convenience cost for the consumer of paying by cash (relative to a payment card). Clearly, a consumer is only willing to use his card whenever $b_c - p_c \geq 0$. Therefore, the proportion of card payments at a store that accepts cards is denoted:

$$(1) \qquad D_c(p_c) = \Pr(b_c \geq p_c) = 1 - F_c(p_c).$$

The net average cardholder benefit per card payment is denoted by:

$$(2) \qquad v_c(p_c) = E(b_c - p_c \mid b_c \geq p_c) > 0,$$

which is a decreasing function of $p_c$.

Merchants try to maximize profits by their card acceptance policy. The profit margin of one unit of good sold by cash is $p - \mu \geq 0$. All merchants accept cash for payment. Similar to consumers, merchants receive an additional (per-transaction) payoff $b_m - p_m$ if they accept a payment card rather than cash when selling the good at the point of sale. The merchant service fee (often called "merchant discount") $p_m$ is charged by the merchant bank.

For simplicity, we assume merchant *homogeneity*, that is, the convenience benefit $b_m$ is equal for every merchant. This convenience benefit may also be interpreted as the merchant's cost of a cash payment (relative to a card payment). Furthermore, we assume (full) *merchant internalization,* implying that merchants accept the card if and only if:

$$(3) \qquad p_m \leq p_m^{\max} \equiv b_m + v_c(p_c).$$

Merchant internalization reflects the idea that merchants are willing to accept cards even when the direct costs ($p_m$) are higher than the direct benefits ($b_m$) in order to offer a better quality of service to their customers (who value this payment option). Ultimately, merchants may be able to extract this additional consumer surplus through higher retailer prices or higher market shares. Notice that due to merchant homogeneity it is either the case that *all*

merchants accept cards (i.e., $D_m(p_m) = 1$ if $p_m \leq p_m^{\max}$) or *none* at all (i.e., $D_m(p_m) = 0$ if $p_m > p_m^{\max}$).[6]

We assume a single card system operated by a card association (that is jointly owned by the banks).[7] The card association determines the interchange fee $a$. The association requires the merchant (i.e. acquiring) bank to pay this fee $a$ to the consumer (i.e. issuing) bank. For each card transaction, the issuer incurs a (net) cost $c_I - a$ and the acquirer $c_A + a$. Let $c = c_I + c_A$ denote the total cost of a card transaction. Note that the interchange fee does not change the total cost of a card transaction nor the mark-up per transaction given consumer and merchant card prices. We assume that the card association sets the interchange fee so as to maximize the sum of profits earned by its issuers and acquirers. For convenience, it is assumed that the acquiring market is perfectly competitive with zero profit margins, $m_A = 0$. By contrast, issuers may have some market power and we assume that their profit margin is constant, $m_I \geq 0$.[8] Finally, the cost of cash payments for banks are normalized to zero.

### 3.2 Optimal Payment Pricing

First we look at social welfare. Some algebraic manipulations show that *social welfare* can be written (up to a constant) as:

$$(4) \qquad W(p_c) = \int_{p_c}^{\infty} (b_c + b_m - c) dF(b_c),$$

such that:

$$p_c = c_I - a + m_I, \quad \text{and} \quad p_m = c_A + a.$$

[6] In the case of merchant heterogeneity an interior solution characterizes optimal consumer and merchant demand for card payments. In this solution some merchants do not accept cards since the benefits of accepting are too low compared to using cash. Qualitatively, however, not much is changed.

[7] This "monopolistic" environment is a good illustration of the Dutch retail payment landscape where debit cards play a dominant role next to cash at the point of sale (POS). In particular, debit cards account for more than 90% volume of all electronic POS transactions in the Netherlands in 2012.

[8] The case with varying issuing margins does not qualitatively change the results (see Rochet and Tirole, 2011). If issuers do not fully pass on cost decreases to consumers—i.e., cost amplification—then pushing for lower interchange fees would increase their profits even further. The reverse result would hold in the case of cost absorption. Constant margins imply 100 percent cost pass-through.

It is not difficult to show that for socially optimal card prices and interchange fee:

(5) $p_c^S = c - b_m;\ p_m^S = b_m + m_I;$ and $a^S = b_m - c_A + m_I.$

At the social optimum, acquiring profits are zero, $\pi_A^S = m_A D_m\left(p_m^S\right) = 0$, and issuing profits amount to $\pi_I^S = m_I D_c\left(p_c^S\right) > 0$. Theoretically, an interchange fee *a* passes the Tourist Test if and only if

(6) $a \le a^T = b_m - c_A$ or, equivalently, $p_m \le b_m.$

That is, $a^T$ defines the maximum level of the interchange fee that makes the merchant indifferent as to the consumer's choice of the payment instrument, cash or cards. We will dub this maximum level $a^T$ the Tourist Test interchange fee. At this maximum, the direct cost $p_m$ is equal to the direct benefit $b_m$. Following Rochet and Tirole (2011), when issuing banks enjoy some market power the socially optimally interchange fee $a^S$ does not satisfy the Tourist Test. If $m_I > 0$, we have:

(7) $a^S = a^T + m_I > a^T.$

If the interchange fee would be capped at $a^T$, consumer fees cannot be set low enough to induce all consumers who generate social surplus to use the payment card at the point of sale. Only when the issuing market is perfectly competitive with zero margins $m_I=0$, the Tourist Test interchange fee $a^T$ coincides with the socially optimal interchange fee $a^S$.

However, when we look at *total user surplus*, ignoring issuer and acquirer profits, by only concentrating on the spread between total benefits ($b_c+b_m$) and total prices ($p_c+p_m=m_I+c$), this discrepancy can be restored. In particular, defining total user surplus as:

(8) $U = \int_{p_c}^{\infty} \left(b_c + b_m - p_c - p_m\right) dF(b_c) = \int_{p_c}^{\infty} \left(b_c + b_m - c - m_I\right) dF(b_c),$

we find for optimal pricing:

(9) $p_c^U = c + m_I - b_m;\ p_m^U = b_{\mathrm{m}};$ and $a^U = a^T = b_m - c_A.$

Under total user surplus maximization, acquiring profits are zero, $\pi_A^U = 0$, and issuing profits amount to $\pi_I^U = m_I D_c\left(p_c^U\right) < \pi_I^S$. The result in (9) shows that for total user surplus maximization the optimal interchange fee $a^U$ equals the Tourist Test fee $a^T$. The Tourist Test would be able to detect excessive fees from a total user surplus point of view, but would yield false positives with respect to social welfare.

Profit maximizing card fees such that the card association maximizes issuing profits, are easy to derive. By noting that merchants are homogenous, they will all be pushed to their max, i.e. the merchant discount is set to $p_m^* = p_m^{\max}$. This (implicitly) implies the highest interchange fee $a^*$ and therefore the lowest consumer fee $p_c^*$. Since issuing profits are decreasing in consumer fees, this yields maximum profits. We derive:

(10) $a^* = b_m - c_A + v_c\left(p_c^*\right);\ p_c^* = c - b_m + m_I - v_c\left(p_c^*\right);$ and $p_m^* = p_m^{\max}.$

Under profit maximization, acquiring profits are zero, $\pi_A^* = 0$, and issuing profits amount to $\pi_I^* = m_I D_c\left(p_c^*\right) \geq \pi_I^S > \pi_I^U$. From (10) we obtain, first, that the profit-maximizing interchange fee $a^*$ is always greater or equal to the Tourist Test fee $a^T$, since $v_c\left(p_c^*\right) \geq 0$. Hence, if Tourist Test fee levels are deemed high already, profit-maximizing fees, left unregulated, would be set even higher. Second, the profit-maximizing interchange fee $a^*$ exceeds the socially optimal fee $a^S$ as well, but only if the issuing margin is smaller than the net average cardholder benefit, $m_I < v_c\left(p_c^*\right)$. Finally, if $m_I \geq v_c\left(p_c^*\right)$, we are in a *second-best* scenario where socially and privately optimal incentives coincide $a^* = a^S$.

### 3.3 Dynamics: Scale, Cost of Cash, and the Tourist Test

Other things being equal, merchants will increasingly prefer cards over cash when the cost of cash rises. More precise, the merchant transactional benefit, $b_m$, of accepting cards relative to cash increases when the (average) cost of a cash payment, say $k_0$, increases, i.e., $\mathrm{d}b_m/\mathrm{d}k_0 > 0$. Moreover, due to considerable scale and scope economies in retail payment systems, the average cost of cash will even further increase when the volume of cash payments, $N_{cp}$, goes down (and consequently card volume, $N_{dc}$, goes up), i.e., $\mathrm{d}k_0/\mathrm{d}N_{cp} < 0$. These conditions may lead to some interesting dynamics.

In our model setup the consumer fee $p_c$ fully determines the volume of card payments and consequently the volume of cash payments assuming that total payment volume is fixed, $N=N_{cp}+N_{dc}$. So,

$$N_{dc} = N \cdot D_c\left(p_c\right) \quad \text{and} \quad N_{cp} = N - N_{dc}.$$

Hence an initial (positive) shock to $k_0$ leads to a rise in $b_m$. Since $\mathrm{d}a/\mathrm{d}k_0=\mathrm{d}a/\mathrm{d}b_m \cdot \mathrm{d}b_m/\mathrm{d}k_0>0$, optimal interchange fees will increase as well, including the Tourist Test fee. Accordingly the consumer fee will fall. This pushes up the use of cards and trims down the use of cash. This decline in cash volume will tend to increase the (average) cost of cash even further and a new round of price adjustments start. Schematically:

$$k_0 \uparrow \;\Rightarrow\; b_m \uparrow \;\Rightarrow\; a^S, a^U, a^T, a^* \uparrow \;\Rightarrow\; p_c \downarrow, p_m \uparrow \;\Rightarrow\; N_{dc} \uparrow, N_{cp} \downarrow \;\Rightarrow\; k_1 \uparrow \;\Rightarrow \cdots$$

From this reasoning we may conclude that increases in cost of cash due to scale effects and technological progress in electronic payments will further push up interchange fees and therefore merchant discounts. However, this may be optimal since convenient benefits of electronic payments increase as well. Lower processing cost $c$ will translate mainly into lower consumer fees so as to optimally boost card demand.

## 4. ESTIMATING THE TOURIST TEST BENCHMARK

In this section we outline how our theoretical framework of the Tourist Test methodology is used to derive an empirical benchmark based on cost data from merchants. The Tourist Test method is based on the idea that a merchant's decision to accept a card payment or not, depends on which of the two payment instruments, cash or debit card, brings the highest benefits. It is implicitly assumed that the merchant accepts both cash and debit card payments and that he has already incurred the fixed costs associated with cash and debit card payments. What matters to him, when a customer enters the store with both cash and a debit card in his wallet, are the additional costs he will be facing. That is, his private variable costs associated with receiving either an extra cash or an additional debit card payment. The difference in these costs determines the Tourist Test interchange fee level and effectively corresponds to the merchant (net) convenience benefit level $b_m$ of accepting cards versus cash.

Following Ten Raa and Shestalova (2004) and Brits and Winder (2005) we assume linearity of the merchant's private variable cost function, which implies that unit variable costs are equal to marginal costs.[9] We assume that the merchant's private variable costs of a cash payment depend on the transaction value, whereas those for a debit card payment are not related to the transaction value. Therefore, the higher the transaction amount a customer has to pay, the more attractive a debit card payment becomes for the merchant compared to a cash payment. We assume that the private variable costs include both the merchant's internal variable costs, as well as his external variable costs. For simplicity, we assume here that the external variable costs only include bank fees.

The merchant's private variable costs for a cash payment of EUR x is denoted as $VC_{cash}(x)$ and consists of four components:

(11a) $$VC_{cash}(x) = \alpha_{cash,Vt,int} + \alpha_{cash,Vt,ext} + (\beta_{cash,Vs,int} + \beta_{cash,Vs,ext})*x,$$

[9] From talks with the European Commission we understood that MasterCard also used this linear approach for the estimation of the interchange fee level for debit card payments using Dutch, Belgium and Swedish cost data, based on the Tourist Test and approved by the European Commission. Using the same methodology as MasterCard enhances the comparability of the outcomes for the Netherlands and MasterCard.

$\alpha_{cash,Vt,int}$ : the merchant's private variable transaction related internal costs for a cash payment. These costs do not vary with the transaction size,

$\alpha_{cash,Vt,ext}$ : the merchant's private variable transaction related external costs for a cash payment. These costs do not vary with the transaction size,

$\beta_{cash,Vs,int}$ : the increase in the merchant's private variable sales related internal costs for a cash payment if the transaction size increases by 1 euro,

$\beta_{cash,Vs,ext}$ : the increase in the merchant's private variable sales related external costs for a cash payment if the transaction size increases by 1 euro,

x : transaction size in euros.

Taking $\alpha_{cash,Vt,int}$ and $\alpha_{cash,Vt,ext}$ together as well as $\beta_{cash,Vs,int}$ and $\beta_{cash,Vs,ext}$ equation (1a) simplifies into:

(11b) $VC_{cash}(x) = \alpha_{cash} + \beta_{cash} * x.$

The merchant's private variable costs for a debit card payment of EUR x is denoted as $VC_{card}(x)$ and consists of two components that are related to the transaction of the payment, and to the value of the payment.[10]

(12a) $VC_{card}(x) = \alpha_{card,Vt,int} + \alpha_{card,Vt,ext}$,

where

$\alpha_{card,Vt,int}$ : the merchant's private variable transaction related internal costs for a card payment. These costs do not vary with the transaction size.

$\alpha_{card,Vt,ext}$ : the merchant's private variable transaction related external costs for a card payment. These costs do not vary with the transaction size.

[10] In the Netherlands, Belgium and Sweden, the countries whose costs formed the base of the Tourist Test interchange fees proposed by MasterCard in 2009, the acquiring fee and the interchange fee, if any, are fixed and do not vary with the transaction amount. For the sake of comparability, we therefore apply fixed acquiring fees and interchange fees as well. However, in other countries the merchant fee and interchange fee for debit card payments may depend on the transaction amount. In that case equation (12b) becomes: $VC_{card}(x) = \alpha_{card,Vt,int} + \gamma x + a^T(x)$ and the equation (13d) changes into: $a^T(x) = (\alpha_{cash} / x + \beta_{cash}) - (\alpha_{card,Vt,int} / x + \gamma)$.

For simplicity we assume that $\alpha_{card,Vt,ext}$ only consists of the per transaction acquiring fee that the merchant has to pay its bank. The level of the MIF is part of merchant's private variable transaction related external costs. Following our theoretic framework, the Tourist Test MIF is denoted by $a^T$. The difference between $\alpha_{card,Vt,ext}$ and $a^T$ indicates the part of the acquiring fee that accrues to the acquiring bank and is denoted by $\gamma$.

(12b) $VC_{card}(x) = \alpha_{card,Vt,int} + \gamma + a^T$ .

The level of the Tourist Test interchange fee that equalizes the merchant's private variable costs for a cash payment of transaction size x to his private variable costs for a similar debit card payment will make the merchant indifferent between accepting cash or a debit card payment.

(13a) $VC_{card}(x) = VC_{cash}(x)$, or

(13b) $\alpha_{card,Vt,int} + \gamma + a^T = \alpha_{cash} + \beta_{cash} * x$.

Solving for $a^T$ gives

(13c) $a^T = \alpha_{cash} + \beta_{cash} * x - \alpha_{card,Vt,int} - \gamma$.

As $a^T$ depends on the transaction value, we formulate (3c) as

(13d) $a^T(x) = \alpha_{cash} + \beta_{cash} * x - \alpha_{card,Vt,int} - \gamma$.

## 5. DATA

We used data from several sources for our analysis. A detailed overview can be found in Jonker and Plooij (2013). Note that the cost estimates for merchants in Brits and Winder (2005), next to the results for Belgium in 2003 and for Sweden in 2002, were used by MasterCard to calculate the interchange fee level for debit card payments using the Tourist Test framework. Therefore, we use Brits and Winder's results as our basis for 2002 estimates.

### 5.1 Data collection

Information about the total number and the value of POS payments in 2002 were taken from Brits and Winder (2005). Their study also provides cost information on cash and debit card payments for retailers, which were collected by research institute EIM.[11] Additional information about the external costs, such as cash deposition fees and acquiring fees for debit card payments for retailers were based on statistics published by HBD (2002) and the Dutch competition authority NMa (2006).

The total number and the value of POS payments in 2009 was estimated by DNB as part of the ECB cost study and is decribed in Jonker (2013). For 2009, we used cost information on cash and debit card payments for a representative sample of retailers from EIM (2011). The questionnaire used by EIM for the year 2009 is similar to the questionnaire used by EIM for earlier cost studies. By using the same research institute for the data collection and similar questionnaires for both 2002 and 2009 comparability of cost data across years is ensured as much as possible. Additional information about banks' acquiring fees and interchange fees were taken from NMa (2010).[12]

### 5.2 Fixed versus variable costs

The different cost items that constitute costs for merchants can be divided into fixed and variable costs. This distinction is relevant for our study, which focuses on variable costs for merchants. Fixed costs relate to the cost items that are not affected by the performance of a specific transaction or by to the sales amounts generated by a specific means of payment. An example of such a fixed cost item is the depreciation costs of a cash register or a POS payment terminal. Variable costs do have such a relation. Some of these costs depend only

[11] In a nutshell, EIM (2011)'s approach to collect merchants' cost is as follows: the core of their survey is a telephone questionnaire among a large representative sample of small and medium sized merchants at business level. Questions were asked about their incoming payment transactions, labour time associated with payment related activities and costs and fees paid to other parties. In addition, EIM distributed a written questionnaire among the (very) large retail companies at concern level. This has been supplemented with data about bank fees from the commercial banks, cash usage from DNB and debit card usage from Currence (scheme owner Dutch debit card scheme 'PIN'). Finally a time registration was carried out on location to estimate the front office time (payment time) per transaction per payment method. A similar approach has been used by a majority of the NCBs participating in the ECB-study by Schmiedel et al. (2012).

[12] Between 2002 and 2009 competition in the card acquiring market increased. In 2004 banks took over the card acquiring from the ACH Interpay and introduced interchange fees. These interchange fees were based on bilateral agreements and not on a multilateral agreement. On average, the average acquiring fee went down from on average 6 eurocents in 2002 to less than 4 eurocents in 2009. The level of the bilateral interchange fees varied between 1-2 eurocents. Both the acquiring and the interchange fee were per-transaction fees.

on whether the transaction is carried out or not (e.g. front office costs for cash and debit card payments or telecommunication costs of a debit card payment), while others are related to the transaction amount involved (e.g. professional money transport and a large part of the back-office activities related to cash payments such as counting banknotes and coins). In the case of cash, the variable costs increase with the transaction amount, whereas the costs for debit card payments mainly depend on whether the transaction is carried out or not. Following the spirit of the Tourist Test we employ the merchant's perspective of which costs are fixed and which are variable.[13] See EIM (2011) for a detailed overview of the different cost items and their nature.

Between 2002 and 2009 the classification of cost items was adjusted at several points (for details see Jonker and Plooij, 2013). For debit card payments these changes led to a shift of EUR 25 million from variable transaction linked costs to fixed costs and for cash payments to a net shift of EUR 125 million from fixed costs to EUR 40 million transaction linked costs and EUR 85 million to transaction –sales linked costs. In section 6 we pay attention on the impact of these changes on the estimated level of the Tourist Test MIF.

### 5.3 Internal versus external costs

Table 2 provides an overview of the composition of the internal costs and external costs incurred for cash and debit card payments by the retailers in 2002 and 2009. The private costs do not only include the costs incurred by these agents themselves to make a payment with a particular payment instrument possible (internal costs). They also take into account the external costs and revenues they face. External costs for one party in the payment chain often constitute revenues for another, such as annual fees and acquiring fees paid by merchants to the acquiring banks.[14] Furthermore, merchants' revenues from surcharging customers for debit card usage have been taken into account.[15] In addition, external costs

[13] For individual agents, the classification of cost items into fixed, variable transaction-related or variable sales-related may differ from the classification on macro level. For instance, for an individual retailer the costs for a payment terminal may be mainly fixed, whereas at the macro level part of these costs are variable, because they vary with the number of retailers who accept debit card payments.
[14] In 2002, banks did not charge consumers fixed periodical fees yet, but in 2009 they did. These fees have been included as revenues in banks' net private costs. Banks did not charge consumers transaction fees for cash withdrawals or debit card usage.
[15] A small part of the merchants surcharged customers for usage of the debit card in case of small amounts. Estimates of the value of these surcharges have been included in the net private variable costs for debit card payments for merchants.

include the opportunity costs of holding cash or non-interest bearing transaction balances which can be considered as implicit transfers.

The bottom three rows in Table 1 present the average internal costs per cash transaction and per debit card transaction, the average private costs per transaction and the average private variable costs per transaction for merchants. Between 2002 and 2009 the merchants' average internal costs per cash transaction increased, whereas the average internal costs per debit card transaction dropped. If we focus on the merchants' average private costs per transaction we see that in 2009 the average costs of a debit card payment were lower than that of a cash payment, whereas in 2002 the opposite was the case. The merchants' private costs can be

**Table 1 Merchants' costs for cash and debit card payments, 2002 – 2009**

| | **2002** | | **2009** | |
|---|---|---|---|---|
| *Key statistics* | Cash | Debit card | Cash | Debit card |
| Total no. of transactions (millions) | 7066 | 1069 | 4579 | 1946 |
| Aggregate amounts (EUR billions) | 66.3 | 47.2 | 58.1 | 76.1 |
| | | | | |
| *Cost items (EUR million)* | | | | |
| Back-office costs | 497 | 35 | 306 | 28 |
| Front-office costs | 417 | 88 | 286 | 152 |
| Telecommunications | 0 | 54 | 0 | 58 |
| Cash Transport | 169 | 0 | 180 | 0 |
| POS terminal costs | 0 | 75 | 0 | 57 |
| Other | 74 | 0 | 78 | 0 |
| **Internal costs** | **1157** | **252** | **850** | **295** |
| | | | | |
| *Break down internal costs* | | | | |
| Fixed | 497 | 99 | 192 | 69 |
| Variable-Transaction linked | 417 | 153 | 322 | 226 |
| Variable - Sales linked | 243 | 0 | 336 | 0 |
| | | | | |
| Opportunity costs, bank fees | 70 | 65 | 72 | 77 |
| Revenues surcharging | 0 | 8 | 0 | 3 |
| **Total private costs** | **1227** | **309** | **922** | **369** |
| | | | | |
| *Average merchants' cost per payment (in EUR)* | | | | |
| Internal costs per payment | 0.16 | 0.24 | 0.19 | 0.15 |
| Private costs per payment | 0.17 | 0.29 | 0.20 | 0.19 |
| Private variable cost per payment | 0.10 | 0.19 | 0.16 | 0.15 |

divided into fixed costs and variable costs. For a merchant who already accepts both cash and debit card payments the private variable costs of a cash and debit card payment indicate which payment instrument incurs lowest variable costs for him. The net operating costs of a debit card instead of a cash payment mentioned by Rochet and Tirole (2011) equals the private variable costs of a debit card payment minus the private variable costs of a similar cash payment. [16] For merchants the net operating costs for a debit card payments were relatively high in 2002, but in 2009 they turned out to be relatively low. So, accepting debit card payments instead of cash reduced their operating costs in 2009.

## 6. ESTIMATION RESULTS

### 6.1 Development of Tourist Test interchange fees

Using Dutch cost data for merchants and the formula derived in section 4 we find the following functions for $a^T(x)$ for Dutch merchants in the years 2002 and 2009:

2002: $a^T(x) = - 0.138 + 0.0045x$
2009: $a^T(x) = - 0.062 + 0.0068x$

The nominal and the relative value of $a^T$ depend positively on the transaction size. In Table 2 we present the interchange fee $a^T$ of 2002 and 2009 for different transaction ranges, from up to EUR 10 to EUR 100 and higher. In addition, we also show the results for the average transaction sizes of debit card payments in 2002 and 2009.

The results indicate that the higher the transaction size the higher $a^T$ will be relative to the transaction size. Moreover, they indicate that using the Tourist Test methodology may lead to an $a^T$ that exceeds the internal cost of a debit card payment borne by banks. The average MIF fee level of 20 cents for 2009 actually exceeds the internal costs of a debit card payment of 17 cents borne by banks (Jonker, 2013). These 17 cents include both issuing and

[16] For a merchant not only the costs associated with accepting a payment with a particular payment instrument matter, also other benefits may be of importance to him. Aspects such safety, the possibility of additional sales, tax evasion or the desire to be customer friendly may also influence the value he attaches to a cash or a card payment. However, it is hard to quantify such benefits. Therefore we focus in the current analysis on the role of costs.

**Table 2 Level of Tourist Test MIFs for different transaction sizes, 2002 - 2009**

| | 2002 | | 2009 | |
|---|---|---|---|---|
| Transaction size (EUR) | $a^T$ (EUR) | % of transaction size | $a^T$ (EUR) | % of transaction size |
| < 10.00 | -0.12 | -2.3% | -0.03 | -0.6% |
| 10.00 – 20.00 | -0.07 | -0.5% | 0.04 | 0.3% |
| 20.00 – 30.00 | -0.03 | -0.1% | 0.11 | 0.4% |
| 30.00 - 40.00 | 0.02 | 0.1% | 0.18 | 0.5% |
| 40.00- 50.00 | 0.06 | 0.1% | 0.24 | 0.5% |
| 50.00-100.00 | 0.20 | 0.3% | 0.45 | 0.6% |
| >= 100.00 | 2.13 | 0.4% | 3.37 | 0.7% |
| Average value debit card transaction in | | | | |
| 2002: 47.25 | 0.07 | 0.2% | 0.26 | 0.5% |
| 2009: 39.07 | 0.04 | 0.1% | 0.20 | 0.5% |

acquiring costs, whereas one of the main rationales of the interchange fee is to compensate the issuing bank for part of its internal costs. Note that the "virtual" Tourist Test MIF also lies well above the actual interchange fee level in the Netherlands, which ranges between 1 – 2 eurocents.

We also estimated what would have been total interchange revenues from all debit card payments in the Netherlands in 2009 if this methodology would have been used to set the level of the interchange fee for debit card payments. It amounts to EUR 370 million, which is EUR 75 million more than the internal costs borne by both issuing and acquiring banks together for debit card payments (Jonker, 2013). So, the Tourist Test methodology to set the MIF level for debit card payments might lead to disproportionate fee levels.

Table 3 also shows that between 2002 and 2009 the interchange fee $a^T$ would have increased for all transaction sizes considered. For example, $a^T$ for an average debit card payment of EUR 47.25 increased by 19 cents from 7 cents in 2002 to 26 cents in 2009, or by 0.3 %-points of the transaction size from 0.2 %-points in 2002 to 0.5 %-points in 2009.

### 6.2 Robustness checks

Table 3 presents the results of two robustness checks on the development of the Tourist test MIF using alternative specifications for the fee and costs structures. The first alternative refers to the fee structure. Unlike in many other countries, in the Netherlands acquiring fees

**Table 3 Sensitivity analysis of development Tourist Test MIFs, 2002 - 2009**

| | 2002 | | 2009 | |
|---|---|---|---|---|
| Transaction size (EUR) | $a^T$ (EUR) | % of transaction size | $a^T$ (EUR) | % of transaction size |
| Base scenario (Table 3) | | | | |
| 2002: 47.25 | 0.07 | 0.2% | 0.26 | 0.5% |
| 2009: 39.07 | 0.04 | 0.1% | 0.20 | 0.5% |
| Alternative 1: Acquiring fees and interchange fees are ad valorem | | | | |
| 2002: 47.25 | 0.08 (+0.01) | 0.2% (+0.0%) | 0.26 (+0.00) | 0.5% (+0.0%) |
| 2009: 39.07 | 0.05 (+0.01) | 0.1% (+0.0%) | 0.21 (+0.01) | 0.5% (+0.0%) |
| Alternative 2: Cost classification in 2009 as in 2002 | | | | |
| 2002: 47.25 | 0.07 | 0.2% | 0.35 (+0.09) | 0.7% (+0.2%) |
| 2009: 39.07 | 0.04 | 0.1% | 0.28 (+0.07) | 0.7% (+0.2%) |

Figures in brackets show the difference between the alternative and the base scenario

and interchange fees for debit card payments are fixed and do not depend on the transaction amount. If Dutch fees were ad valorem instead of fixed, the resulting $a^T$ would be at most 1 eurocent higher than the ones presented in Table 3. However, the main result would still hold, i.e. the interchange fee $a^T$ would have increased considerably between 2002 and 2009.

The second scenario refers to the changes that took place between 2002 and 2009 in the division of the costs of the different items into fixed, variable transaction-linked and transaction sales-linked. In order to examine whether the results in Table 3 are driven by changes in the cost structure we applied the division used in 2002 for 2009 as well. It turns out that the increase in $a^T$ is not caused by changes in the cost categorization, on the contrary. If these changes would not have taken place the increase in $a^T$ would have been even larger.

Summarizing, the outcomes of the two alternative cost categorizations suggest that our results are robust to different cost categorizations and different fee structures.

### 6.3 Drivers of the increase in the Tourist Test interchange fee

The question is which factors are responsible for the increase in the Tourist Test MIF. Corroborating with the theoretic framework, the interchange fee level $a^T$ is sensitive to

changes in the merchant's private variable costs for cash payments and in his private variable costs for debit card payments. Table 4 demonstrates in two steps the influence of changes in the cost functions on the level of $a^T$.

We use the average transaction size of a debit card payment in 2009 and the merchants' cost function for 2002 as a starting point. We begin with the impact of changes in a merchant's private variable cost function for cash payments. The variable costs of a cash payment for a merchant increased by 10 cents. The rising costs for cash leads to an increase in the interchange fee level of 10 cents from 4 to 14 cents, or from 0.1% of the transaction size to 0.4% of the transaction size. There are several reasons which may explain this increase (EIM, 2011). First of all, wage increases exercised upward pressure on merchants' costs for cash as cash payments are labour intensive. The same holds for price increases in general. Secondly, negative scale effects affected merchants' variable costs of cash.

The second change we examined is the change between 2002 and 2009 in the merchant's private variable costs for debit card payments. These costs decreased with 6 cents to 14 cents in 2009. The influence of this drop in costs translates into a similar rise in $a^T$, or relatively speaking, to an increase of 0.1%-points of the transaction size. One of the reasons which explains this cost reduction is the faster processing of a debit card payment at the counter, from 26 seconds in 2002 to 19 seconds in 2009. Another reason is lower internet rates.

Summarising, both the two factors that influence the theoretical level of the MIF for debit card payments based on the Tourist Test methodology and Dutch merchants' costs data turn out to have exercised upward pressure on the level of $a^T$. The largest part of the estimated change stems from the change in merchants' costs for cash payments.

**Table 4 Explaining the difference between 2002 and 2009 results wrt the $a^T$ level**

| | Transaction size debit card 2009 | Merchant's private variable costs | | | |
|---|---|---|---|---|---|
| | (EUR) | cash (EUR) | debit card (EUR) | $a^T$ (EUR) | % of trans-action size |
| Cost functions 2002 | 39.07 | 0.24 | 0.20 | 0.04 | 0.1% |
| 1: + costs of cash 09 | 39.07 | 0.34 | 0.20 | 0.14 | 0.4% |
| 2: + costs of debit card 09 | 39.07 | 0.34 | 0.14 | 0.20 | 0.5% |

## 7. POTENTIAL EFFECTS OF FEE LEVEL CHANGES ON CARD USAGE

Changes in the cost functions for cash and the debit card have a large impact on the Tourist Test interchange fee level for debit card payments. According to our theoretic framework an increase in the MIF would lead to an increase in the acquiring fees paid by merchants for card transactions. This fee would be increased to the point where merchants are indifferent between card and cash payments, whereas with a lower fee, card payments are more attractive to merchants than cash payments. At the same time, a higher MIF would lead to lower transaction fees for consumers, which would make card payments more attractive for consumers and thereby stimulate the use of cards.[17] This would justify increasing the MIF in case of an increase of the difference between the costs of card and cash payments, since a MIF below the Tourist Test level would lead to an underusage of card payments. A higher MIF would stimulate consumers to use the more efficient payment instrument (in this case debit card instead of cash).

This raises the question how the increase in the level of $a^T$ has been passed through in the acquiring fee and in consumer (transaction) fees for debit card payments. Table 5 shows the realized fee levels for 2002 and 2009 and the virtual fee levels for 2009. We assume that the virtual fee levels were only influenced by the development of $a^T$ from 4 to 20 eurocents and that the change in the level of $a^T$ was completely passed through onto consumers.

The card acquiring fee for merchants would increase by 233% from on average 6 eurocents to 20 eurocents. The consumer transaction fee would drop from zero to -16 eurocents, i.e. banks would reward their consumers with 16 eurocents for each debit card payment they made.

**Table 5 Consequences pass through $a^T$ for consumer and merchant fees**

| | Card acquiring fee (EUR) | Consumer transaction fee (EUR) | Annual current account fee (EUR) |
|---|---|---|---|
| Realisation 2002 | 0.06 | 0.00 | 0.00 |
| Realisation 2009 | 0.04 | 0.00 | 12.00 |
| Virtual 2009 with $a^T$s | 0.20 | -0.16 | -2.50 |

[17] The transaction fees for consumers could even become negative, i.e. consumers would get a reward of some form for making a card payment.

Alternatively, the extra interchange revenues may also be passed through onto consumers by lowering the annual fee for their current account. Services in a basic current account package includes a current account, a debit card for ATM withdrawals and debit card payments and access to online banking. In 2002 consumers did not have to pay a fee yet, but in 2009 banks charged most of their non-business cardholders a periodical fee for their current account. The average fee level for a basic current account was EUR 12 in 2009. If the additional $a^T$ revenues would have been used to lower the current account fees the annual fee level would have dropped by EUR 14.50 to - EUR 2.50.

However, in reality, transaction fees or rewards for consumers are not part of the business model of Dutch banks, and also not of banks in most other European countries. So, on the consumer side, there is no mechanism through which the use of cards is stimulated by the issuing banks.[18] On the merchant side, fees may be increased to the point where they are indifferent between cash and card payments. This Tourist Test fee level is not so high that merchants would stop accepting cards, but it could make them less inclined to actively stimulate the use of cards. Taking both of these aspects together, it is to be expected that in a market where there are only transaction fees for merchants and not for consumers, whether positive or negative, an increase of the MIF to the new, higher Tourist Test level would not increase the proportion of card payments, and could even lead to lower card use.

## 8. FINAL REMARKS

According to several competition authorities and courts of justice interchange fees for card payments can be excessively high and exercise upward pressure on the merchant service fee. There are discussions that these interchange fees should be regulated. One possibility is to introduce caps based on issuers' costs. Rochet and Tirole (2011) argue that while under certain conditions the interchange fee chosen by issuers may indeed exceed the short-term socially optimal level, there is no logical argument for caps based on issuers' costs. Another possibility for regulatory intervention is based on merchant's costs. Our theoretic framework

[18] In theory, banks pass the interchange fee on to their customers. However, research by the European Commission (2006) showed that issuing banks only pass 25% of their revenues from interchange fees on to their card holders. Empirical evidence from another network industry, i.e. the telephone industry, where termination rates were reduced as part of regulatory measures also point to incomplete pass through of fee reductions to customers, see Genakos and Valletti (2011).

shows that the Tourist Test benchmark is legitimate if one's aim is to maximize short-term total user surplus. The attraction of the Tourist Test methodology lies in the fact that card acceptance will not increase merchants' direct operating costs.

We show the development of the MIF level for debit card payments by applying the Tourist Test methodology to Dutch costs data for 2002 and 2009. The outcomes show that MIFs may increase from 0.2% to 0.5% of the transaction amount of an average debit card payment. Moreover, the 2009 fee level would exceed banks' issuing costs for a debit card payment; i.e. merchant fees would be lower if the benchmark were based on issuers' costs rather than the Tourist Test. The main drivers of the increase in Tourist Test MIF level are the rising costs for cash and declining costs for debit card payments for merchants. Over time, scale and scope effects increase these cost differentials even further. If banks would base their acquiring fees on the Tourist Test methodology for debit card payments, merchants are discouraged to invest in acceptance and efficiency of debit card payments. The reason is that merchants would hardly benefit from any of the efficiency gains that arise from increased debit card usage or improvements in the infrastructure for card payments, as these are (partly) neutralized by rising acquiring fees. With merchants having less incentive to stimulate card payments, the application of the Tourist Test could slow down the existing trend of increasing the use of debit cards. In a market where the social costs of debit card payments are now lower than those of cash, this would mean that potential social cost savings are not realised.

The effects of the use of the Tourist Test on merchant and consumer fee levels and finally on the acceptance and use of payment cards depends not only on the level of the interchange fee but also on other aspects of the market, such as pass-through. Adjustments may need to be made to the theoretical model to account for specific market characteristics. Furthermore, in the application of the test in practice, an important question is what cost categories should be included. Following the methodology used by MasterCard, we use variable private costs for merchants, with a time horizon of several years. However, when making a decision whether to accept a card payment from a customer, it seems likely that a merchant would only take the marginal costs into account. To what extent this would change the Tourist Test MIFs is a matter for further research.

The impact of the Tourist Test is of particular interest since the European Commission has announced a regulation on interchange fees for card payments. The differences in payment behaviour and the costs of payment instruments across Europe pose a challenge in setting a general regulatory benchmark. The Tourist Test methodology seems, in theory, to be a useful tool set a maximum MIF level. In practice, it has successfully been used to decrease MIFs set by Visa and MasterCard. However, its value as a regulatory benchmark may differ between markets, depending on aspects such as costs of payment instruments and current fee levels. The results presented in this study show that the Tourist Test methodology may have unintended consequences in markets where card usage is rapidly increasing while the use of cash is declining, such as in the Netherlands. Instead of a reduction of MIF levels, applying the Tourist Test could have the opposite effect. If the aim is to find a benchmark that prevents MIF levels from going up, regardless of market characteristics, the Tourist Test may well turn out to be a tourist trap.

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