BoF Online

2007 • No. 2

Regulating the payment card industry

Päivi Heikkinen

The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the Bank of Finland.

SUOMEN PANKKI FINLANDS BANK
EUROJÄRJESTELMÄ
EUROSYSTEMET

Bank of Finland

Financial Markets and Statistics

22.5.2007

Contents

Editor-in-Chief

Jouko Marttila

ISSN

1796-9123 (online)

Postal address
PO Box 160
FI-00101 HELSINKI, FINLAND

Street address Snellmaninaukio
Phone +358 10 8311
Fax +358 9 174 872

Email
first name.surname@bof.fi
www.bof.fi

Swift SPFB FI HH
Business ID 0202248-1
Domicile Helsinki

1 Introduction

The payment card industry[1] is subject to substantive regulatory pressure. Both the fees, especially the interchange fees, and the scheme rules have been scrutinized and in many jurisdictions also regulated. Taking this interest of authorities at its face value suggests that the payment card market is not functioning according to the best interests of at least some of its participants. Especially merchants have complained about the high fees charged from them when accepting card payments. These complaints explain in part why most past and current propositions for regulation have targeted the relationship between the merchant and the payment card industry.

Available economic research, however, provides only limited support for such targeted, industry-specific regulation. In particular, it is unclear why there is a need for industry-specific regulation and why general competition policy does not suffice. Despite of this, the authorities have been ready to push forward industry-specific regulation that, if adopted, would further affect the payment card schemes as well as individual card issuers and acquirers. This paper argues that even though the authorities' regulatory proposals and actions are based on extensive assessments of the prevailing market conditions, these assessments more often than not fail to view the industry as a strategic actor[2], capable of pre-empting regulatory efforts and actively changing its behaviour when constrained by regulation. The aim of this paper is to highlight the importance of this omission by discussing the payment card industry's recent developments and potential reactions to some implemented or suggested regulation.

---

[1] Payment card industry refers to the providers of the whole system or value chain of card payments: issuers of payment cards, the acquirers servicing merchants, their service providers and the schemes providing the system with rules, functions and often also infrastructures. In this paper, payment card scheme refers to the management (previously association) level of a card system, often distinguished by a brand such as MasterCard International and Visa International. The concept of scheme, however, may be ambiguous as it refers in some discussions to different card types (e.g. debit, credit, on-line debit, charge cards) provided under a brand. A schematic presentation of the industry's counterparties and relations is given in Annex 1.

[2] The concept strategic actor refers to purposeful and pro-active behaviour according to an integrated plan, the strategy. In this context, a strategic actor does not just make price adjustments (like a re-active actor) or remain passive in front of suggested regulation but uses e.g. quality, quantity, investment, entry and exit as tools. The concept "strategic actor" has been used in e.g. agent oriented modelling of business processes or in strategic studies. This omission is highlighted also by Rochet-Tirole (2006).

To this end, this paper in chapter 2 briefly reviews what economic literature suggests are the determinants of socially optimal fee level and structure in payment card industry, and whether this analysis supports the proposed regulation. In chapter 3 some specific features of the industry are discussed to highlight its multi-tiered structure and decision making. Chapter 4 gives an overview on the on-going regulatory debate and chapter 5 makes an effort to identify some of the strategic responses and options available to the industry.

There is some evidence of payment card industry reacting actively to regulation or regulatory threat. Stango[3] documents, for example, how regulatory threat substantively changed firm behaviour in the credit card industry in the US in early 1990s. Payment card industry also shows a history of structural evolution.[4] This evolution is hardly about to slow down. Quite the contrary, the question is how the structural change continues and whether and in which way it is shaped by regulation.

It is typically assumed that the authorities intervene to correct market failures. This paper remains agnostic as to what kind of market failures there are in the payment card industry, if any. However, what this paper suggests is that the risk of regulatory failure should not be overlooked. Such failure could result from unduly aimed or excessive regulatory measures by authorities forcing the industry to respond strategically, by e.g. changing its behaviour or structure profoundly. This paper aims to contribute to the development of impact assessments, made prior to regulation, and to suggest areas of study which would contribute to better regulation.

---

[3] Stango (2003).

[4] The structural evolution of payment card industry is discussed e.g. by Evans - Schmalensee (2005).

2 Economic literature on two-sided markets

The payment card industry is a typical example of two sided (or multisided) markets. Payment with card is a network good where the increase of the number of users of a good benefits other users. In the payment card market the network benefits are two-sided: cardholders benefit from the increased number of merchants accepting the card and the merchants benefit from the increased number of card holders.[5] The definition has been further elaborated by describing a two-sided market as one in which the volume of transactions between end-users (i.e. card users and merchants) depends on the structure of fees and not only on the overall level of the fees charged by the platform (i.e. the payment card industry).[6]

The economic research[7] should help us to analyse the determinants of demand and supply on this specific market, and whether it is possible to reach a set of network fees and rules which would guarantee competition and an optimal amount of card payments in the society. In view of the existing and proposed regulation (discussed in chapter 4), the relevant theoretical framework can be found from the research that explores the socially optimal fee structures and -levels in two-sided markets and especially the question why the fee structure has become asymmetric[8]. Also research on how the fees imposed to one side of the market (e.g. to merchants) float to the other side of the market (e.g. to card holders) is of interest. In addition, research on network competition, even though not numerous, is relevant[9]. Strategic responses to regulatory threat have been studied, and these analyses support the

---

[5] Chakravorti (2003), Hunt (2003).

[6] Rochet-Tirole (2005).

[7] Two sided market has been widely studied with different scopes and assumptions. There has been research of restrictions on merchant pricing, of interchange fees, merchant competition and network competition. The scope of several studies has been in the determination of the socially optimal structure of fees in the network.

[8] Asymmetric pricing means that costs of the service are not divided by the cause of the cost but one side of the market carries a larger part of them (see the definition of two-sided market).

[9] a comprehensive presentation of relevant economic discussion on payment card industry is in Rochet-Tirole (2006).

assumption that the payment card industry will proactively either avoid or mitigate the impact of potential regulation.[10]

2.1 Optimal fee level and structure

The current theoretical research gives no evidence in support of reaching the socially optimal fee level or -structure on a two sided market by any regulation, especially if it considers only the costs of the participants. The research implicates that the card industry's profit maximising interchange fee is not likely to be socially optimal, but fails to provide with rules improving the welfare. In addition, there is no economic basis for concluding that a zero interchange would be more or less beneficial for the society than any privately determined fee level. The optimal interchange fee depends on several factors like:

- card holders' price elasticity
- merchants' price elasticity
- indirect network effects between card holders and merchants
- competition in issuing and acquiring
- competition among merchants
- transaction costs
- liquidity constraints
- marginal costs for servicing both sides of the market
- influence of competing payment instruments and how these instruments response to changes in prices of the analysed payment card system.

As far as I'm aware of, no studies estimating the socially optimal interchange fee with this complexity is available. [11]

According to classical economic theory the social optimum in a one sided market is realised with an output level at which the price equals the marginal cost. On a two sided market the other side of the market benefits from the increased output on the first side even though the latter's marginal cost would imply a lower output[12]. The interchange fee helps internalise this kind of an imbalance (externality) between the two sides of the market, and in doing so it has the potential of making both groups better off.[13] Moreover, the complex factors determining the socially optimal fee structure are probably impossible to measure in practice.[14]

---

[10] e.g. Erfle-McMillan (1990), Glazer-McMillan (1992).

[11] Evans - Schmalensee (2005).

[12] Hence, the traditional economic approach applied to one sided markets is not applicable to two sided markets.

[13] Evans - Schmalensee (2005).

[14] Evans - Schmalensee (2005).

Many two sided markets apply asymmetry in their price structure.[15] Asymmetric pricing may have several motivations. In case of asymmetries between the two sides of the market - when the price sensitivities vary from side to side or the externalities of one side exceed externalities on the other - skewed pricing may balance demand and supply. Asymmetry may also reflect the competitiveness of one side of the market over the other, hence implying, that in payment card industry, the issuing side of the market could exercise more bargaining power than the acquiring side. Price asymmetry may also reflect the higher investment requirements of one side of the market. In general, it can be concluded that, in industries with asymmetric pricing, the revenues will flow to the high cost side of the business, and to the side which has less demand.[16]

It is important to note, however, that this asymmetry does not mean that the costs of one side would be covered by the other side[17], but rather that the desirable structure and volumes of the two sided market with asymmetrical variables need balancing.[18] This is backed up by the fact that also 3-party schemes[19] use asymmetric pricing. The current asymmetry in pricing has its historical backgrounds in creating in the network the critical mass of card holders and card accepting merchants, and it is a result of bargaining within the co-operative organisation's members with different stakes in issuing and acquiring. It has even been argued that multi-party systems like today's global networks would never have emerged without asymmetric fee structure.[20]

Analysis of whether and how the industry structure (roles of different participants in the industry or value chain) influences the optimal fee structure is not available. However, many conclusions made of multi-party schemes apply also to three-party schemes, though further research is required.[21] The competition between issuers and between acquirers also needs further clarification. How the industry structure, where the same institutions may act as issuers and acquirers, influences competition, and whether the tiered structure of processing has effect to the industry structure is so far unclear.[22]

---

[15] Evans - Schmalensee (2005). Asymmetric pricing refers to one side of the market (e.g. merchants) paying a larger portion of the network costs compared to the other side (e.g. card holders). Asymmetry is created by interchange fee.

[16] Weiner-Wright (2005), these characteristics of payment card industry is discussed in chapter 3.

[17] This has been the logic of cost based interchange regulation.

[18] Weiner - Wright (2005).

[19] Characteristics of payment card schemes like four- and three-party schemes are discussed in chapter 3.2.

[20] Evans - Schmalensee (2005).

[21] Rochet - Tirole (2002a), Rochet-Tirole (2002b).

[22] the issue discussed e.g. by Chakravorti (2003).

2.2 Impact of capped fees to end users

By capping the interchange fee regulators aim to influence the end user prices, i.e. fees imposed to card holders and merchants. In the payment card market, the capped interchange fees do not automatically reduce the merchant fees or increase the card holder fees. The degree of reduction in merchant fees is determined by the intensity of competition in acquiring. On card holder side, the increase may affect either fixed or variable card fees. To what extent the card holder fees are increased depends on the elasticity of demand for having the card and the elasticity of demand for using the card.[23] How sensitive the card holders are to these two type of fees (usage and membership externalities) affects the structure of fees possible to be imposed to them: variable fees (usage charges) impact the end user's willingness to trade on the platform (to use the card), and fixed fees (membership charges) affect the end-user's willingness to participate in the platform (to have the card).[24]

In addition, there are one-time costs like changes to issuers' or acquirers' IT-systems which influence when and how the changed interchange fee flows to end users. Available data implicates that card holder fees do not change in accordance with regulated interchange fees. There seems to be some evidence that card issuers rather adjust to the capped fees by seeking new ways to provide card services, such as e.g. complementing their product portfolio with three-party schemes.[25] Further support to this is provided in chapter 3 when the role of payment card services in banking is discussed and in chapter 5.

2.3 Other relevant research

Research of network competition considers the interchange fee levels when card holders have several cards in use (so-called multi-homing) or just one card (so-called single-homing). The situation where card holders have several payment cards available seems to enable merchants to guide the customers to use the more preferable ones. This increases merchant's bargaining power against acquirers and therefore contribute to lower merchant fees. However, this type of network competition does not necessarily lead to socially optimal interchange fee any more likely than a single network based market would.[26]

---

[23] Evans-Schmalensee (2005), see also chapter 3.1.

[24] Rochet-Tirole (2004).

[25] Evans - Schmalensee (2005).

[26] Chakravorti (2003), about multi-homing see Hyytinen-Takalo (2004) and Rochet-Tirole (2006).

So far only the study by Hausman, Leonard and Tirole (2003) has investigated the payment card industry's structure. They conclude that dual governance structures, e.g. card issuers joint memberships in competing schemes or joint ventures, may improve standardisation and reduce research duplication costs.[27] There are several areas of the two sided market which still need further investigation, such as competition between payment cards and other payment instruments, the marginal costs or benefits of card payments for card holders[28] and the influence of credit facilities when paying by card. Also financial institutions as strategic actors in the network need further investigation.[29] There are analysis of strategic responses to regulatory threat in the credit card market, which gives support to this study.[30] However, only preliminary empirical results of the effects of regulation are available to facilitate this type of research. [31]

---

[27] Hausman-Leonard-Tirole (2003), see also Chakravorti (2003).

[28] In his study of payment industry Kemppainen shows that, depending on market coverage (partial or fully), the welfare implications of regulation vs. price discrimination are ambiguous (Kemppainen 2005).

[29] Chakravorti (2003) and Evans - Schmalensee (2005).

[30] Stango (2003).

[31] see Chang - Evans - Swartz (2005).

3 Multifaceted nature of payment card industry

This chapter highlights some industry specific features of the payment card industry, partly to give empirical evidence to some of the suggestions made in the economic literature, and partly to give background information for the analysis of potential industry responses to regulation[32].

3.1 On payment card industry in general

In payment card industry, economies of scale play a substantial role. The current cost structure of payment card schemes may, to some extent, reflect the relative cost intensity of the counterparties.[33] The payment card issuer carries a larger proportion of card payment production costs. Issuer is liable to the credit risk combined to both debit and credit cards and to fraud, whereas merchants following the card scheme rules are normally guaranteed their money. Issuing payment cards includes the management of the card base and registry and the accounts related to them. Due to the need for various functionalities like risk management, exception handling, and online services like authorisation, the business is ICT-intensive. The processing of a payment as such does not differ from credit to debit cards (online or offline), but the credit facilities add on funding and credit management functions.

Issuance of credit cards seems to be the most profitable line of payment card business when also the interest and other revenues are included in the calculations.[34] In the U.S. 70% of the issuer revenues come from revolving credits and little over 13% from merchant fees. Annual card fees bring only 2% of the total revenues. Around 50% of a credit card issuer's costs come from the cost of funding and customer defaults, and around 22% of operation

---

[32] For an over all description of payment card industry refer to e.g. Chakravorti (2003), EU DG Competition Interim Report on Payment Cards and Payment Systems, European Commission (2006) or gt.news.com (2005).
For a schematic description of roles and fees, see Appendix 1.

[33] see chapter 2.1.

[34] European Commission (2006).

and marketing of the program.[35] It seems that in many countries, issuing of debit cards is mainly an additional service to financial institutions' account holders.

Acquiring is also volume based business, and acquirers need to make substantial investments in order to be able to run the business in a cost-efficient way. However, once the investment is made, the scale of business may be expanded rather easily.[36] In general, processing of payment card transactions seems to be concentrating to a few large service providers, often of U.S. origin.[37] These service providers may have various roles, from being outsourcing partners for processing, to issuing or acquiring business of their own. The role and impact of these service providers to the industry and its structure has not been analysed.

Recognising the difficulties of defining the roles of different actors in the industry unambiguously, one can conclude that the acquiring business is more concentrated than issuing, at least in Europe.[38] This can be explained by a combination of factors. In order to get both sides of the market onboard, there has been a scheme rule stipulating that an acquirer in a multi-party scheme also had to act as issuer.[39] Industry characteristics like investment intensity, revenue sharing mechanisms, main sources of revenues and scheme rules have led to a situation where, in many countries, the acquiring is concentrated to joint ventures, whereas the issuing is done by individual institutions. The acquiring joint ventures are often owned by issuers[40].

The complexity of the payment card industry can also be described as a combination of co-operation and competition, and there is an imbalance in the network benefits not just between card holders and merchants but also between issuers and acquirers or merchants of different sizes.[41] In order to create a well-functioning business environment, the issuers and acquirers have to co-operate and create e.g. common standards and usage rules for

---

[35] Chakravorti (2003).

[36] The investment intensity has been taken into account in e.g. EU DG Competition Interim Report on Payment Cards and Payment Systems, European Union (2006). However, the depreciations of investments are not included in the cost-revenue studies. In economics the need for investment has been discussed by e.g. Weiner -Wright (2005).

[37] Heikkinen (2005), see also the homepages of e.g. euroConex, FirstData and Atos Worldline.

[38] The EU DG Competition Interim Report on Payment Cards and Payment Systems draws similar conclusions and recognises, that in acquiring, the concentration analysis says nothing by itself about possible coordination in the market or use of market power for excessive rents.

[39] Visa has given up this rule in 2005, Visa International Annual Report 2005, Visa EU (2005).

[40] This market characteristic is confirmed by EU DG Competition Interim Report on Payment Cards and Payment Systems

[41] Lähteenmäki (2006)

cards and EFTPOS terminals.[42] At the same time, these institutions may compete vigorously with each other for card holders and merchants.

The fees imposed to card holders and merchants seem to follow the rule that card holders pay fixed monthly or annual fees for their cards, [43] meaning that membership fee is applied. Merchants normally pay a transaction based fee (usage fee) and no or a minimal membership fee. The different fee structures on both sides of the network have their own path dependency and most likely reflect how the participants perceive the benefits acquired from the cards.[44]

The need to get both card holders and merchants join the network as well as need of investments and compatibility may have been the main reasons to why the payment card industry is so concentrated. The companies seldom reveal the structure of their business, but according to available evidence, the payment transmission (e.g. in form of debit cards) is a supporting service to other banking services where as credit cards have the potential to generate business on their own. The industry seems to believe that card holders' price sensitivity is higher than merchants'.

3.2 Types of payment card schemes

3.2.1 Proprietary card schemes

Proprietary cards are usually issued by a merchant organisation, retail chain or co-operative.[45] The card is accepted for payment mainly in the shops of the merchant in question. This creates a closed system. Hence, they are sometimes called cards with limited usage. The distinction between proprietary, three-party and four-party schemes on that ground, however, is not always simple to make, as there are e.g. proprietary schemes which have agreements with a vast variety of service providers thus widening the card holders' possibility to use the card beyond the issuing merchant's outlets. Proprietary cards are motivated mainly by a merchant's need to generate more business, to tie its customers with loyalty benefits and by its attempt to avoid the costs of accepting general purpose cards. Some merchants operate the card system themselves and some have outsourced it, often to

---

[42] This cooperation may also apply to setting multilaterally fees in national markets.

[43] Often a fixed fee and in case of credit cards an percentage fee on the credit limit.

[44] see chapter 2.2.

[45] EU DG Competition in its report (p 88) says that three-party schemes are also referred to as proprietary schemes. Here a distinction is made between three-party schemes and proprietary schemes used mainly for purchase financing.

the same service providers that banks use. However, the issuing and acquiring from legal perspective, including eventual fees, remain inside the merchant organisation. Considering that a large part of all shopping is done locally, the proprietary schemes could form a counterforce to international schemes. However, the current trend shows that merchants are to a growing extent co-branding their cards with international brands[46]. This is worth noting, as merchants at the same time complain about international schemes' fees and rules.

3.2.2 Unitary or three-party card schemes

Unitary card systems resemble proprietary cards in the sense that both issuing and acquiring as well as scheme management are taken care of by the system itself. Unitary card systems are for profit organisations and do not limit their operations to just one retail chain, geographically, by line of business or by other criteria. In order to achieve sufficient volumes and sufficient network of card holders and card accepting merchants, unitary systems may use other companies, often financial institutions, as contractual partners for card distribution, merchant agreements and routing of payments. These contracts may be in form of e.g. franchising.[47] In these cases the contractual partner receives fees according to agreed fee structures. Even if unitary systems apply no explicit interchange fee, considering the structure of operations, the system resembles very much a multi-party scheme.[48]

Unitary systems seem to have generally adopted asymmetric pricing structures.[49] By comparing public information about the card holder benefits and merchant fees it seems justified to conclude that unitary systems often offer more generous card holder benefits than most multi-party schemes. Respectively, unitary schemes seem to have higher merchant fees than most multi-party schemes. This could imply that fees determined inside a company are set higher than fees negotiated by several participants, even though these participants may be interlinked[50].

---

[46] e.g. Talous-Sanomat (.2007)

[47] E.g. Diners Club trade mark is owned by Citibank and its organisation covers over 200 countries. Franchising rights of Diners Club Nordic belong to SEB Kort AB, which operates in Sweden, Norway, Denmark and Finland. SEB Kort AB is owned by SEB AB, Skandinaviska Enskilda Banken. Diners Club (2007)

[48] See Appendix 1

[49] e.g. Evans-Schmalensee (2005).

[50] With this in mind, some authorities have preferred a multilateral interchange arrangement, see chapter 4.2.

3.2.3 Multi-party card schemes

In multi-party card systems the covering scheme management is done by a card association, or company, responsible for the payment card as a product, its development, maintenance of technical and functional network, default fees and clearing and settlement arrangements. It also sets the rules for relationships between counterparties, stipulating e.g. who bears the losses in case of fraud, and takes care of the brand management. The card association or company is mainly owned by financial institutions which act as issuers and/or acquirers in the network according to the general principles set by the scheme but acting independently towards their customers (both card holders and merchants). [51]

A distinctive feature of current international multi-party schemes is the fact that in many countries both sides of the industry are owned by same financial institutions. In these cases, no true bargaining on fees between issuance and acquiring is established. This may be one reason to higher merchant and card holder fees in certain countries. This is also a reason why the structure and various roles in the payment card industry are not easy to capture: in theory the roles of issuer and acquirers and the scheme management are clear, but in real life the same institutions may act simultaneously in different roles and superficially independent actors may have owner structures de facto overruling the independence[52]. To blur the picture even more, several issuers issue many competing card brands, from both multi-party and three-party systems.

---

[51] A good description of multi-party schemes' organisation can be found in EU DG Competition Report on Payment Cards and Payment Systems, European Commission (2006) p 88-106.

[52] European Commission (2006). p 142

4 Existing regulation and regulative norms

Payment cards industry has been subject to regulation both in Europe and in Australia. To a large extent, the regulation has its underpinnings in the competition law, but especially in Australia, the motivation has been to contribute to a more efficient payment system. Due to differing regulatory environment in the United States, the rules and fees of the industry have been contested mainly in courts of law. The payment card industry is under scrutiny also in several other countries not discussed here. Those countries include e.g. Poland, Portugal, Mexico, Colombia, New Zealand, Korea and South Africa[53]. In the following, the focus is on Australia, Europe and the U.S.A.

4.1 Australia

Australia has become a kind of a laboratory for regulation of payment card industry. The Reserve Bank of Australia's (RBA) powers is exercised by the Payment System Board established in 1998. The RBA has defined five conditions elementary for an efficient and competitive payment system, and has directed straightforward regulation in order to fulfil them. The relevant five conditions are[54]

- relative prices reflect relative resource costs
- merchants' freedom to choose which payment instruments they accept and to charge a price for them
- transparent prices
- minimized barriers of entry to the payment card system
- competition within and between individual payment systems

The Australian analysis that underlies the regulation recognises the substitutability of various payment instruments but does not take a stance towards cash.

The RBA started to enforce regulation on multilateral interchange fees (MIF) on credit card issuers and acquirers. The Reserve Bank's Standard on interchange fees came into

[53] SEC (2006), Electronic Payments International (2005a).

[54] Lowe (2005).

effect on 1 July 2003[55]. According to Assistant Governor Lowe the average interchange fee rate has been reduced to around 0,55 % of the transaction value by 2006 from nearly 1,5 % in early 2003, before the Standard was launched.[56] The RBA has continued to follow closely the industry, and a common benchmark interchange fee applicable to all credit card schemes has been effective since November 2006.[57]

The same year the Standard on credit card interchange fees was introduced, also the no-surcharge rule was removed. This allowed merchants to pass onto consumers the higher costs associated with accepting credit cards. According to Lowe, the vast majority of merchants did not yet, in 2005, charge for paying with credit card, but some firms e.g. operating in very competitive low-margin businesses had made use of the possibility. Transparency of pricing has also been realised and all MIFs and an average level of merchant service fees are published. The RBA has also required the Australian Payments Clearing Association (APCA) to redraft its access regime to lower barriers of new entrants to the business. [58]

In the same time, the interchange fees of debit card schemes have been subject to regulation.[59] An Australian speciality is that the domestic debit scheme, EFTPOS[60], credits interchange from issuer to acquirer whereas the international schemes credit the interchange from acquirer to issuer. A credible cost basis for same type of transactions with opposite flow of interchange is difficult to achieve[61]. The RBA has suggested a flat fee for both systems[62]. The RBA provided both Visa and MasterCard an opportunity to comply with its suggestions, and finally has set a Standard to Visa Debit whereas MasterCard debit has provided the suggested undertaking.[63] As a result of these reforms, according to the RBA from 1 November 2006 the average interchange fee for an average transaction of 80 AUD with a MasterCard or Visa debit transaction is expected to fall from around 40 cents to around 15

[55] According to the Standard, the weighted average of interchange fees must be no higher than a cost-based benchmark for each scheme, calculated from the costs of transaction processing, authorisation, fraud and fraud prevention and funding the interest free period. The Standard applies for Bankcard, MasterCard and Visa credit card schemes.

[56] Lowe (2005), Lowe (2006), RBA (2003a), RBA (2003b).

[57] RBA (2005).

[58] Lowe (2005).

[59] RBA (2006).

[60] EFTPOS is operated by banks, one large retailer and the processor on bilateral agreements

[61] This is also reflected in the conclusion by academic research that no socially optimal fee level can be found based on costs only, as described in chapter 2. The issue is also discussed by Vickers (2005).

[62] The question has been resolved by including switching and processing costs in the eligible costs of the EFTPOS system and the authorisation and processing costs in the eligible costs of other debit systems.

[63] RBA (2006).

cents. The benchmark interchange fee for a similar EFTPOS transaction will be 5 cents. It is noteworthy that the Australian Competition Tribunal did not accept the operating banks' suggestion to abolish the interchange fees completely from the EFTPOS scheme.[64]

In addition, from 1 January 2007, merchants will no longer be obliged to accept a scheme's debit cards as a condition of accepting its credit cards (abolishment of the so called honour all cards –rule). This means that all debit cards must be visually and electronically differentiated from credit cards by the end of 2009.[65]

The RBA has also started discussions with the Australian Bankers' Association calling on the banking industry to address access to the ATM system. The RBA also sees a mutual interchange fee for ATM transactions more beneficial than bilateral fees, which may be used to restrict access to the market or competition.[66]

The RBA has chosen not to target its regulation to 3-party schemes mainly due to the fact that these schemes have no distinct interchange fee to target. The merchant fees have been influenced by obtaining an agreement with American Express to remove its no surcharge rule and so called anti-steering rule[67], and to have its combined market share with Diners Club published. With this information the position of merchants to negotiate the fees should be improved. So far, a small decline in American Express merchant fees has been seen.

4.2 Europe

In Europe, regulation has been made and planned on both national and on EU-level. In 2002, the European Commission's Competition Directorate-General has examined the Visa cross border MIF in the EU-area and under certain conditions exempted the application of MIF. These conditions include e.g. reducing fee levels,[68] a cost-based fee cap for MIF and disclosure of the cost base behind the MIF. The exemption applies only to MIF of cross-border transactions made with consumer cards.[69] Payment systems, including payment card systems and the way they operate are, however, under scrutiny in the Commission for the time being. The Commission targets payment card industry both with an Interim Report on

---

[64] Electronic Payments International (2006a).

[65] Electronic Payments International (2006b).

[66] Electronic Payments International (2005b).

[67] Anti steering rule has prohibited the merchant to recommend another payment card to the customer.

[68] the MIF for deferred debit and credit cards was to be reduced stepwise to 0,7% in 2007 and the MIF for debit card transactions be flat rate of 0,28€.

[69] Competition policy newsletter (2002).

Payment Cards and Payment Systems by DG Competition and with a Consultation Paper on SEPA Incentives by DG Internal Markets. [70] [71]

Individual countries where payment card industry has been under scrutiny are Switzerland, Spain and UK. In December 2006 the Spanish Ministry of Industry, Tourism and Trade introduced an agreement reducing interchange for both credit and debit card payments in Spain. The aim is to create a system of setting maximum interchange fees, based on issuers' costs, by 2009. During the implementation, the fee levels will be stepwise reduced. The Swiss Competition Commission has also agreed with the country's main issuers and acquirers a procedure for setting the domestic multilateral interchange fee for Visa and MasterCard credit cards. The agreement was effected in February 2006 and the fees are expected to fall during a three-year period.[72] Also Italy and France[73] have domestic MIF-arrangements supervised by authorities.

The Office of Fair Trade (OFT) in the U.K. has targeted both Visa and MasterCard individually regarding their agreements on domestic multilateral interchange fees applicable to consumer credit, charge and deferred debit cards. The OFT has seen the MIF, set by the card schemes and their members, actually is a cartel agreement. According to OFT, this leads to excessive fees compared to relevant costs and raises the prices for merchants and ultimately to consumers.[74] In June 2006 OFT announced it is going to leave the earlier MIF arrangements to affected third parties to contest in private court, and it concentrates to the current MIF arrangements of Visa and MasterCard together. This re-engineering of approach was motivated by the proceedings in the Competition Appeal Tribunal (CAT) where MasterCard successfully argued its MIF to have been set since November 2004 by MasterCard management instead of MasterCard UK member banks.[75] This turn of events has its roots in payment card schemes' reorganising their operations and management, as will be discussed later in chapter 5.

---

[70] European Commission (2006), European Commission (2006a).

[71] MasterCard announced its new SEPA interchange rates for Maestro cards in December 2006. The rates are so called fall back rates for SEPA-area which means they are applied between the issuer and the acquirer in case the counterparties do not have a separate agreement. The rates are substantially lower than the current Maestro intra-EEA interchange rates. (MasterCard 2006).

[72] Electronic Payments International (2006a).

[73] Competition authorities accepted MIF and how it is calculated for domestic CB transactions in 1990.

[74] Vickers (2005), and OFT 195/05 (2005), OFT 168/05 (2005).

[75] OFT 97/06 (2006) and Electronic Payments International (2006c).

Besides the MIF, the prohibition of no-surcharge has been an issue in Europe already since the beginning of the 1990s. The no surcharge prohibition was abolished in the U.K. already in 1991. The abolishment has happened also in the Netherlands[76] and in Sweden[77] and its effects have been studied for the EU Commission Competition DG in 2000. Both studies indicate that only a small proportion of merchants actually charge their customers (5-10% of merchants). This is due to a fear for negative card holder reactions and customers refraining from paying with their cards if surcharged. The amounts charged vary and there seem to be cases where the surcharge does not reflect the actual cost of the transaction to the merchant.[78] The rules prohibiting merchants from imposing surcharges or higher prices on customers paying with a credit card will also be removed in Switzerland together with the MIF regulation.[79]

In spite of already capped and disclosed interchange fees in many jurisdictions, according to the European Commission DG Competition recent study, the merchant fees in various European countries vary substantially not just based on the line of business (based on experienced risk) or the type of transaction (chip-based, electronic, paper-based) but geographically and according to the size of the business. Either it is too early to judge the effects of capped MIFs or there seem to be mechanisms able to dilute the efforts to cap MIF. Another aspect is the lacking competition in the acquiring domain which would have the potential to efficiently bring the merchant fees down.[80]

4.3 United States

Both the payment card market and the role of authorities in the United States of America differ from Europe or Australia, and the market practices are mainly tested in courts of law. Several court cases have been raised in the United States against the major global card schemes Visa and MasterCard. These cases are raised by merchants or competing card schemes. These cases target the honour all cards rule and no surcharge rules, agreements on single or dual issuance[81] and the MIF. The Department of Justice case against both companies points out the eventual antitrust structure stemming from the fact that a member

---

[76] ITM Research for EU Competition DG (2000).

[77] IMA Market Development (2000).

[78] IMA Market Development (2000).

[79] Electronic Payments International (2006d).

[80] European Commission (2006). p 79.

[81] Meaning the ability or prohibition to issue simultaneously cards from competing schemes.

bank, while attending the board of directors of a scheme, simultaneously issues and/or acquires a competing scheme. Dual issuance as such was considered competitive but the restrictions in issuing other schemes than Visa or MasterCard, such as unitary schemes, was considered anticompetitive. Since 2004, the issuers have been able to make agreements with other schemes such as American Express or Discovery. These two companies have claimed damages from both Visa and MasterCard due to the former arrangements.

As a consequence of various consolidated and single suits by merchants MasterCard has made agreements with merchants on banning the "honour all cards" rule. This means that the scheme will implement programs which allow merchants to identify debit cards from credit cards and it will establish a separate debit interchange rate for a required period.

Other cases have targeted the currency conversion fees, merchant chargeback related issues and the impact of excessive merchant fees to consumer prices. There are at least two class action lawsuits by groups of merchants against both Visa and MasterCard on their interchange fees and marketing activities. The outcomes of these cases are not yet available. [82]

Over the past decade MasterCard and Visa interchange fees have increased in the United States despite of reductions in telecommunications and other processing costs. This could be due to the competition between schemes, which creates upward pressure on these fees.[83] This superficially paradox argument is based on the fact that the fees are set by the interlinked members of the card scheme, i.e. there is no real bargaining between issuers and acquirers. The rising trend of merchant fees apparently also lies behind the numerous court cases seeking change or damages for card schemes' rules, operations or fees. In the same time, according to District Court judge handling the antitrust litigation of Visa and MasterCard, these two schemes compete vigorously, prices to consumers have dropped and there has been rapid innovation of systems, product offerings and services.[84]

---

[82] SEC (2006).

[83] Lowe (2006).

[84] SEC (2006).

5 Industry responses to regulation

5.1 Experience of existing regulation

5.1.1 Australian experience

The RBA approach is based on efficiency and competitiveness, and has explicit criteria for these goals. The measures taken have been pragmatic and have woken controversy both in payment card industry and in retail business to the extent that Visa has proposed that the promotion of competition and efficiency should be removed from the central bank's domain and left solely to competition authorities.[85] The RBA acknowledges that the cost based standards for interchange fee do not necessarily reflect the fact that the interchange fees should be set on the basis of costs of just one side of the market, but rather the fact that it was the means available to the regulator.[86]

The regulation has been in place since 2003, which means the results are not unambiguously visible yet.[87] It takes several years before the eventual changes in the industry or in the card holder behaviour are reflected in statistics. Issuers' and card holders' decisions are typically made according to the lifecycle of the cards[88]. Merchants are to react only after the number of card holders has changed. Also issuers' and acquirers' decisions take a few years to show effect. The long term development in Australia shows a general trend from cheques to electronic payments. During the past few years the growth of the value of credit card transactions has declined, but so far the merchant acceptance has remained the same. The card holder benefits have been cut somewhat and some surcharging occurs. The competition in credit card issuing has shifted to competing with lower interest rates rather than with reward points. Also a small increase of the combined market share of American Express and Diners Club can be seen[89]. There are no quantitative studies of the lower interchange fees' impact on consumer prices, but the scarce evidence that is available

[85] Electronic Payments International (2006b).

[86] Lowe (2006).

[87] The first disclosed study of the subject is by Chang - Evans - Swarz (2005).

[88] The life-cycle of a payment card with magnetig stripe is 1-3 years and with a chip up to 5 years.

[89] Lowe (2006), Lowe (2005).

suggests that merchants do not pass the reduction in merchant fees to consumers in form of lower prices.[90]

Acknowledging that it is too early to say anything definite, the first evaluation of RBA regulation indicates that the expectations have not been filled. Banks have started to shift volume from the regulated to the unregulated systems. Banks have raised card holder fixed fees, which affect the card holders' willingness to have the card. The raised membership fees correspond to 40-50% of the declined issuer interchange revenue. No transaction-based charges have been imposed on card holders, nor have merchants started to surcharge credit card users. Thus, the incentives for card holders to use cards in POS have not changed radically. If the pattern persists, the RBA regulation will likely reduce the number of card holders of the regulated card systems.[91]

5.1.2 Changes in MasterCard and Visa scheme management

A major change that already took place in the payment card industry is the initial public offering (IPO) of MasterCard. A variety of implications are expected from this change of status from an association to a public company. The company will be subject to both requirements for financial performance and to regulation and disclosure requirements of public companies. The IPO was arranged in a way in which the members of the association will keep 41% of the shares and 49% will be floated. 10% of the shares with 18% of the voting rights are given to a charitable foundation established.[92] In October 2006 Visa announced its plans to create a listed company Visa Inc. of its USA, Canada and International operations. Visa Europe, however, is not included and it will retain its member-owned association structure. It will operate as a licensee of Visa Inc.[93] This separation is mainly due to the regulatory threat; European Commission DG Competition's ongoing scrutiny on the payment card market in Europe and the project to create a single euro payments area (SEPA).

The new structures may serve several purposes. The change over to a public company may effectively reduce the members' liabilities to lawsuits – a severe threat in the U.S. market. Both MasterCard and Visa (Visa International and Visa Europe) have appointed independent directors to their boards. These appointments are made in order to tackle the

[90] Chang-Evans-Swarz (2005).

[91] Chang-Evans-Swarz (2005), see also chapters 2.2. and 3.1.

[92] SEC (2005).

[93] Visa (2006).

accusations of anti-competitive organisational arrangements.[94] One result of the new organisation of MasterCard is in the UK the OFT decision to reshape its activities against domestic MIF arrangements since MasterCard announced that the domestic MIF is set by its management, not by member banks collectively.[95]

The public company structure also allows merchants and other stakeholders to become co-owners of the company and influence its operations. The fact that in MasterCard IPO the 10% of equity and 18% of votes are given to the charitable foundation, efficiently blocks eventual takeovers[96].

5.2 Potential industry responses to regulation or threat of regulation

In spite of various motivations - efficiency, contestability, or anti-competitiveness of the market - the tools used by authorities have been quite similar: regulation of the interchange fee and the card schemes' rules (mainly honour all cards -rule and no surcharge -rule). As the previous examples allude to, responses to regulation may occur on three levels: scheme level, institution (scheme member - issuer and acquirer) level and card usage level. The following sub-chapters discuss the industry's potential responses to regulation accordingly.

5.2.1 Potential responses on scheme level

Considering the industry specifics described in chapter 3.2.2., fee-setting decisions in the new public companies are made in a similar manner as in unitary schemes. This could imply that, without other changes, fee levels in the public company structure rather rise than decline.

A new organisational structure, as already adopted by MasterCard and Visa, may enable more profound changes in the operations of the international schemes. As a listed company, the owners decide upon the strategy of the firm, and anyone can become an owner. If merchants became co-owners of the scheme managing company, they would be able to influence its business goals and strategies.[97] This might lead to a situation that has been

[94] as the U.S. Department Of Justice case against Visa and MasterCard on issuers of competing brands participating in the board of a brand, or OFT claim of antitrust behaviour in setting U.K. domestic interchange by MasterCard, see chapter 4.

[95] Electronic Payments International (2006c) and OFT (2006).

[96] MacDonald (2006).

[97] This development is promoted also by proprietary card schemes co-branding with international brands, see chapter 3.2.1.

experienced in the Finnish market, where both merchants and banks own jointly the company acquiring credit cards and hence both merchants' and banks' representatives are involved in negotiations of MIF and merchant fees. As a result of this, the market enjoys very low fees compared internationally. However, it is hard to say, how likely a scenario this may be.

As the regulatory pressure mainly targets the four-party schemes, three-party schemes have been left intact, meaning that the existing regulation is asymmetric. The RBA sees that the common pressure from lower merchant fees in the four-party schemes affects also three-party schemes and will bring them down, too. However, if the existing global schemes experience a severe threat of losing business, the public company structure would allow a change from a four-party scheme to a three-party scheme.[98] Though unlikely, development like that would require substantial rethinking of the existing regulation.

5.2.2 Potential responses on institution level

Every issuer threatened by loss of his business considers its product portfolio accordingly[99]. One possible reaction by issuers is to change strategy and start acting as "subcontractors" to three-party schemes in stead of participating as a member in a four-party scheme. Both Australian experience and some industry experts have already alluded to such a possibility.

Change of focus in payment card issuing is probably one of the biggest threats to the wide global acceptance of current international four-party schemes. It also means a lucrative opportunity to existing three-party schemes. A 10-20% shift of payment card base to three-party schemes would increase merchants' pressure to accept these cards which are outside the current regulatory domain. This type of development will be visible in statistics only after several years, due to the renewal cycle of existing card bases.

General purpose payment card schemes may face competition also from proprietary schemes, especially in areas where the retail business is concentrated. The limits of "proprietary" may be ambiguous, as described in chapter 3.2.1[100]. For consumers mainly acting locally, a proprietary card, combined eventually with an account or credit facilities, could offer a competitive alternative to other payment instruments. Retail chains could also

---

[98] As described in chapter 3, the operative structure of three- and four-party schemes are not so different.

[99] Payment cards are one of the services offered to customers to have them committed to the bank, often as a by-product of the main banking products such as deposits and loans. Only credit cards seem to have enough revenue potential to have made it possible to create specialised business. See chapter 3.1.

[100] Proprietary schemes are also completely outside of current regulation, including the Single Euro Payments Area initiative.

avoid lock-in by bank issued cards. However, most existing proprietary schemes have been launched in cooperation with banks, and there rather seems to be a trend where proprietary schemes are co-branded with international schemes.

5.2.3 Potential responses on card usage level

Changes in scheme level do not have direct influence on card usage. Institution level decisions on shifting the issued cards to alternative schemes may have, at least in the longer run, an impact to card usage. However, the regulated scheme rules have the potential to influence card usage also directly.

Different card schemes typically have different merchant fees. Differences are based on card and transaction type: online or offline, debit or credit, electronic- or paper based, pin or signature based. Also line of business may influence the fee as certain businesses are experienced more risky. Abolishment of honour all cards –rules is meant to allow merchants to choose which types of cards of a scheme he wishes to accept. At the same time, this would force the schemes to differentiate the various card types from each other.[101] Otherwise consumers would not know whether a merchant accepting the scheme really does accept his card. Card holder trust is considered essential for a card scheme. Differentiation means that a card scheme's brand is broken in parts, and the number of participants of the sub-brand potentially diminishes. Differentiation of schemes is also expensive requiring global marketing and information and thus increases the costs of the schemes. This may fragment the market, require investment and lessens the attraction of these "sub-schemes" to issuers. In the long run this potentially decreases the number of points of sales where card holders can use their type of card and card holders' willingness to possess the card.

No-surcharge rule[102] prohibits the merchant to charge his acquiring fees from customers paying with cards. Some consumer organisations have expressed their concerns about the abolishment of no-surcharge rule, fearing that consumers will have difficulties in knowing what they are charged for and how much.[103] The payment card industry experiences the price elasticity of consumers regarding payment instruments relatively high – payment is no product by itself but just an enabler of other economic transactions. The payment card

---

[101] An example of differentiated brands is the online authorised debit cards (Visa's Electron and MasterCard's Maestro). Transactions with these cards require online authorisation, which is not possible with all POS-terminals. Hence, the decal showing merchant's acceptance is separated from the scheme's general acceptance decal.

[102] Non-surcharge rule is often referred to as non-discrimination rule.

[103] e.g. Electronic Payments International, (2006e).

industry fears that surcharging will guide consumers to other payment instruments. In countries where surcharging would be possible, only a minority of merchants use the option.[104] The current evidence suggests that the abolishment of no-surcharge rule, at least in short term, has only a negligible impact.

Besides scheme rules also some current business practices have been identified to be anticompetitive by the EU Competition DG Sector inquiry[105], even though opposite conclusions could be drawn as well. Bundling of merchant fees, meaning that the different MIF-levels of different card types are not reflected in merchant fees, and the fact that in many markets merchants with huge volumes enjoy smaller fees than small merchants with small volumes are examples of such practices. Disclosed pricing structures have been proposed to enhance merchants' bargaining power. It is difficult to see how mere disclosure of prices could solve this type of problems.

[104] See chapter 4.2.

[105] European Commission (2006).

6 Conclusions

In light of existing evidence, it seems obvious that companies in payment card industry do react strategically and change their behaviour under existing or expected regulation. The structure of the payment card industry is complex, and participating institutions may act simultaneously in various roles. When discussing the anti-competitive nature of the industry, it is important to distinguish on which level of the industry there is lack of competition. Based on U.S. court decisions the competition is considered to happen between schemes. In European Commission DG Competition sector inquiry competition on institution level is highlighted, but its analysis fails to point out tools how to increase competition between issuers and acquirers and how multi-issuing or stakes in both operations affect competition. Decisions of strategic responses to regulation are made on at least two levels of the industry: by the schemes and by each individual institution participating the scheme. As all members are not equally participating in the scheme management, and institutions may have various business goals, the decisions made on these two levels may well be contradictory to each other. E.g. an issuer may shift its cards from a scheme to another and still remain active in the previous scheme. [106]

Without prejudice to the possibility of improving market mechanism by regulation, based on conclusions of economic literature, regulated fee levels or structures will be socially optimal only by chance. The optimal interchange fee depends on several factors, as described in chapter 2. Economic literature gives some support to the fear that, by regulating the interchange fee or scheme rules, the regulator does not manage to correct any market failures. The asymmetric pricing structure of the market has its historical reasons, and may be justified also in maintaining the existing networks. If specific regulation is considered necessary in the payment card industry, the competition in institution level (issuing and acquiring) as well as the influence of competing payment instruments should be more carefully dealt with.[107] Capped MIF may not be the most adequate means to promote competition in the industry.

In order to create the necessary network of card users, and points of sales accepting the card, a certain amount of cooperation or coordination between issuers and acquirers is

[106] The industry structure and institutions' different roles has been discussed in chapter 3.

[107] The basic line of reasoning is to create level playing field to all payment instruments.

required. At the same time, the cooperation may distort competition. E.g. linking issuing with acquiring may abolish the true bargaining in the setting of interchange levels. According to evidence from at least one market, participation of merchants in the cooperation of card acquiring has resulted in relatively low fee levels[108]. Further analysis of competition and cooperation on different levels of the card industry, including the role of global processors, is required to support better regulation.

The payment card industry's potential responses to regulation have been discussed in this paper with a three level framework: the scheme level, institution level and card usage level.

The change of status of the scheme managing associations to a public company is of profound nature. A public company is able to operate more like a three-party scheme - and may even become one - but it also enables co-ownership of banks and merchants, of which there is at least one example.

The interchange fee is paid between the issuer and the acquirer, and the interchange cap hence influences mainly the institutions in these roles. As the price elasticity is not the same on both sides of the market, capped interchange fees are not directly reflected to card holder or merchant fees. Besides elasticises, other factors affecting the fluctuation of changed fees may be e.g. the competition in issuing and acquiring and investment required by the change. To compensate the cut in income, issuers may individually start changing their service portfolio - e.g. by becoming active in three-party schemes. This development would fragment both the global acceptance of currently dominating four-party schemes and the regulative influence.

Regulation of the scheme rules may have various implications to the industry. By abolishing honor all cards -rule merchants are allowed to decide which type of cards in a scheme and thus fees he accepts. An unintended concequence of this choice may be a fragmented network and higher costs of brand management and, in the end of the day, weakened services for both merchants and card holders.

The surcharging by payment instrument is prone to merchant arbitrariness, and if not implemented equally, it might bias the use of instruments to what is not socially economical. The existing experience shows, however, that, in a competitive environment, merchants tend

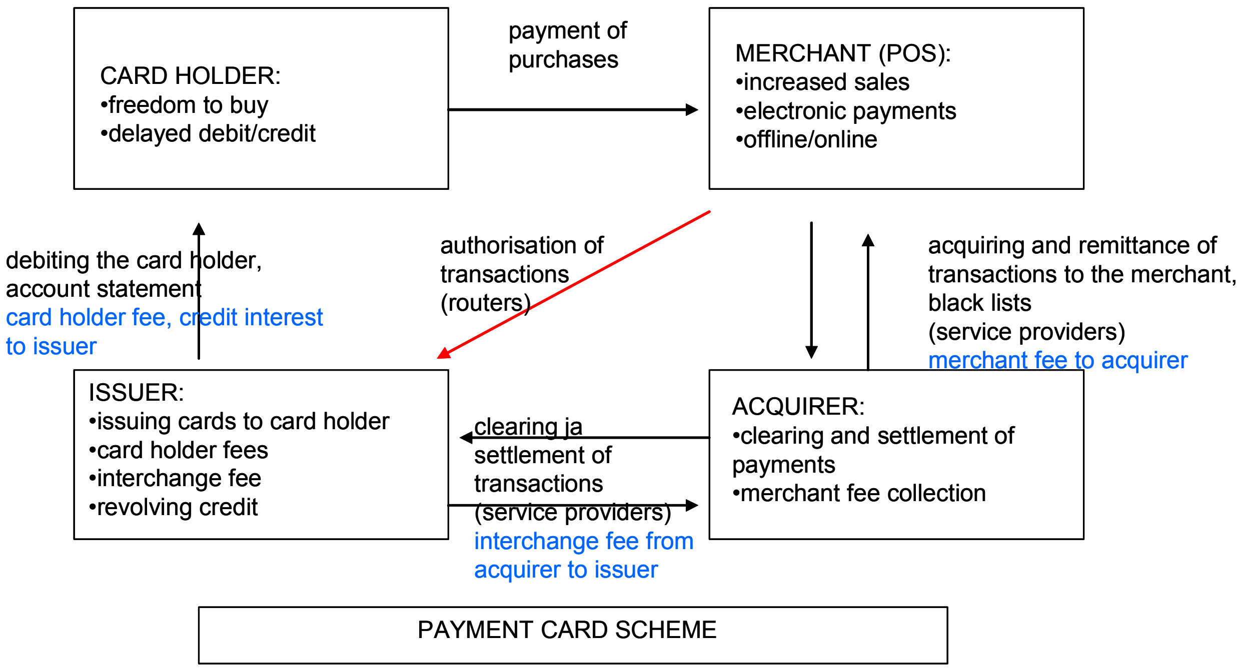
[108] see Chapter 5.2.1. on the Finnish payment card market.

not to surcharge customers by payment instrument. Hence, the influence of regulating no-surcharging rule may have only limited effect.[109]

The existing regulation does not appear to pay sufficient attention to the tiered and complex nature of the payment card industry as well as the financial institutions strategic options in the market. These elements weaken the effects of regulation even if it was initially properly designed. Hence, risk for regulatory failure exists.

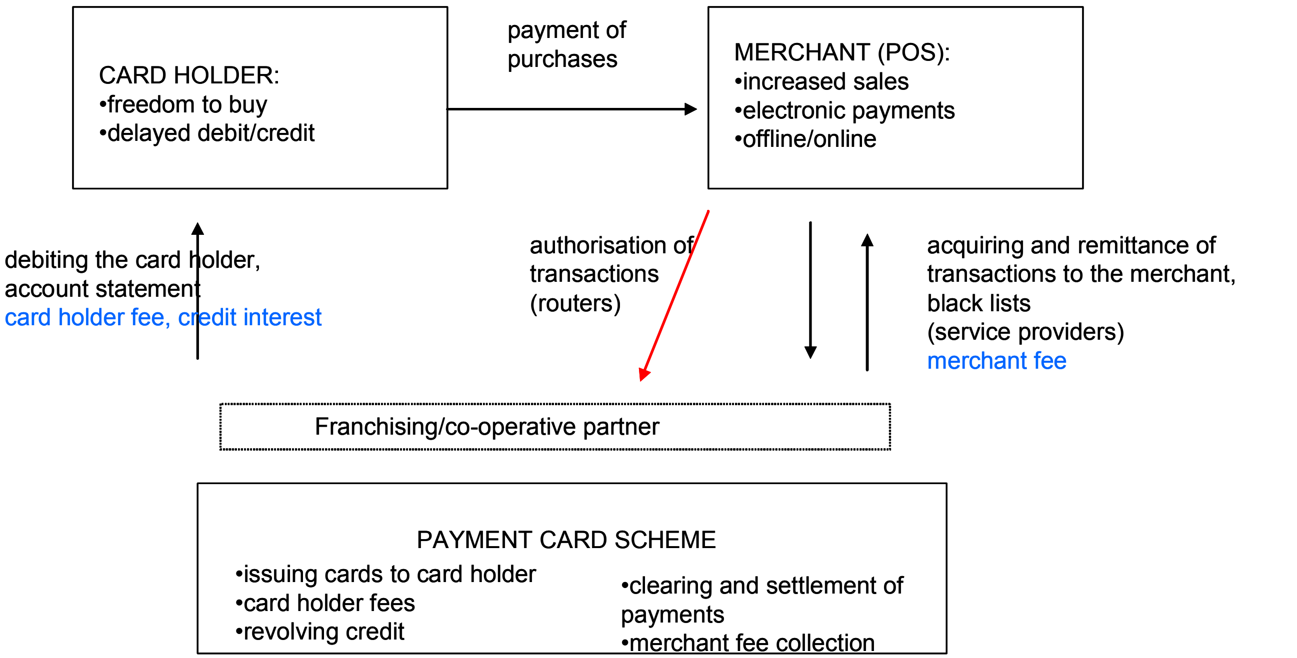
[109] Another approach would be to consider the costs related to payment instruments in general as an elementary part of merchant costs, comparable to rent or wages, and concentrate to achieving optimal merchant fee levels by enhanced competition.

Appendix 1. Business logic of payment card industry: four–party scheme



combined from different sources by the author

Appendix 2. Business logic of payment card industry: three–party scheme



combined from different sources by the author

References

Chang, H. – Evans, D. – Swarz, D. (2005) **The Effect of Regulatory Intervention in Two-Sided Markets: An Assessment of Interchange-Fee Capping in Australia**. Review of Network Economics, Vol.4, Issue 4, December 2005, 328-358.

Chakravorti, S. (2003) **Theory of Credit Card Networks: A Survey of the Litterature**. Review of Network Economics, Vol.2, Issue 2, June 2003, 50-68.

Competition policy newsletter (2002), **Clarifying the application of the competition rules to card payment systems: the Commission's exemption decision on the Multilateral Interchange Fees of Visa International.** Competition policy newsletter 2002, number 3, October, 33

Diners Club (2007) **Kauppiaille**. http://kauppias.dinersclub.fi/kauppias/viewcontent.aspx?plc=21

Electronic Payments International (2005a), **Interchange war forces reform**. Electronic Payments International November 2005, 5.

Electronic Payments International (2005b), **RBA steps up card reforms**. Electronic Payments International December 2005, 1-2.

Electronic Payments International (2006a), **RBA tackles EFTPOS again** and **Dutch regulator reverses Interpay decision.** Electronic Payments International January 2006, 6-7.

Electronic Payments International (2006b), **RBA imposed debit card reforms**. Electronic Payments International May 2006, 12-13.

Electronic Payments International (2006c), **OFT refocuses interchange challenge**. Electronic Payments International June 2006, 2.

Electronic Payments International (2006d), **New deals to cut interchange**. Electronic Payments International January 2006, 8.

Electronic Payments International (2006e), **Banks under pressure over pricing**. Electronic Payments International February 2006, 6. and **Competition enquiry targets payments,** 11.

Erfle, S. - McMillan, H. (1990) **Media, Political Pressure, and the Firm: The Case of Petroleum Pricing in the Late 1970s**, The Quarterly Journal of Economics, Vol. 105 No.1. February 1990, 1115-134.

European Commission, (2006) **EU DG Competition Interim Report on Payment Cards and Payment Systems**. European Commission Competition DG, 12.4.2006. http://ec.europa.eu/comm/competition/antitrust/others/sector_inquiries/financial_services/retail.html

European Commission (2006a), **Consultative Paper on SEPA incentives**. European Commission Internal Market and Services DG, 13.2.2006. http://ec.europa.eu/internal_market/payments/sepa/index_en.htm

Evans, D. – Schmalensee, R. (2005) **The Economics of Interchange Fees and their Regulation: an Overview.** MIT Sloan School of Management Working Paper 4548-05, May 2005.

Glazer, A. - McMillan, H. (1992) **Pricing by the Firm under Regulatory Threat**. The Quarterly Journal of Economics, Vol. 107, No.3, August 1992, 1089-1099.

Gt.news (2005), **Guide on Payment Cards in Business.** www.gtnews.com/paymentcards/paymentcardsguide1.cfm (18.8.2005).

Hausman, J. - Leonard, G. - Tirole, J. (2003) **On Non-exclusive Membership in Competing Joint Ventures**. Rand Journal of Economics vol 34, no 1 Spring 2003, 43-62.

Heikkinen, P. (2005) **Number of payment cards increasing**. Bank of Finland Financial Market Report 1/2005, 21.

Hunt, R. (2003) **An Introduction to the Economics of Payment Card Networks**. Review of Network Economics, Vol.2, Issue 2 - June 2003, 80-96.

Hyytinen, A. – Takalo, T. (2004) **Multihoming in the market for payment media: evidence from young Finnish Consumers.** Bank of Finland Discussion Papers 25/2004.

IMA Market Development (2000), **Study regarding the Effects of the Abolition of the Non-discrimination Rule in Sweden for European Commission Competition Directorate General**. IMA Market Development AB, 29.2.2000.

ITM Research for EU Competition DG (2000), **The abolition of the No-discrimination Rule**, Project number: R231, Amsterdam, March 2000.

Kemppainen, K. (2005) **Assessing effects of price regulation in retail payment systems.** Bank of Finland Discussion Papers 19/2005.

Lowe, (2005) **Reform of the payment system.** Reserve Bank Bulletin March 2005, 9-22.

Lowe, (2006) **The Evolution and Regulation of the Payments System**. Address to Payments System Conference 2006, Melbourne Business School, Melbourne, 14.3.2006. http://www.rba.gov.au/Speeches/2006/index.html

Lähteenmäki, I. (2006), **The Development of the Finnish Banking Industry from a Partnership Perspective**. Acta Universitatis Ouluensis G Oeconomica 23, Oulu 2006.

MacDonald (2006), **What MasterCard's IPO Means for Merchant Suit**. American Banker, June 9, 2006, 80.

MasterCard (2006), **MasterCard Europe Announces Maestro SEPA Interchange Rates**. MasterCard News Release 4.12.2006. http://www.mastercard.com/us/company/en/newsroom/pr_SEPAInterchange.html.

OFT 195/05 (2005), **OFT issues statement of objections on Visa agreement**. http://www.oft.gov.uk/News/Press+releases/2005/195-05.htm.

OFT 168/05 (2005), **MasterCard agreement anti-competitive, rules OFT**. http://www.oft.gov.uk/news/press/2005/168-05.htm.

OFT 97/06 (2006) **OFT to refocus credit card interchange fees work.** http://www.oft.gov.uk/News/Press+releases/2006/97-06.htm.

Rochet, J-C. – Tirole, J. (2002a) **Platform Competition on Two-sided Markets.** http://idei.fr/doc/wp/2002/platform.pdf

Rochet, J-C.-Tirole, J. (2002b**) Cooperation among Competitors: Some Economics of Payment Card Associations**. The Rand Journal of Economics, Vol.33, No.4. (Winter, 2002), 549-570.

Rochet, J-C. – Tirole, J. (2004) **Two-sided Markets: An Overview**.
http://faculty.haas.berkeley.edu/hermalin/rochet_tirole.pdf

Rochet, J-C. – Tirole, J. (2005) **Two-sided Markets: A Progress Report.**
http://idei.fr/doc/wp/2005/2sided_markets.pdf

Rochet, J-C.-Tirole, J. (2006) **Externalities and Regulation in Card Payment Systems**. Review of Network Economics, Vol.5, Issue 1 - March 2006, 1-14.

RBA (2003a), **Reform on credit card schemes in Australia**, Media Releases 2003-12,
http://www.rba.gov.au/MediaReleases/2003/mr_03_12.html

RBA (2003b), **Interchange Fees for the Bankcard, MasterCard and Visa Credit Card Schemes**, Media Releases 2003-14,
http://www.rba.gov.au/MediaReleases/2003/mr_03_14.html

RBA (2005), **Payments system reform**, Media Release 2005-08,
http://www.rba.gov.au/MediaReleases/2005/mr_05_08.html

RBA (2006), **Reform of Debit Card Systems in Australia**, Media Release 2006-04,
http://www.rba.gov.au/MediaReleases/2006/mr_06_04.html

SEC (2005) **Form S-1**, United States Securities and Exchange Commission Registration Statement 15.9.2005.
http://www.sec.gov/Archives/edgar/data/1141391/000119312505185903/ds1.htm.

SEC (2006) **Form 10-K**, United States Securities and Exchange Commission for annual and transition reports pursuant to sections 13 or 15(d) of the Securities Exchange Act of 1934. File number 000-50250 MasterCard Incorporated for fiscal year 2004.

http://www.sec.gov/Archives/edgar/data/1141391/000095012305002512/y06000e10vk.htm#109.

Stango, V. (2003) **Strategic Responses to Regulatory Threat in the Credit Card Market**. Journal of Law and Economics, vol. XLVI October 2003, 427-451.

Taloussanomat (2007), **Kaupat tuputtavat korttejaan**. Taloussanomat 7.2.2007, http://arkisto.taloussanomat.fi/doris/doriswww_2726.asp

Weiner, S.-Wright, J. (2005), **Interchange Fees in Various Countries: Developments and Determinants.** Review of Network Economics, vol. 4, Issue 4 December 2005, 290-323.

Vickers, J. (2005), **Public policy and the invisible price: competition law, regulation and the interchange fee**. Paper for the international payments policy conference sponsored by the Federal Reserve Bank of Kansas City, Santa Fe, 6. May 2005. http://www.kc.frb.org/FRFS/PSR/PDF/Publicpolicyinvisibleprice-final.pdf

Visa EU, (2005) **Visa International Annual Report 2005**. http://www.visaeurope.com

Visa (2006), **Visa announces global restructuring**. Visa Europe News Releases 11.10.2006. http://www.visaeurope.com/pressandmedia/newsreleases/press267_pressreleases.jsp

Homepages referred to:
euroConex, http://www.novainfo.com/euroconex/index.asp.
FirstData, http://www.firstdata.com.
Atos Worldline, http://www.atosworldline.com/index.htm.