

An examination of the economics of payment card systems

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Abstract

The use of payment cards has increased substantially in recent years. These cards have become an indispensable and natural payment instrument for many consumers. On closer examination, a complex network of interdependencies underlies these inconspicuous pieces of plastic. The coordination of all the parties involved in a payment card system is far more complex than the simplicity of the payment process

would lead one to expect. This paper aims to provide an understanding of the various payment card types and systems, their mode of operation and the cost/benefit considerations of the parties involved. Particular attention is paid to the economics of two-sided markets, the principles of which govern the operation of payment card systems. Finally, the paper examines the interchange fees which – arguably – are required for the smooth functioning of payment card systems.

By David Maurer¹

1 Introduction

Though created just a few decades ago, and with some reservations regarding its underlying business model, the payment card has revolutionised retail payments. In the last sixty years, these cards have conquered the world and a large section of the world's population could now hardly imagine life without them. In eleven European countries, the number of card payments rose by 140% overall in the period from 1987 to 2004.² In Switzerland, the increase in card payments between 1996 and 2007 was more than 260%.³ In some places, the payment card has become the leading cashless, internationally usable payment instrument in the retail trade and a major competitor of cash. Closer examination of the payment card market reveals an industry which requires complex coordination of the parties involved. The following, simplified example conveys some impression of the complexity of the payment card market.

For the consumer to be able to make a purchase with a card, he must first of all own a card. This he obtains from a card issuer (the issuer), which for its part sometimes calls upon the services of other companies to check the creditworthiness of the applicant, produce and print the card and possibly post the account documents and statements. Purchases cannot be made with a payment card unless or until the card is also accepted by merchants. This is the job of a company (the acquirer) which sets up the necessary contractual relationship between the merchant and the card system,⁴ guarantees that the amount of the purchase will be transferred to the merchant and provides it with the payment terminal and other infrastructure. When someone pays by card, the payment terminal opens a connection with a central computer, through which the validity of the card, the limit on the card, the daily limit and sufficiency of funds are checked. If the payment is approved, another company processes the electronically transferred data and forwards the information to the issuer. The latter then transfers the amount owed to the merchant's bank.⁵ The payment is cleared

through a clearing institution and settled through a payment system.⁶

The way in which a card system works is therefore much more multi-layered than it may initially appear. Since the end of the 20th century, both academic researchers and the competition authorities of various countries have been studying this complex market. This article explores the interdependencies of the payment card market, examines the economics of two-sided markets and looks into the controversial issue of interchange fees.

2 The history of the payment card

The precursors of universally accepted credit cards were the merchant cards, which first made an appearance in the 1920s. These were issued by hotels, oil companies or department stores, and enabled the cardholders to hold a credit account and the merchants to keep a systematic record of customers' purchases.⁷

Universal credit cards were born in 1949, when three Americans – Alfred Bloomingdale, Frank McNamara and Ralph Snyder – tried to integrate a third party into the merchant cards, which had up to then involved only two parties. They founded the company known as Diners Club.⁸ Their company acted as a middleman between consumer and merchant by granting the former credit and providing the latter with a customer. Upon using the card, the amount of the purchase was recorded and forwarded to Diners, where the consumer's bills were centrally gathered. Once a month, the amount outstanding was collected and passed on to the merchants.⁹ Fees for the services were charged on both sides. Credit was thus no longer seen merely as a means to an end, but as an actual product which could be sold by way of a credit card. as part of a credit card 'package'. There had been no precedent for this business model up to then. Accordingly, the Diners Club Card start-up phase was hard going. In addition to the hotels, oil companies and department stores that already issued their own customer charge cards, it was difficult to persuade ordinary merchants to participate. They feared that having the credit card company act as a middleman would weaken the customer relationship.

In 1958, American Express and Carte Blanche – the credit card of the Hilton hotel chain – entered the

1 The opinions expressed herein reflect those of the author and not necessarily those of the Swiss National Bank. The author would like to thank Andy Sturm, Philipp Haene, Thomas Nellen, Sandra Balmer, Christiane Burger, Patrick Lengg and Manuel Murbach for their valuable and inspiring discussions and comments.

2 Cf. Bolt and Humphrey (2007, p. 459). The eleven countries analysed were Belgium, Denmark, Finland, France, Germany, Italy, the Netherlands, Norway, Spain, Sweden and the United Kingdom.

3 Total debit and credit card payments. Cf. Swiss National Bank (2009), Table C2.

4 A card system (also known as an association) is a platform which draws up the rules of membership and whose brand name a payment card carries. MasterCard, Visa and American Express (in the credit card market) or Maestro and V Pay (in the debit card market) are well-known card systems.

5 The merchant's account is generally credited with the sales price (less merchant charges) within two to three days (Evans and Schmalensee 2005a, p. 11).

6 If the cardholder and the merchant have an account with the same bank, payment is generally settled through the bank's in house system. In addition, there are many other companies that operate in the payment card market by, for example, producing the necessary software and hardware or specialising in the securitisation and on-selling of credit card debts.

7 In the absence of any indication to the contrary, the following historical account is based on Mandell (1990) and Evans and Schmalensee (2005a).

8 Various rumours circulate about the precise circumstances that led to the foundation of Diners Club. The most widespread but entirely fictional rumour was put about by Diners Club for marketing purposes. According to this legend, Frank McNamara had the eye-catching idea for the new business model when, over a business dinner, he found that he had forgotten his wallet, which was a great embarrassment for him in front of his business partners and the restaurant owner. Thereupon he vowed never to let anything like that ever happen again and founded Diners Club. The Diners Club credit card was actually initially intended – as the name suggests – primarily for use in restaurants. Cf. also Pitzke (1999).

9 An idea which in its essential features has survived to this day but which, as interviews with those involved at the time reveal, was initially met with great incomprehension. A friend of Frank McNamara, when confronted with the business model, said he thought it was the worst idea he had ever heard ... nobody 'put it on the slate' [consumed on credit] in those days. Pitzke (1999).

credit card market.¹⁰ Operationally, the fact that the three companies had no national network that would have enabled the card to be used everywhere in the United States was a great challenge. Bank of America also entered the credit card market in 1958 and had its BankAmericard licensed throughout the US (in 1976, BankAmericard changed its name to Visa, in order to give its business model an international flavour with an easily pronounceable brand name). In response to these expansion efforts by Bank of America, a number of major banks got together to launch a second nationwide card system known as the Interbank Card Association, which later became Master Charge – the predecessor brand name of today's MasterCard.¹¹ At international level, the landscape of the main players on the credit card market has not changed greatly since then. In 1986, the US market was joined by the Discover card, issued by the department store giant Sears,¹² in Japan, the JCB card became generally accepted and, for some time now, the CUP (China Union Pay) card from China has been developing into a serious competitor in the credit card market. Although credit cards appeared on the market in Europe at approximately the same time as in America, for a long time they received a much less enthusiastic reception here than in the US.

The development of the second very widely used form of payment card, the debit card, did not begin until several decades after the launch of the credit card. For that, the necessary technological EFT (electronic funds transfer) infrastructure needed to be developed first. While the credit card eliminates the need for cash to make a payment, EFT technology removes the lending middleman. With the EFT infrastructure, direct checking of the customer's account status at the point of sale and the electronic transfer of funds became possible.

3 Different types of payment card

The following section examines the definitions, demarcation lines and properties of the individual types of payment card.¹³ Payment cards differ mainly in the timing of when the purchaser settles his liability and may be broadly divided into three categories: pay later, pay now and pay before.

10 Carte Blanche later merged with Diners Club.

11 In 2002, MasterCard merged with Eurocard, which was widely used in Europe.

12 Discover did not catch on internationally (Evans and Schmalensee 2005a, p. 19).

13 In the case of credit cards in particular, differing definitions and demarcation lines sometimes appear to exist, depending on the country. In the absence of any indication to the contrary, the following definitions are based on the Red Book (2008, p. 294).

14 There are, however, differing demarcation lines, for in some countries delayed debit cards are classified as debit cards even though they grant credit during the interest-free period.

15 Because of the problems of pricing in two-sided markets (cf. section 4.1 and 4.2), these fees are frequently set extremely low as a 'teaser' or may be paid with points under reward schemes, which is indirectly subsidised by higher charges for the merchant.

3.1 Pay later cards

Credit cards

Genuine credit cards grant the holder of the card a credit line for cash withdrawals or purchases. The amounts outstanding owed to the credit card issuer may typically be repaid interest free at the end of a billing period or be paid off in instalments while incurring interest. Consequently, with credit cards there is a time lag between use of the card and repayment of the amount owed. As soon as a payment is made by credit card, the credit card becomes the instrument of an unsecured consumer credit.

There are also cards which are referred to as non-genuine credit cards, where the interest-bearing credit option is deselected and the amount outstanding must be repaid at the end of the agreed period. Such cards are also known as delayed debit cards or charge cards.¹⁴ For cultural reasons, non-genuine credit cards are more common in Europe, where consumer credit is less widely used than in North America.

With both types of credit card, cardholders usually have to pay the issuing institution an annual fee.¹⁵ A credit card is not necessarily linked to any account that the holder may have with a bank. Even customers without a bank account may hold credit cards.

Retailer/loyalty cards

Retailer cards are cards which are issued by a company and are intended to be used only for transactions at this company. As far as their function is concerned, retailer cards are affiliated to credit cards if they grant the holder a credit option. Typically, the aim of retailer cards is to seek to ensure customers' loyalty to the company, which it does by granting them credit, backed up by reward schemes. Retailer cards are widely used by department store chains or filling station companies, for example.¹⁶

Co-branding and affinity cards

Retailer cards should not be confused with co-branding cards, which are issued in a brand partnership between a credit card brand (MasterCard, Visa or American Express) and a company. A co branding card is a credit card in the usual sense, but it also has additional functions incorporated by the issuing merchant in question.¹⁷

16 For example, in Switzerland, BP, Shell and Avia issue retailer cards which allow the cardholder to buy on credit. However, unlike co branding cards, the opportunities for using these retailer cards are generally limited to the companies in question.

17 The MasterCards issued by Migros and Coop or SWISS (Swiss International Air Lines) are examples of co-branding cards. They have the normal functions of a credit card but also enable the user to participate in specific reward schemes (e.g. Cumulus points, Super points, air miles).

Widespread use is also made of affinity cards, which are very similar to co branding cards; the main difference being that the credit card brand's partnership is not with companies but with clubs, associations, organisations, interest groups or non-government organisations. These are also responsible for the card design. With an affinity card, the cardholder expresses his support (affinity) for a particular organisation. In addition, the organisation in question is credited with a certain percentage of every annual fee and every sale on the card. Indirectly, therefore, with each purchase an affinity cardholder donates a marginal amount to his favoured organisation.¹⁸

3.2 Pay now cards

Debit cards

When a debit card is used, the cardholder's account is debited straightaway. Unlike a credit card, a debit card requires the cardholder to have an account with the card-issuing credit institution. Debit cards are used for purchases at the point of sale, for internet payments¹⁹ and also for cash withdrawals at ATMs. Payments and withdrawals are generally authorised by means of a PIN (personal identification number)²⁰ via EFTPOS²¹ systems. These systems enable the automated, electronic and cashless processing of payments. Daily limits and withdrawal limits typically restrict the number and value of payments that can be made by debit cards. A few decades ago, when the technological infrastructure for point of sale payments and electronic data transfer were lacking, account cards had only an ATM cash withdrawal function or served only as cheque guarantee cards (e.g. the EC card for eurocheques). It was only as technology developed that such account cards, which were already widely used, acquired the expanded electronic funds transfer functions in use today. This historically substantiated fact is one of the reasons why the price structure of debit card systems has developed differently from that of credit card systems.²²

In addition to the normal debit card, there are various sub-forms. Even today, some cards still have only a pure account card function; that is, they can be used only for withdrawing cash at ATMs or over the bank counter. With offline debit cards, payments can-

not be processed at the point of sale in real time, but only with a few days' delay.

3.3 Pay before cards

Prepaid cards

With prepaid cards, a sum loaded onto the card in advance is available for transactions or cash withdrawals. Prepaid cards come in various guises: both debit and credit card providers offer prepaid cards, but electronic purses (known in Switzerland as CASH) are also based on the concept of pre payment. In principle, prepaid cards also include phone and copy cards, although their use is normally limited to the issuer's own outlets and is based on the loading and storing of units of value. Unlike cards such as these, the Swiss Travel Cash card can be used worldwide.²³ Prepaid cards are also suitable for people without a bank account. In the US, for example, some employers even offer employees the option of having their wages paid onto a prepaid card which can be used to withdraw cash at an ATM or to pay at a point of sale.²⁴ In some countries, efforts are also being made to pay benefits to asylum seekers without a bank account onto prepaid cards.²⁵ In the last few years, gift cards are also being increasingly offered in the form of prepaid cards instead of paper. The amount loaded and stored on the voucher card at the issuing company where it is bought can be used by the beneficiary at the company's own payment terminals, using a PIN.²⁶

3.4 Multifunction cards

Multifunction cards combine a number of functions on one card. In addition to having a debit card and a credit card function on a single card,²⁷ multifunction cards can also have additional features. The bulk of the debit cards issued in Switzerland are actually multifunction cards, since they also have the CASH electronic purse function. Electronic purses can be loaded and unloaded at ATMs and are particularly suited to paying small (or even very small) amounts. The credit balance loaded is in the meantime stored in the CASH pool²⁸ and debited to the CASH pool when payments are made.

18 Affinity cards are issued by major football clubs, for example, but also by non-profit organisations such as Greenpeace or the WWF. Cf. also Cards-Karten-Cartes (2008, p. 7).

19 The Saferpay online payment platform, for example, enables online payments to be made in Switzerland using the PostFinance debit card, the PostFinance Card (www.saferpay.com/postfinance.asp). A similar payment method is available in a number of European countries for the Maestro card. This is a combination of debit card payment and e banking. With an online payment, after entering their Maestro card number, customers are taken to their bank's website. There they are asked to enter the usual online banking details and the payment is then activated (www.saferpay.com/maestro.asp).

20 In some countries, however, debit card payments are also authorised with a signature, which makes the payment a signature debit transaction. Where this is not the case, the payment is referred to as a PIN debit transaction (Evans and Schmalensee 2005a, p. 11).

21 Electronic funds transfer at point of sale.

22 This pricing problem is examined in more detail in section 4.2.

23 As an electronic means of payment, Travel Cash is an alternative to the rapidly disappearing travellers' cheque. With the Travel Cash card, which is a member of the Maestro system, the amount prepaid by the cardholder can be used at all Maestro outlets.

24 Evans and Schmalensee (2005a, p. 2).

25 According to the Swedish National Debt Office.

26 Cf. also Klein (2008, p. 14).

27 According to PostFinance, this combination is not yet possible in Switzerland.

28 If a cardholder loads a certain amount onto his CASH chip at the ATM, his account is debited and the prepaid pool (CASH pool) account is credited. If the cardholder pays from his CASH credit balance, the CASH pool is debited and the amount transferred to the merchant.

4 How payment card markets work

Closer analysis of how the card market works reveals that fairly complex coordination of all parties involved in the system is essential. The economists Evans and Schmalensee, who are among the pioneers of academic research into payment card markets, maintain that “it’s hard to find an industry that, on the surface, fits as poorly as this one into the boxes that economists have developed for classifying industries”.²⁹ While this coordination problem may have contributed to the sluggish start of the first credit card systems back in the 1960s, understanding the complex processes involved has improved significantly in the last decade thanks to the economic analysis in the industry. The following sections examine the economic peculiarities of the payment card market.

4.1 The economics of two-sided markets

The analysis of two-sided markets has contributed greatly to the understanding of payment card markets. Although credit card systems have existed for more than fifty years, economic analysis of this type of market is a relative new field of research.³⁰ Developments in information technology in the last decade have contributed to research into two-sided markets, since from an economic perspective many information platforms have similar characteristics to payment card systems.

The key distinguishing feature of two-sided markets is that one or more user is involved on each of the two sides of the market. An intermediary performs the necessary coordination function by bringing the individual participants on both sides of the market together and thereby helping to increase their utility. This intermediary is indispensable for the functioning of two-sided markets; without it the participants on either side of the market would not come together. For this reason, two sided markets are also known as two-sided networks or sometimes also as two-sided platforms. In a normal goods market, no intermediary is necessary. A person who wishes to purchase chewing gum buys his gum independently at the kiosk, while in a two-sided market (a dating agency, for example), a platform is

required for both sides of the market (single woman and single man) to meet.

Positive network externalities

A key attribute of a two-sided market are positive network externalities. These cause the utility of participating in the market (or network) for the participant on one side of the market to increase the larger the group on the other side of market. Market participants cannot achieve this additional utility on their own; it requires the market participation of others. The payment card system is a two sided market in which consumers participate on one side of the market and merchants on the other. Both groups of participants are brought together via the platform – the card system, such as MasterCard or Visa, for instance. The utility of possessing the card increases for the cardholder with each additional participating merchant. Conversely, the utility of membership of the card system increases for the merchant the more consumers have a payment card. A card system generates positive network externalities only if it is used simultaneously by both groups. The utility of participation would be insignificant for card owners if there were only a few merchants that accepted the card.³¹

Positive network externalities do not arise in the normal goods market. There both consumers and suppliers are the full beneficiaries of any decision to buy. For example, the decision of a purchaser to buy his chewing gum at a particular kiosk does not concurrently increase the utility of other kiosk owners. When buying chewing gum, the utility is completely internalised directly for those involved.

Examples of two-sided markets

In addition to payment card markets, there are other prominent industries that function in accordance with the laws of two-sided markets:

- Computer operating systems: The operating system connects users on one side of the market and software developers on the other side. With each additional user, the utility for software developers in producing programs for the operating system increases. Conversely, the utility for users increases in line with the number of programs developed for the operating system.

²⁹ Evans and Schmalensee (2005a, p. 6).

³⁰ Cf., for example, Hunt (2003), Rochet and Tirole (2003a), Evans and Schmalensee (2005b), Rochet and Tirole (2006).

³¹ This problem appears to be one reason why the market penetration by innovative payment instruments remains suboptimal despite their technical feasibility. One example is the Swiss e money solution CASH, which, even though it is integrated into most debit cards, can really only be used in a relatively limited number of cafeterias as well as at parking metres and kiosks. Consequently, the two-sided CASH market is under-represented on the merchant/outlet side of the market. The utility for the CASH cardholder is therefore significantly lower than if CASH could be used more widely.

- Video games: A similar relationship applies for video game consoles (e.g. Sony Playstation, Xbox, Nintendo), which connects the developers of the games with gamers. Developers have a great incentive to program games for those consoles which are very popular with gamers.
- DVD and Blue Ray players function in accordance with similar criteria – film producers have a greater incentive to publish their films through the standard that has the most users.
- Two-sided markets also exist outside information technology and entertainment electronics. One classic example is a dating agency. Its importance increases with the number of participants on both sides of the market.

4.2 Challenges in two-sided markets

Despite the contextual differences between the aforementioned industries, they are faced with comparable challenges because of their two-sided market structure.

Chicken and egg dilemma

One major challenge for a two-sided market lies in achieving a critical mass of users. Only if this critical mass is reached is there any incentive at all, because of the positive network externalities, for both groups to participate in the network. This peculiarity has also been dubbed the ‘chicken and egg’ dilemma: A consumer derives little utility from a payment card if there are hardly any merchants who accept the payment card.³² Various models have to be tried to solve the chicken and egg dilemma – for example by allowing one market group to join the network free of charge (credit cards with no annual fee) or by canvassing for users on one side of the market by means of investment³³ (software developers are granted free access to cost-intensive operating system programming tools or qualified assistance).³⁴ This strategy helps to ensure that the preferred user group has fewer incentives to participate in other competing two-sided markets.

32 Mandell (1990) describes the difficulties that faced Diners Club, as the first credit card, in attempting to solve the chicken and egg dilemma.

33 The Caillaud and Jullien (2003) paper analyses network business strategies and price structures in two-sided markets.

34 Evans and Schmalensee (2005a, p. 144).

35 According to Evans (2004, pp. 51–52), the ‘marginal cost = marginal revenue’ condition has no meaning “in two-sided markets, because there is no conceptual way to allocate the increases in revenues from changes in prices to one side or the other. Changes in prices result in more ‘transactions’ from which both sides benefit. Nor is there any useful way to allocate the costs. Often costs are jointly incurred, and any means of allocating them is arbitrary.”

Prices and price structure

In two-sided markets – unlike normal markets – not only does a price have to be found, but so, too, does an optimum price structure. The choice of price structure also arises in markets which have already solved the problem of critical mass. An optimum price structure gives both sides of the market the necessary incentives to continue to participate in the market and balances the interests of the member groups. The usual optimum for normal markets with perfect competition (price = marginal cost = marginal revenue) is, however, not applicable in the two-sided market.³⁵ The feedback effects and interdependencies of the customer groups participating in the market present a much more complex scenario. In order at least to get close to the optimum, the network operators exploit the different price elasticities of the users. Usually, the more price-inelastic side of the market is treated as a profit centre, while the more price-elastic side is tempted into (continuing its) membership by means of special offers (loss leaders).³⁶

Some Japanese dating clubs appear to have incorporated the properties of the two-sided market optimally into their business model. Men and women sit on opposite sides of a glass divide. If one of the two parties sees a person on the other side of the divide that interests them, the waiter is asked to pass this person a ‘love note’. A price system that exploits the different price elasticities of the two sexes ensures that sufficient visitors are attracted to both sides of the glass divide and that the club operators do not come away empty-handed. Men pay a one-off fee of approximately USD 100 and an entry fee of USD 20 per visit. Women, on the other hand, are admitted free of charge.³⁷

But pricing can also be based on other criteria, for example, if there is a sub-group on one side of the market that is regarded by the users on the other side of the market as extremely attractive.³⁸ This is the case with American Express (AMEX), for example, with whom merchants are traditionally prepared to pay higher merchant charges in order not to lose AMEX business credit

36 Rochet and Tirole (2003a, p. 991). With credit cards, cardholders are treated as loss leaders (low card fees), while merchants as profit centres are asked to foot significantly more of the bill than cardholders through the merchant charges or interchange fee.

Evans and Schmalensee (2005a, p. 145) demonstrate by way of examples that finding the optimum price structure for the network operators is in practice a great challenge and that the theoretical economic optima of ordinary markets cannot be implemented in two-sided markets.

37 Evans and Schmalensee (2005a, p. 133).

38 Rochet and Tirole (2003a, p. 1013) describe this group as ‘marquee buyers’.

cardholders, who are regarded as marquee buyers. The cross-subsidisation of credit cardholders by merchants is higher in the case of a marquee buyer group than with conventional credit card systems.

The price structure differs markedly, however, if one group of users is already locked into the market. Rochet and Tirole cite debit card holders in America as an example.³⁹ Originally, account cards (the predecessors of debit cards) were used to withdraw cash at ATMs or previously over the bank counter. Since direct online authentication and the payment at point of sale function only became possible with debit cards when the technology had advanced sufficiently, it was the merchants who had to be persuaded to participate in the debit card market and to purchase the necessary infrastructure, whereas cardholders already had the necessary card. In this case, unlike in the credit card market, a price structure with an extremely low merchant charge was chosen. The existence of locked-in cardholders influenced the price structure in favour of the merchants.

Multihoming

A further peculiarity of two-sided markets is a phenomenon known as multihoming. Frequently, one group of users in the market participates in several competing two-sided markets. Software developers write programs for a number of operating systems, while users typically have only one operating system. In the card market, multihoming can be found on both sides of the market. On the one hand, merchants frequently offer access to a number of different card networks and, on the other, cardholders often have cards from a number of different payment systems at the same time. The availability of substitutes and also the expected opportunity to multihome influences prices and price structures in the two-sided market.⁴⁰

4.3 The structure of card systems

In the absence of any indication to the contrary, sections 4.3 and 4.4 examine the relationships in the

credit card market. A separate analysis of the debit card market is not provided since the relationships between the players in the debit card market basically resemble those in the credit card market. In substance, as indicated in section 3, debit cards do, however, differ from credit cards, especially in the following respects:

1. Bank account relationship required between cardholder and issuer
2. Amount deducted from account when payment is made (hence 'debit')
3. Normally no credit function

The structure of debit card markets can also be shaped by country-specific features since, in addition to the two international systems – MasterCard's Maestro and Visa's Visa Electron or V Pay – many countries have their own debit card systems (e.g. PostFinance card in Switzerland, EC in Germany, PIN in the Netherlands, Dankort in Denmark).

Globally, American Express, Diners Club, MasterCard and Visa are the leading international credit card systems. Then there is also Discover in the US, JCB in Japan and CUP (China Union Pay) in China.⁴¹

Four, three and two-party systems

Various models can be found for the structure of credit and debit card systems as two-sided markets, the most prevalent being the four-party system, where four parties are connected via the card system acting as the platform.⁴² There are two parties on each side of the market (the consumer side or the merchant side). The two parties on the consumer side are the consumers and the issuers. The issuer provides the consumer with the payment card and thereby enables him to access the card system. The two parties on the merchant side are the merchant and the acquirer (the company that recruits merchants). The acquirer manages the relationship with the merchant and enables it to access the card system.

39 Rochet and Tirole (2003a, p. 1,014).
40 Evans (2004, p. 55).

41 Cf. Evans and Schmalensee for the background to the business structure of various payment card systems over the past few decades (2005a).

42 For this reason, the term 'five-party system' would actually be more accurate than 'four-party system'. The card system (the licensor company, such as MasterCard or Visa), which is omitted from the usual listing of the parties is the indispensable platform and thus the fifth party, without which payments would not be possible at all.

Chart 1 shows the flow of services and payments in a four-party credit card system. The transaction is triggered as soon as the consumer decides to use his card as the payment instrument at the point of sale. At that point the consumer transfers to the merchant the right to demand the sale price from the issuer. The merchant transfers this right directly to the acquirer, which initiates the remaining steps of the clearing and settlement of the payment itself or outsources them to third parties, depending on its business model. This also includes demanding payment of the sales price from the issuer and reimbursing the merchant. The issuer advances the acquirer the sales price and charges the consumer for it at the end of the interest-free period. As compensation for the cost of processing the transaction and for the lending risk on the consumer side, the issuer deducts the interchange fee from the sales price that it transfers to the acquirer.⁴³

For its part, the acquirer retains for its services a further amount,⁴⁴ which is, however, significantly smaller in comparison with the interchange fee. This sum covers payments made for services which the acquirer does not undertake itself but outsources to specialist companies. Only the residual amount of the actual sales price (97–99%) is transferred to the merchant.

The credit card systems most widely used internationally – MasterCard and Visa – are four-party systems. American Express, JCB and Diners Club are structured in accordance with a three-party system in which the acquirer is also the issuer and is thus connected to both the merchant and consumer sides of the market (cf. chart 2). In a three-party system, the interchange

fee is superfluous. Apart from that, the payment and service flows in a three-party system resemble those of a four-party system.

The two-party system is the simplest as far as the relationships between the parties are concerned. In a two-party system, the merchant is simultaneously both the issuer and the acquirer. This form of system is found predominantly in retailers cards. Such a card, for example Shell's, can only be used at the merchant's.⁴⁵

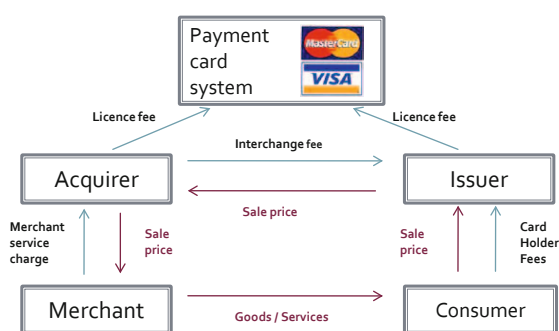
4.4 Players in the payment card market

Using the example of the credit card, the following sections consider more closely the individual parties in the card system,⁴⁶ focusing on the utility that is achieved in comparison with using cash and examining the costs and fees that are incurred when paying by card.

Consumers

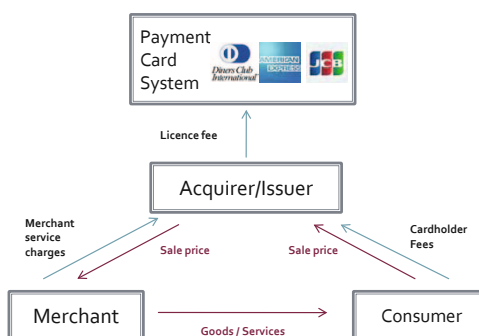
Utility: For consumers, paying by credit card brings advantages in many respects. The primary benefit is that payment cards reduce the amount of cash that consumers have to carry around and hunt out at the point of sale. Payment cards offer more security since, to make a payment at the point of sale, they require authentication and, after a theft, unlike cash, they can be used only if the secret number (PIN) is known.⁴⁷ Paying by card brings transparency and makes it easier for consumers to keep track of their own spending. Companies used business credit cards to simplify the expense accounting of their employees. Since the cre-

Chart 1: Four-party system



43 Cf. section 5 for background to the interchange fee.
44 This amount is part of the merchant charge.

Chart 2: Three-party system



45 Cf. definition of retailer cards in section 3.1.
46 An analysis of the situation in the debit card market would paint a similar picture, with the exception of the credit line and, in most cases, also the reward programmes, which normally do not apply to the debit card.
47 This advantage does not apply to cards with e-money credit balances (CASH in Switzerland, for example), since these can be used without a PIN. If an e-money card is lost and the credit balance on it has not, however, been spent by its expiry date, it is credited to the next card.

dit card can be used in all currencies, the commission costs that would be incurred when exchanging cash can be avoided by paying by card. In addition, genuine credit cards⁴⁸ provide the customer with a credit line with a personal upper limit and an interest-free period, usually of 30 days. Interest on the credit becomes payable only if it is not repaid within this period. One important thing is that this is a credit line that does not have to be renegotiated each time. In addition to the payment function, credit cards offer the holder many other additional advantages. Widespread use is made of memberships of reward schemes (e.g. air miles, Cumulus points, Super points)⁴⁹ as well as insurance services and the like.⁵⁰ When considering utility, the positive network externalities should not be ignored either. For the consumer, the utility of participating in the system also increases with the number of outlets that accept the card at home and abroad and, indirectly, with the number of other cardholders.

Costs and fees: The direct costs to the credit card holder include, in particular, the annual fee and the interest charges if the credit is still outstanding beyond the interest-free period. For card payments made in another currency, exchange rate losses and foreign currency charges are also incurred. Where merchants charge different amounts for different payment instruments at the point of sale, using a credit card entails paying a higher price.⁵¹ The indirect costs of a card transaction include traceability, since every time the card is used to make a payment the user leaves a trace and information about his identity. The issuer and the merchant gain an insight into the consumer's payment history and consumption patterns.

Merchants

Utility: A merchant derives various benefits from membership of a credit card system, not least easier sales processes. Electronic processing of card payments simplifies the accounting process compared to cash transactions, enhances transparency, sometimes accelerates the sales process and makes the processes downstream of the payment easier (e.g. cashing up, reduced cash management). In addition, card payments increase security and reduce costs for the merchant: there are no risks and costs in connection with cash processing (cash transport, accepting forged notes and

coin, cash refund errors),⁵² and the merchant is protected against card fraud and against the consumer's credit risk if it has diligently complied with all its security obligations. In the case of reservations, credit card numbers offer the merchant security if customers cancel a reservation at short notice. Some merchants also highlight the hygienic superiority of card payment instruments over cash.⁵³ Accepting credit cards can also help to expand a merchant's business. Various distance sales of goods and services (internet, telephone orders or mail order) are normally only possible with a credit card. In addition, accepting credit cards also widens the merchant's customer base by making it possible for cash-poor customers to make purchases by credit card which would not have been possible without a credit line.⁵⁴ Merchants with foreign customers also benefit from the fact that the payment card can be used as a payment instrument without having to hold any cash in local currency.

Costs and fees: The advantages of accepting a card are offset to some extent by the direct costs to the merchant. The fixed costs include the installation, maintenance and purchase or rental costs of the payment infrastructure, staff training costs and the fees for participating in the card system. Variable costs are incurred on each card payment. These are part of the merchant charges which are deducted when the transaction price is transferred from the issuer to the merchant.⁵⁵ The indirect costs to the merchant include complying with the card system's rules, for example, the 'honour all cards' rule⁵⁶ or the necessary security checks (comparing signatures, checking the validity of the card).⁵⁷ In some countries, merchants are contractually obliged, under pressure from the card systems, to observe the non discrimination rule⁵⁸ and so treat all payment instruments the same – even though they give rise to different costs.

Unlike cash, merchants are not obliged to accept a credit card as a payment instrument.⁵⁹ The merchant's decision to participate in the card system or not depends on his expected net utility, which is also influenced by the positive network externalities and which increases with the number of credit card holders and the number of other outlets for the card.⁶⁰ For this reason and because of the relatively high fixed costs of a payment infrastructure, merchants frequently opt for

48 Cf. section 3.1 for a definition of genuine and non-genuine credit cards.
49 Reward and point collection schemes are described as a 'negative price' (Gans and King, 2000, p. 5) which the issuer recoups through other channels, normally through higher interchange fees, unfavourable exchange rates, high foreign currency charges or higher card fees.

50 Credit card companies sometimes also offer wealthy credit card holders additional services, such as those of a personal butler – which generally entail higher card fees.

51 Or a reduction for cash or debit card payments may be negotiated. Cf. also details on the non-discrimination rule in section 5.2.

52 According to Rafsanjani (2006), one café in Washington, DC, for example, accepts only card payments. Cash is refused since the costs of managing and processing cash are considered too high.

53 According to a study by infectious disease researchers at the University of Geneva, certain strains of flu virus appear to be able to survive for up to 17 days on banknotes. Cf. *Die Welt* (2008).

54 Bolt and Chakravorti (2008, p. 21) call this behaviour 'intertemporal business stealing'. Merchants who accept cards are luring credit card customers who do not yet have the necessary cash resources and, in this way, are taking business away from the merchants of tomorrow today.

55 Also known as 'merchant service charges'. But merchant charges are sometimes also misleadingly referred to as 'merchant discounts', even though the charges are deducted directly from the sales price and there is no actual discount as such – only a charge.

56 Cf. details on the honour all cards rule in section 5.2.

57 The majority of these security checks are carried out electronically. With PIN-based payments, there is generally no matching of signatures. Back in the days of manual imprinters, these checks were the responsibility of merchants. Since 1 January 2005, the following liability rules apply for Visa and MasterCard in Switzerland: For transactions using an imprinter, the party that is liable is the one that is not EMV compatible. The issuer bears the liability if the card is not EMV compatible. The merchant is liable if it does not have an EMV compatible terminal. Cf. www.aduno.ch/de/service/glossar.php, keyword: Imprinter. EMV is a standard that was devised jointly by Eurocard, MasterCard and Visa to facilitate compatibility for chip-based payment cards (EMV stands for the three initial letters of the three card systems).

58 For details on the non-discrimination rule, cf. section 5.2.

59 In Switzerland, the Federal Act on Currency and Payment Instruments (CPIA, 1999) stipulates in art. 3 para. 1 that everyone is obliged to accept in payment up to 100 coins and banknotes without restriction.

60 Cf. details on the economics of two-sided markets in section 4.1.

multihoming.⁶¹ In this way, merchants seek to attract a wider number of cardholders and, at the same time, to exploit economies of scale and scope.

Issuers

The primary function of the issuer is to issue payment cards to consumers. Its areas of operation are, however, more complex and, strictly speaking, embrace those of a financier. The issuer (or a specialised firm commissioned by it) checks the consumer's creditworthiness, provides the credit, processes payments, transfers the sale amount to the acquirer for onward transmission to the merchant, produces bills and statements, collects interest owed, recovers debts and is ultimately liable if the cardholder defaults on his payments. In addition, the issuer assumes the funding costs of the credit in the interest-free period. The guarantor function performed by the issuer is vital and indispensable for the smooth functioning of the card system. The issuer confirms for the acquirer – and the latter in turn confirms for the merchant – that the credit is covered. For this reason, the issuer bears any loss incurred on the default of the borrower, provided all parties involved have fulfilled their duties of care properly.

The issuer gains utility in the form of revenues from annual credit card fees, interest earnings on the credit extended,⁶² exchange rate gains, currency translation income and interchange fee passed on by the acquirer. All this is, to some extent, offset for the issuer by direct and indirect costs. The former include the licence fees that have to be paid to the card system each year and costs arising in connection with the processing of a card transaction, managing the customer relationship or billing; indirect costs are incurred in connection with the liability risks in the credit card business.

Acquirers

The acquirer has a direct relationship with the merchants. It seeks to enlist them as members of a card system, concludes the necessary participation contracts, provides the required payment infrastructure and is responsible for the processing of payments. The acquirer's revenues derive from the fees which are

retained directly from the purchase amount paid to the merchant. On top of this come the acquirer's fixed revenues from the leasing or sale of the payment infrastructure to the merchant. Unlike the issuer, the bulk of the acquirer's income is variable, however, and is directly dependent on the volume of payment transactions generated by the merchant.

The acquirer incurs the cost of licence fees payable for being allowed to participate in the card system and the costs of processing transactions, managing the customer relationship or the risks borne. Unlike the issuer, however, the acquirer bears a much lower risk. On the one hand, he guarantees the merchant that the sale price will be transferred to him in due time and, on the other, he is liable to the issuer if a merchant fails before any reverse transfer.

Processors

In addition to the traditional roles of the acquirer and the issuer, other companies perform specialised services, some of which may be outsourced by the acquirer or the issuer. Some acquirers establish and manage with the merchants the relationship with the card system, but have the background activities – such as the processing of the payments – carried out by other firms. On the issuers' side, too, payment processing services are outsourced to specialised companies which take on the task of, for example, sending out statements to or collecting money from cardholders.⁶³ There are also firms which take on the processing for both the acquirer and the issuer.

Other companies

In addition to the main parties, a card system – irrespective of whether it is constructed on the two, three or four-party model – will also have other specialist companies which create added value and make a major contribution to the smooth running of the payment system. These include firms which, for example, specialise in constructing payment terminals, develop processing software, offer dynamic currency conversion⁶⁴ or advise the card system parties on implementing regulatory changes.

61 For details on multihoming, cf. section 4.2.

62 As Bolt and Chakravorti (2008, p. 21) remark, interest income for the issuer increases with the number of cash-poor consumers who finance their future consumption today by credit card. It is not only merchants but also issuers who profit from this intertemporal business stealing.

63 Cf. also Evans and Schmalensee (2005a, p. 19).

64 Dynamic currency conversion grants the consumer the possibility to determine the payment currency himself at the point of sale. This brings transparency as early as the point of sale into what would otherwise be the issuer's rather unfathomable currency conversion.

5 Interchange fees

In addition to the obvious card system charges – such as the annual card fees, the account overdraft charges, the interest charges or the foreign currency charges – the interchange fees are less obvious to the cardholder. They flow from the acquirer to the issuer and therefore tend to be unknown to the general public. In the last decade, they have, however, increasingly become the focus of public discussion, since competition authorities in various countries suspect that they conceal possibly unlawful price agreements. Interchange fees are, however, nothing new: they have been a regular component of card systems for several decades now. For the banks involved in the payment system, they are a multi-billion business.

5.1 Equalisation mechanism

The interchange fee serves as an equalisation mechanism in the four-party system and enables utility to be spread between all the parties involved. The interchange fee is a fee that the acquirer pays to the issuer.⁶⁵ It can be negotiated bilaterally between issuer and acquirer or multilaterally between a number of issuers and acquirers. In the latter case, the fee is referred to as the multilateral interchange fee.

The optimum interchange fee allocates the total costs of the card system across all parties in such a way that the volume of card transactions is maximised. Outside this optimum, the interchange fee may result in a reduction in the volume of transactions. Too low an interchange fee would result in issuers replacing the lost income through other channels – in particular by increasing card fees, cutting reward scheme points or dispensing with extra services (observable, for example, after the statutorily imposed reduction in the interchange fee in Australia).⁶⁶ As a result, these effects would reduce the incentives for consumers to hold cards. However, if interchange fees were to be set too high, they would be passed on quite visibly to merchants through the merchant charges. The merchants would then be inclined to dissuade customers from using credit cards, to issue their own merchant cards or not to participate in credit card systems at all.

65 In practice, the interchange fee is withheld by the issuer from the purchase amount that is to be transferred to the acquirer.

66 As a Reserve Bank of Australia report (2008) demonstrates, regulation of interchange fees resulted in higher annual card fees having to be paid and fewer points being awarded in reward schemes. All in all, the consumer effectively had to pay higher prices for a credit card transaction. Furthermore, as expected, the elimination of the non-discrimination rule led to surcharges being applied on card payments but not to a general fall in prices. An empirical analysis of early data from the Australian reforms backs up these trends; cf. Simon, Smith and West (2008).

5.2 The non-discrimination rule and the honour all cards rule

Frequent reference is made in the literature on the interchange fee to the non-discrimination rule and the honour all cards rule – two important contractual features of the payment card market. The acceptance agreements between merchants and acquirers usually contain a prohibition on price differentiation (known as the non-discrimination rule).⁶⁷ These prohibit merchants from passing the merchant charges (which include the interchange fees) on to consumers. Merchants are also not allowed to grant the customer a price reduction when using lower-cost payment instruments such as debit cards or the credit cards of other card systems. Discriminating between different payment instruments by way of price is prohibited under the non-discrimination rule.

The honour all cards rule obliges merchants to accept all cards of the same card system, irrespective of their properties, origin or holder. In practical terms, this means that merchants have to accept magnetic strip credit cards or credit cards from overseas, even though these involve higher interchange fees – and lower income for the merchant. The honour all cards rule is of vital importance for the functioning of a card system. On the one hand, cardholders can rely on all cards of the same card brand being able to be used worldwide; on the other hand, and provided they observe their duty of care obligations, merchants have the guarantee that a payment will be guaranteed irrespective of the origin and properties of the card.

5.3 Types of interchange fee

Interchange fees in the payment card market

Interchange fees exist in various forms. Each card system determines its own interchange fee individually. In addition, interchange fees also depend on the type of card (credit or debit card). Yet, in some countries, interchange fees can vary even within the same card system, depending on whether the card is a magnetic strip card or a chip card, whether it is part of a reward scheme or whether it is used for online shopping, telephone ordering or directly at the point of sale. In ad-

67 Occasionally also referred to as the 'no surcharge rule'.

dition, the interchange fee can depend on the category of card (standard, premium or gold card). Interchange fees that differ according to the cardholder's country of origin can also be encountered.⁶⁸ The following regional interchange fee variations can be found on the credit and debit card market:

- Domestic multilateral interchange fee (DMIF): is used when the payment takes place in the country in which the card was issued.
- Interregional interchange fee (within Europe): is used when a European cardholder makes a payment in another European country.
- International interchange fee: is charged if a cardholder pays by card outside Europe.

Interchange fees in the ATM market

Interchange fees are also widespread in the ATM market. In this case – unlike the practice in card systems – they flow from the issuer to the ATM operator whose ATM the cardholder uses to withdraw cash.⁶⁹

Interchange fees in the direct debit system

In some countries, interchange fees are also levied in the direct debit system. A direct debit system is similar to a four-party payment card system. The four parties involved are: the payer, the payer's bank,⁷⁰ the payee and the payee's bank.⁷¹ Like the payment card market, the direct debit system interchange fee is an equalisation payment from the payee's bank to the payer's bank. While only a few European countries have an interchange fee in their existing national direct debit systems, its introduction for cross-border direct debits was the subject of intense discussions in the course of the implementation of the Single Euro Payments Area (SEPA) Direct Debit Scheme and was viewed with suspicion by the European competition authorities.⁷² According to a joint statement by the European Commission and the European Central Bank, after a three-year transitional period, interchange fees will no longer be permitted in the SEPA Direct Debit Scheme with effect from 2012 for competition reasons.⁷³

5.4 Criticism of the interchange fee

Various arguments are advanced as criticisms of interchange fees:

Subsidisation

In conjunction with the non-discrimination rule, the interchange fee results in costs being allocated to all consumers, even those who do not pay by payment card. Since the fee is passed on to the merchants, but the latter cannot pass it on to the actual originators (the card-using consumers), the interchange fee ultimately increases the price of the basket of goods being offered. Consequently, those consumers who pay with a cheaper payment instrument are subsidising those who decide to use a more expensive payment instrument. This reasoning presupposes, however, that merchants are prevented by the non-discrimination rule from exercising price differentiation for different payment instruments.⁷⁴ If the interchange fees incurred were to be passed on in full to the cardholder, the price of the basket of goods being offered would not be influenced any further.⁷⁵ The non-discrimination rule is therefore sometimes regarded by the competition authorities as an instrument for card systems to abuse their market power.⁷⁶

Market power over merchants

It is also argued that merchants have extremely weak negotiating power vis-à-vis the card systems and have no alternative but to accept the interchange fee. Any threat from merchants to leave the card system if interchange fees are too high is generally ineffectual. Only very few influential merchants – such as Wal-Mart in the US – have been able to obtain a reduction in interchange fees and thus created a competitive advantage over their competitors.⁷⁷ Most merchants' hands are tied over interchange fees, however, if the non-discrimination rule is in force at the same time.⁷⁸

68 Weiner and Wright (2005) offer a country-by-country comparison of interchange fees.

69 On the economics and flow of fees within ATM networks, cf. Donze and Dubec (2008).

70 The first two parties are comparable to the cardholder and the issuer in the payment card market.

71 Parties three and four correspond to the acquirer and the merchant in the card market.

72 As emerges from a speech by EU Competition Commissioner Irmfried Schwimann (2008).

73 European Commission, European Central Bank (2009).

74 Bolt and Chakravorti (2008, p. 19) and Rochet (2003, p. 106) find that price discrimination between payment instruments is used only rarely even in countries in which it is legally admissible. Even so, this condition fundamentally alters merchants' negotiating power. Cf. also Bolt, Jonker and van Renselaar (2008).

75 If the costs of payment instruments were to be passed on perfectly, for a basket of goods with a real value of CHF 10.00 at the till, a customer would pay, for example, CHF 10.10 with a debit card, CHF 10.20 for a credit card payment or CHF 10.30 for a payment in cash.

76 Cf. Rochet and Tiole (2002, p. 550).

77 Cf. Posner (2006, p. 23).

78 For this reason, merchants in some countries have filed a class action against card systems.

Fraudulent price-fixing

From a competition law perspective, the collective setting of the interchange fee between a number of acquirers and issuers is a particular irritant. It is suspected that it conceals fraudulent and anti-competitive price-fixing enabling issuers to generate income without actually rendering a service, at the expense of merchants and consumers. In fact, in the general business world, any agreement among competitors to secure a higher price on the goods market or any allocation of income that might be agreed is anti-competitive. Although it appears tempting to apply this general law to multilaterally agreed interchange fees, economic research findings reveal that such a hasty conclusion ignores the special dynamics and characteristics of two-sided markets.

Lack of competition between payment systems

Various authorities suspect that the high interchange fees reflect a lack of competition between card systems. One of the sources in which this suspicion is expressed contains the following comment from the Reserve Bank of Australia: "In Australia, credit card interchange fees are not determined by a competitive market."⁷⁹ It is occasionally found that the same institutions act as issuers or acquirers of two competing payment card systems at the same time, which means that ultimately the same participants set the interchange fee for two card systems.⁸⁰

Inefficiencies caused by interchange fees

In some payment card systems, interchange fees result in undesirable distortions. In the debit card market in the US, for example, the charging of interchange fees has led to increased use of inefficient offline debit card payments,⁸¹ which involve higher interchange fees, at the expense of online debit payments.⁸² Balto states: "We observe the perverse marketplace phenomenon in which merchants pay more in interchange for a less efficient and valuable payment system – offline debit – than they do for its online counterpart."⁸³ In other countries in which the debit card system operates with no interchange fees, the debit card network and the use of debit cards has developed more rapidly and more efficiently than in the US.⁸⁴

5.5 Regulation of interchange fees

Because of the above-mentioned criticisms, interchange fees have attracted the attention of the regulatory authorities in some countries in past few years. The following two sub-sections provide a brief account of the decisions to regulate in Australia and Switzerland.⁸⁵

Australia⁸⁶

In a joint study, the Australian Consumer and Competition Commission and the Reserve Bank of Australia established that consumers were paying higher prices than necessary for payment services – not least due to excessive interchange fees, which were higher than the actual cost. The interchange fees did not appear to be exposed to the normal forces of competition, since the income from the interchange fees was being used not to cover costs but to subsidise credit card fees or to finance reward schemes. The study also took exception to the fact that the existence of the non-discrimination rule significantly restricted merchants' negotiating power and that credit card payment costs could not be passed on to the originators of the costs. Since the interchange fees were subject to no clear or proper controls and had remained persistently high over several decades, the study doubted that the interchange fees could be reduced without regulatory intervention.

The study did concede, however, that in a network, the interchange fee can lead to an allocation of costs between the users and is therefore in principle justified – but only if it is cost-based and determined objectively and transparently. It deemed that relevant costs were those which, on the one hand, related to the receipt, verification and reconciliation of payment information and to the settlement of a transaction or, on the other hand, arose from the payment guarantee and the interest-free period. The figure arrived at by this cost-based model served as the upper limit for the interchange fee, which is recalculated at three-year intervals. Whereas the interchange fee in credit card systems had been around 0.95% per transaction before the competition authorities intervened, it is now around 0.5%.⁸⁷

79 Reserve Bank of Australia (2002, p. 8).

80 Where an issuer issues Visa cards and MasterCard cards at the same time, this is known as dual branding.

81 For a definition of various types of debit cards, cf. section 3.2.

82 Since interchange fees for offline debit payments were higher in the US than for online debit payments, greater use was made of slower and less secure offline debiting. Consumers were also charged for online debit payments, as a result of which, there was little incentive to use this payment instrument and merchants therefore saw little reason to change over to online debiting. The banks' market power over the interchange fee led to a suboptimal situation in which higher-cost and less socially efficient payment instrument gained widespread acceptance. Cf. Balto (2000, p. 216).

83 Balto (2000, p. 222).

84 According to Balto (2000), this is the case in Canada, for example.

85 Bradford and Hayashi (2008) offer an overview of various interchange fee regulations.

86 Reserve Bank of Australia (2002).

87 Reserve Bank of Australia (2008, p. 4).

The arguments adduced in favour of the decision to regulate in the Australian credit card market were subsequently taken as a benchmark in most of the similar decisions taken by other competition authorities.

Switzerland⁸⁸

The Swiss Competition Commission (COMCO) assessed the domestic multilateral interchange fees (DMIF) in the credit card market that were applied in the MasterCard and Visa credit card systems.⁸⁹ Since the issuers engage in dual branding in Switzerland – i.e. they issue both Visa and MasterCard cards – the same representatives sit on both the committees in which the DMIF for each card system is set.⁹⁰ The COMCO came to the conclusion that the fixing of the DMIF was, in principle, a price agreement and that the non-discrimination rule was anti-competitive. It did concede, however, that a multilateral procedure for setting the interchange fee in a complex four-party system actually has efficiency advantages in that it facilitates market entry for market newcomers and contributes significantly to lower transaction costs.⁹¹ But in the COMCO's opinion, the collective setting of the interchange fee would be an advantage only if the fee were limited to actual cost components that were indispensable for the functioning of the network. These cost components did not include the costs arising from the interest-free period, losses in connection with the payment guarantee, marketing among merchants or reward schemes.

On the basis of this cost approach, the COMCO set a maximum DMIF of 1.3–1.35% per transaction. For reasons of transparency, the parties involved are obliged to disclose the exact DMIF to merchants. In addition, the non-discrimination rule was declared unlawful in order, firstly, to strengthen the negotiating position of merchants and, secondly, to increase the competitive pressure on credit card systems from other payment instruments. For the present, this mutually agreed arrangement of 2005 is set to run for four years, which allows the COMCO to re assess the effects of the measures taken on competition in the credit card market at the end of this period.⁹²

5.6 Economic findings on interchange fees

With the competition authorities focusing more and more on the regulation of the interchange fee, the interest of economic researchers in this area has also increased. The originator of research into the interchange fee is generally reckoned to be William F. Baxter, who published the first scientific paper on it in 1983.⁹³ It took just under two decades for further works in this branch of research to appear, some of them being prompted by the growing interest of the regulatory authorities. The literature reveals that payment card systems are extremely complex networks, which allows no clear solution for setting an optimal interchange fee.⁹⁴ A large number of factors must be taken into account, including the following (which is not a definitive list):

- Merchant and consumer utility functions, which influence each other because of the positive network effects
- Acquirer and issuer cost functions
- Strategic interaction for card acceptance between merchants
- Market power or competition between issuers and between acquirers
- Bilateral or multilateral setting of the interchange fee
- Competition (or intensity thereof) between payment card systems
- Competition between different payment instruments
- Price differentiation between various payment instruments or the prohibition thereof

The theoretical works reviewed depict the relevant economic relationships in a simplified fashion and are based on specialised assumptions. They examine the question of the optimum interchange fee in the light of a few of the above-mentioned factors and therefore also differ in terms of a number of key conclusions. Despite the multiplicity of models, a number of common findings emerge:

- The interchange fee is an indispensable equalisation mechanism in the payment card system and, in the social optimum, is never zero. In addition, the relationships in the payment card market are too complex for the socially optimum interchange fee to be determined solely on the basis of cost-based considerations.⁹⁵

88 Swiss Competition Commission (COMCO) (2005).

89 To date, there is no DMIF in the Swiss debit card market.

90 The Visa Issuer/Acquirer Forum (VIAF) for Visa and the MasterCard Committee (MCC) for MasterCard.

91 If a foreign acquirer, for instance, tries to gain a foothold in the Swiss market, it would have to fix an interchange fee with every Swiss issuer bilaterally.

92 The Swiss Competition Commission (COMCO) let it be known on 16 July 2009 that it was launching a new investigation into interchange fees (COMCO, 2009).

93 Baxter (1983).

94 The following paragraphs provide a synthesis of the findings of some of the major economic research works on interchange fees: Baxter (1983), Schmalensee (2002), Rochet and Tirole (2002), Small and Wright (2002), Gans and King (2003a, 2003b, 2003c), Wright (2004, 2003a, 2003b), Guthrie and Wright (2007), Bolt and Chakravorti (2008) and Rochet and Wright (2009). Abele et al. (2007) provide a detailed overview.

95 Baxter (1983) illustrates this relationship with a simplified example: Suppose that for the acquirer and issuer a card payment generates a marginal cost of CHF 0.20 each per transaction. The merchant obtains a marginal utility of CHF 0.50 and the consumer a marginal utility of CHF 0.10. Overall, the transaction would be efficient, since the aggregate marginal utility exceeds the aggregate marginal cost: CHF (0.50 + 0.10) – CHF (0.20 + 0.20) = CHF 0.20. This transaction is not carried out without an equalisation payment, however, since the marginal costs of the acquirer and issuer are not covered. But if the acquirer were now to charge the merchant CHF 0.30 and the issuer the consumer CHF 0.10, and the acquirer were, at the same time, to pass CHF 0.10 on to the issuer, the marginal costs of the acquirer and issuer would be covered and there would nevertheless still remain a net utility of CHF 0.20 overall. This example could be solved with other numbers, but a payment from the acquirer to the issuer is necessary.

- In macroeconomic terms, collective setting of the interchange fee is superior to bilateral setting. Although the logic of normal markets would imply that this resembles a price-fixing agreement, the peculiarities of two-sided markets require multilateral setting.⁹⁶ In addition, a prohibition of multilateral interchange fees in four-party systems would favour three-party systems.⁹⁷
- The interchange fee is neutral when the payment instrument market is competitive at the point of sale and price differentiation is allowed. The cost arising from the payment instrument would then be borne by the direct originator itself. In this case, the size of the interchange fee would have no impact on real variables. Although changes in a neutral interchange fee give rise to adjustments in the price of the goods as well as card fees and merchant charges, company profits and consumer utility remain unchanged.⁹⁸
- Since price differentiation is sometimes not possible at the point of sale, it is quite possible that the privately optimum interchange fee will differ from the socially optimum one. For any regulatory intervention in respect of the interchange fee, however, what is crucial is whether this discrepancy is of a systematic nature. This would be the case if theoretical analyses were to reveal that, in the normal course of events, the socially optimum interchange fee were to be always less than or always more than the privately optimum interchange fee. According to Rochet and Tirole (2003b) and Evans and Schmalensee (2005c), there are no indications of any systematic discrepancy between the socially and the privately optimum interchange fee. In the case of monopolistic, non-regulated card networks, however, works of a later date reveal that an interchange fee above the social optimum is chosen and that limiting it by means of regulation can have a welfare-enhancing effect.⁹⁹

Economic theory suggests that there is no justification for abolishing interchange fees altogether by means of regulatory measures, whereas limiting interchange fees can be welfare-enhancing in certain circumstances. Any restriction should be based, not on the laws of normal markets, but taking into consideration the peculiarities of two-sided markets and the complex relationships in payment card markets. Theory therefore sometimes runs counter to competition authority reasoning. It should be borne in mind here, however, that there are still hardly any empirical results on the interchange fee to accompany the theoretical literature that might be drawn on to assist regulators. In a certain sense, the experience of those countries in which regulation of interchange fees has recently been introduced will show how far the theoretical reasoning is confirmed.¹⁰⁰

6 Conclusion

Although the use of payment cards has increased in recent years and many consumers in the Western world have several different cards in their wallets, the general public seems to know little about the functioning of payment card markets. This article has described the common types of payment card and focused more closely on the complex task of coordinating all the players on the payment card market, which is subject to the economic principles of two-sided markets. Two-sided markets have their own special characteristics which differ considerably from those of normal goods markets. These peculiarities need to be borne in mind when seeking to regulate payment card markets and, not least, when assessing interchange fees. Future empirical analyses will reveal the extent to which regulatory decisions actually produce welfare-enhancing effects.

96 Baxter (1983, p. 586), for example, writes quite unequivocally: “[One] should recognize that collective institutional determination of the interchange fee is both appropriate and desirable ... [Although] this collective process of equilibration resembles horizontal price-fixing, it should not be so treated ... [I]ndividual establishment of interchange fees will almost certainly produce chaotic results, such as higher fees and instability in the card system.” Small and Wright (2002) predict that where interchange fees are set bilaterally, if the issuer strives to maximise profits individually, this could cause a card system to implode.

97 According to Schmalensee (2002, p. 119), an interchange fee set bilaterally would not only be fundamentally harmful to the four-party card system, but would also impair its competitiveness versus a third-party system. Since the issuer role and acquirer role are both filled by the same institution in the three-party system, no interchange fee is needed there. Consequently, three-party systems can set whatever merchant charges and card fees they like without concerns about regulatory intervention.

98 Since a card transaction is ultimately a transfer of funds from the consumer to the other three parties (the merchant, the acquirer and the issuer) which is matched by the three prices (price of the goods, merchant charge and card fee), the interchange fee is the fourth – and therefore superfluous – price. Every price change in the interchange fee is offset by a change in the equilibrium values of the other three prices, with profits and utility remaining unchanged. Cf. Gans and King (2003c).

99 Cf. Rochet and Wright (2009) and Bedre and Calvano (2009).

100 Initial empirical analyses in a working paper by Chakravorti, Fernandez and Valverde (2009) on the regulation of interchange fees in Spain suggest that regulation in payment card markets with traditionally lower merchant acceptance can be worthwhile since regulation leads to lower merchant charges and to more merchants joining the card system as a result. In this case, therefore, regulation can favour merchants and – via network externalities – benefit consumers as well.

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