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## **Report on the Brazilian payment card industry**

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**Central Bank of Brazil**

**Secretariat for Economic Monitoring – Ministry of Finance**

**Secretariat of Economic Law – Ministry of Justice**

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## Executive Summary

In July of 2006, the Central Bank of Brazil, the Secretariat of Economic Law of the Ministry of Justice (SDE), and the Secretariat for Economic Monitoring of the Ministry of Finance (SEAE) celebrated a technical cooperation memorandum aimed at carrying out joint studies relating to retail payment systems. This report, which is the first outcome of that effort, aims to identify potential market failures stemming from market's organization and practices, so as to become a reference for possible steps towards social welfare improvements.

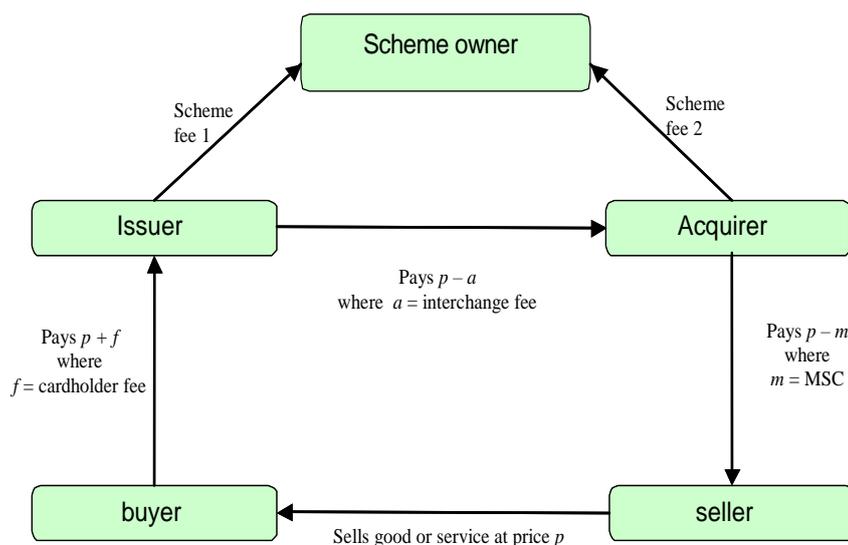
The scope of the report comprises widely accepted credit and debit cards, namely those related to the following brands: Visa; MasterCard; Cheque Eletrônico; American Express; Hipercard; and Diners. Private label and pre-paid cards have not been considered, the former because they are dedicated for purchases at one particular business, and the latter because of their incipient use in Brazil.

The analyses carried out in this report are based on the microeconomic theory concerning two-sided markets, which has been an object of academic studies and very often weighs upon regulators. The report also considers relevant steps taken in a number of countries – and their outcomes – by their respective central banks, antitrust authorities and other government bodies.

On the supply side of the payment card markets, it is possible to highlight the following participants:

- Issuer – an entity, typically a financial institution, which maintains a direct relationship with the cardholder, and is responsible for identification and authorization procedures in each transaction, as well as for setting the corresponding credit limits and interest rates, charging the cardholder and receiving the relevant payment, and defining, if any, the reward program;
- Acquirer – an entity, usually a bank or an entity controlled by a bank, which is responsible for the relationship with merchants participating in the payment card arrangement; and
- Owner of the arrangement (payment card company) – an entity that owns the trademark and defines the general rules and functioning of the relevant payment card arrangement.

Each payment card arrangement typically comprises three or four parts, depending on who plays the roles of issuing bank and acquirer. In the four-party system, shown in the following diagram, these roles are played by distinct entities. This is the case of Visa, MasterCard and Cheque Eletrônico. In the three-party system, which is the case of Amex, Hipercard and Diners, a single entity is the issuing bank and the acquirer at the same time.



One of the problems regarding the use of traditional microeconomic analysis in two-sided markets stems from the fact that it does not take into account the effects of one side of the market onto the other. It does not consider the importance of pricing structure as a strategic instrument to attract, in a balanced way, participants to both sides of the market (issuer-cardholder side and acquirer-merchant side). The analysis of a two-sided market using traditional microeconomic tools, which considers that prices and marginal costs should converge, may lead either to a regulatory framework that does not deliver the expected outcome or to a scenario in which undesirable side effects overcome the goals.

In this report, interaction, interdependence and network externalities between the two sides of the market will play a major role not only with regard to the establishment of networks rules and the definition of relevant markets, but also to the assessment of price and profit margins. It should be noted that there is little support in the literature to the existence of optimal fees to be observed by market participants. In light of that, it is necessary to assess local idiosyncrasies to back the relevant public policy decisions.

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## **The Brazilian case**

The payment card industry in Brazil is regulated by several authorities. Financial institutions and payment clearing and settlement systems are jointly regulated by the National Monetary Council (CMN) and the Central Bank of Brazil. Antitrust issues are under the responsibility of the latter whenever they are related to financial institutions' activities, and also of the SBDC (Brazilian System for the Advancement of Competition), which is composed of three agencies: SDE, SEAE and CADE (Administrative Council for Economic Defense). Moreover, the payment card industry is subject to the National System for Consumer Protection and Defense (SNDC), integrated by SDE through its Department of Protection and Defense of Consumers and the so-called PROCON. SNDC is governed by the Consumer Defense Act.

The analysis carried out in this report is based on information collected from four distinct sources: payment card companies; payment card issuers; acquirers and data processors; and merchants. Moreover, data from the National Information System for Consumer Defense, which consolidates consumers' complaints and denunciations, were also considered.

### **Structure**

The volume of payment card transactions has consistently increased since 2002, from 275 million transactions on the first quarter of that year to 2 billion transactions in the fourth quarter of 2007. In the end of 2007, the number of credit cards and debit cards amounted to 66.6 million and 52.3 million, respectively. Combined, Visa and MasterCard, the main brands, accounted for more than 90% of the payment cards in circulation (credit and debit cards).

Visa and MasterCard lead also the acquiring market, with a slight predominance of the former. Furthermore, the number of merchants accepting credit cards is slightly larger than the number of those accepting debit cards. Some 80% of merchants accepting payment cards recognize Visa as the most used brand, while some 71% of them have indicated MasterCard as the second brand. The degree of acceptance of the local brand debit card (*Cheque Eletrônico*) has decreased as a consequence of a 2005 strategic decision taken by Brazilian banks to discontinue its issuance.

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To measure and assess the payment card industry participants' market power, two possible scenarios were considered:

a) each side of the market (acquiring market and issuance market ) of each payment card scheme is a distinct relevant market; and

b) each side of the market as a whole is a distinct relevant market.

In four-party systems, concentration in the issuance market is moderate and compatible with the banking system profile. Since payment cards are retail products, they are likely to be part of the service menu of most of retail banks. On the other hand, the outcome reflects also the participation of the issuers in the capital of the acquirer. In the fourth quarter of 2007, considering the volume of transactions, the four main Visa issuers accounted for 78.9% of the credit card market, while the five main Visa issuers accounted for 92.7% of the debit card market. Concerning the MasterCard brand, the four main issuers accounted for 66.4% of the credit card market, and for 77% of the debit card market.

Considering all credit card schemes as a whole, the four largest issuers accounted for some 61% of the relevant transactions in the considered period, while the four main debit card issuers accounted for 70% of the market. Concerning the acquiring side, each payment card scheme counts on a single acquirer and, considering the acquiring market as a whole, the two largest acquirers accounted for 90% of all credit card transactions, and for 99.6% of all debit card transactions.

Therefore, as compared to the first scenario, in the second one there is a little reduction in the concentration level of the issuance market, while in the acquiring side the concentration level shows a structure that is close to a duopoly, and thus it is possible to conclude that the two largest acquirers have market power even in the second scenario.

The acquiring structure reaches the maximum level of vertical integration, which includes the clearing and settlement function. It is important to note that there is no interoperability between the network services, not even in the capturing and processing of transactions. This framework implies larger costs and represents a barrier to entry for a new entrant to break into the market.

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In a scenario in which network, clearing and settlement services were provided independently and there were network interoperability, financial institutions which nowadays participate in the capital of Visanet and Redecard would be potential competitors in the acquiring market. In the case of Visa, a single acquirer has contractual exclusivity rights, meaning that any candidate to be a Visa scheme's acquirer is not accepted. The perception of aggregate value in the acquiring activity increases with the possibility to accept multiple brands. In that sense, it is important to allow potential entrants to offer their services to multiple four-party systems, without exclusivity clauses.

Clearing and settlement services in four-party systems, which have been offered by the acquirers themselves, should be provided by a neutral entity to the issuance and acquiring businesses, as the potential for competition exists within these markets. Clearing and settlement services could be provided by the incumbent systems as that would make possible to extend the gains to other retail payment instruments.

### **Rules and practices**

The no-surcharge rule prohibits payment instrument-based price differentiation. Besides being prohibited according to contractual clauses in agreements between acquirers and merchants, this rule is backed by an interpretation of SNDC according to which the Brazilian Consumer Defense Act outlaws that practice. The main concern of the payment card industry is that a suspension of the no-surcharge rule would reduce the incentives for the use of payment cards. Nevertheless, the no-surcharge rule reinforces the case for pricing regulation of the payment card industry.

A survey carried out by the Central Bank of Brazil indicates that most merchants who currently do not offer discounts for payment instruments other than plastic (which represent some 65% of the sample interviewed), would not use price differentiation even if this practice were contractually and legally allowed, due mainly to operational issues and possible loss of customers.

It is expected that effective price differentiation would take into account not only the costs involved, but also the benefits aggregated by each payment instrument, so as to generate incentives to their use based on relevant costs and benefits. Furthermore, if price differentiation were allowed, it would reduce the possibility of cross subsidies from consumers not using payment cards (typically low income people) to cardholders (typically middle income and affluent people).

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Another practice of the industry is the requirement that payment cards should be accepted no matter who the issuer is, or its nature (hybrid, co-branded or pure) or category (basic, gold, platinum etc.). Besides being necessary to the credibility of the arrangement, such a rule stimulates competition among issuers, since it makes network externalities within a particular scheme to be extended to all issuers regardless of their sizes. Acceptance of both debit and credit cards is not obligatory, what rules out the practice of conditioning the sale of one product to the sale of another.

As for access rules, a common requirement to all arrangements is that, to be issuer or acquirer, an entity wishing to participate should be either under the supervision of the Central Bank of Brazil or under its direct control. This rule, despite restricting participation, is a form of risk management, particularly in the case of issuers. Furthermore, given the number of existing financial institutions, the harm inflicted on competition can be considered modest when compared to gains in terms of security. With regard to acquirers, a few exceptions to the rule are acceptable depending on the specificities of each market.

The interchange fee in four-party systems surveyed in this report is unilaterally set by the payment card arrangement owner for common use by all participants, and it is in line with the interchange fee charged in other countries. This approach is preferable to bilateral agreements between issuers and acquirers since it counteracts concentration by preventing larger participants from creating barriers to entry and from jeopardizing the survival of smaller participants. However, were interchange fees set multilaterally by local participants, in accordance with local specificities instead of replicating international fee levels, the outcome would probably be more efficient.

In Brazil, a 30-day lag between the purchasing date and the date in which the merchant receives the payment is observed in credit card transactions, which is significantly different from the 2-day lag typically observed in other countries. On the other hand, cardholders have, on average, 28 days to pay their payment card bills. Therefore, credit card issuers bear no financing costs in payment card transactions.

### **Prices and profits**

In the existing four-party credit card systems, the interchange fee starts off from a basic fee, which is set according to the card type (golden, platinum etc.), transaction capture technology, number of installments, and the market segment in

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which the business operates. The average fee has increased along with the growing number of cardholders that choose to pay for their purchases in installments and with the expansion in the use of "platinum" and "corporate" cards. The interchange fee for debit card transactions has presented mild fluctuations around the level of 50% of the merchant discount fee. Throughout the period surveyed, the interchange fee charged by the local debit card arrangement amounted to around 50% of that used by international arrangements.

A strong local debit card arrangement is a positive factor in terms of market contestability and reduction of operational costs. The final prices practiced by local arrangements tend to be lower following their reduced costs due to, among other things, the fact that they do not have to pay for the use of an international trademark. However, it is important that the governance of the local arrangement be as neutral as possible regarding participating banks.

Some 73% of the variation observed in the average discount rate is explained in terms of market segmentation, which indicates the exercise of price discrimination.

The behavior of the discount rate in credit card transactions corroborates the hypothesis that there is a relation between the interchange fee and the merchant discount fee. The pass-through factor from the interchange fee to the merchant discount fee is equal or higher than one, even though it may vary according to the business sector. As a general rule, sectors more prone to concentration, more homogeneous size and in which merchants have bargain power tend to benefit from lower discount rates.

In order to use a credit card, cardholders may have to pay an annual fee. There are no transaction-based fees on cardholders. Annual fees charged by the main credit card arrangements have been relatively stable throughout the period surveyed. According to a CMN resolution, annual fees cannot be charged in debit card arrangements.

It should be noted that benefits stemming from reward programs imply, in economic terms, a reduced or even a negative effective annual fee. This policy has been used by the industry as a tool to promote credit card usage, which reflects the greater price-elasticity of demand in this side of the market along with the fact that competition among issuers is tighter.

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Sometimes, depending both on the arrangement and the issuer, a fee can be charged for card replacement or for participating in the reward program. As a result of these practices and price policies, issuers' profit margins seems to be dependent on interest revenues stemming from roll-over facilities granted to cardholders.

In effect, this report provides evidence that the issuance business would not breakeven without that source of revenue. That confirms the understanding of market participants according to which, from issuers' perspective, credit cards should be regarded as two distinct products: a payment instrument and a pre-approved credit line available to cardholders. It has been also realized that, at the current level of interchange fees and interest rates, the issuance business would remain profitable even in a scenario in which merchants are paid two days after the purchasing date, with the opportunity cost being borne by the card issuer.

As for the debit card business, simulations have shown that issuers do not make profit out of it, probably because debit cards generate no interest revenues and also because interchange fees are lower. However, debit cards present lower costs for banks vis-à-vis paper-based instruments.

Profits in the acquiring business increased more than 300% from 2003 to 2007, concentrated in Visanet, Redecard and Hipercard. This growth rate is not coherent with the evolution in other parameters of the industry such as the expansion in value of transactions and increases in the number of payment cards in circulation, in the number of participating merchants and in the number of transactions. During the period studied, acquirer's profit margins were larger than one might expect giving the level of risk of this activity. The main source of revenue for acquirers comes from the collection of merchant discount fees, while the main expenditure is related to the payment of interchange fees.

As part of their activities, acquirers rent POS terminals to merchants and their business by itself is profitable. In 2007 alone, Visanet and Redecard cashed in enough revenues from that source to buy out all their relevant fixed assets. Acquirers would be profitable even if they had to outsource network services. The profitability of independent network service providers would be a function of the fees charged to acquirers, as well as of the potential cost reduction stemming from network interoperability.

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It is possible to anticipate that, even in the most conservative scenario, there would be significant room for cost reduction, which means that network interoperability should be stimulated. The necessary investment can be financed with cost reductions. Furthermore, in a scenario in which the acquiring function and the network service provision were separate activities, the cost for new entrants would be lower.

The report findings indicate important market failures. It should be pointed out the lack of contestability in the acquiring business as well as the evidence that Visanet and Redecard have significant market power. That conclusion is based on existing barriers to new entrants (either contractual or economic), high vertical integration and also the absence of network interoperability.

Existing network externalities along with potential gains of scale have not generated enough incentives to trigger cooperation and, as a consequence, interoperability among network service providers.

There is evidence that the existence of a local debit card arrangement is somewhat important to keep contestability alive in this market.

Lastly, information asymmetry among economic agents concerning prices impairs market's self-discipline. There is room for improvement in transparency regarding the definition of interchange fees, merchant discount fees and fees charged to cardholders. Additionally, there is strong evidence that the no-surcharge rule cause distortions in the market and are detrimental to consumers. Therefore, there are gains in efficiency and social welfare to be pursued in the payment card industry through the promotion of competition in the acquiring business as well as by changes in the provision of network services.



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# 1

## Introduction

Central banks have been involved in payment system modernization due mainly to its role as the institution responsible for maintaining the public confidence in the currency and also the soundness of the relevant national payment systems. Hence, central banks aim at promoting the use of efficient and secure payment instruments. In particular, they have paid attention to retail payment instruments, even though they do not have the potential to generate and spread systemic risk. There is strong empirical evidence that the use of electronic in lieu of paper-based payment instruments may generate significant reduction in the annual expenditures concerning payment services in a country (Valverde et al., 2002; Humphrey et al., 2003; Banco Central do Brasil, 2007; and Brits and Winder, 2005). Broadly speaking, there is an upward trend towards the use of electronic payment instruments worldwide.

Among them, payment card transactions at the point of sale, including those regarding electronic commerce, have experienced the largest increments. Such a fact has led both central banks and antitrust authorities to take a more active stance regarding the relevant markets. Due to their structure, the presence of gains of scale and network externalities, those markets tend to develop a concentration bias, which has prompted regulators to examine thoroughly the hypothesis of anti-competition practices by the relevant service providers. The main issues are related to the use of market power, existence of barriers to new entrants, cartel-like practices and vertical structures. They underline the importance of understanding that market and its organization. The rich literature on the subject stresses its peculiarities, which should be considered whenever policy interventions in the payment card industry are contemplated.

Under those premises, the Central Bank of Brazil has been promoting a project for the modernization of retail payment instruments. In July 14, 2006, it celebrated a technical

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cooperation memorandum with the Secretariat of Economic Law of the Ministry of Justice (SDE) and the Secretariat for Economic Monitoring of the Ministry of Finance (SEAE), which aimed at the adoption of a coordinated effort to increase both payment card industry's efficiency and social welfare.

The aforementioned memorandum is a further step taken by the Central Bank of Brazil in the process of monitoring the payment card industry and follows the publication of the "Report on the Brazilian Retail Payment System", in 2005, and "The Directive 1", in 2006. The former document focused on the identification of determinants, if any, for the modernization of the national retail payment system so as to make it a reference for policy making. According to its conclusions, larger cooperation regarding payment system infrastructure as well as tighter competition in the provision of payment services would be required if efficiency in the Brazilian retail payment system were to be improved.

Through the Directive 1, the Central Bank of Brazil laid out its opinion and expectations about the payment card industry's organization. Initially, the Central Bank's basic recommendation was for the industry to enhance cooperation concerning the use of technological infrastructure so as to improve its efficiency. Furthermore, the Central Bank of Brazil informed the industry that it would be following a transparent agenda that would include close monitoring of its developments and a better understanding of its functioning so as to prevent potential market failures and to curb anti-competition practices.

This report is composed of 5 chapters, starting with this one. The second chapter introduces the payment card market as a two-sided market (2SM) and offers subsidies for further analyses throughout the report. It describes the main characteristics of 2SMs and explains how they differ from traditional markets. It also points out problems arising from the application of traditional analysis to such market, including that for the definition of relevant market. Chapter 2 also illustrates some of the existing 2SM models, the business rules observed in the payment card industry, and a depiction of the current status of competition among participants.

Chapter 3 describes international experience concerning steps adopted by public authorities in order to promote improvement of the payment card industry. Issues such as industry's rules, relevant market, concentration, profits and fees are addressed with special emphasis on particularities of the payment card industry in each country.

Chapter 4 addresses the Brazilian payment card industry, its organization, participants and main features so as to offer public authorities the necessary technical details

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and economic knowledge of the industry. With this purpose, questionnaires were used in order to collect information from industry's participants, that is, payment card companies, issuers, acquirers, merchants and service providers.

Chapter 5, in its turn, presents the general conclusions regarding the Brazilian payment card industry's level of competition and efficiency.



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# 2

## **Economic Aspects**

The objective of this chapter is to deal with the economic aspects of the market of payment cards, organized as a two-sided market (2SM). It outlines the main characteristics of this market and how it distinguishes itself from traditional markets. In such a way, the concept and the characteristics of a 2SM will be presented, as well as the form by which the market of payment cards can be understood as a market of this type. This is an important aspect to the extent that public policy making is intrinsically influenced by the way the industry is understood. Any proposal reflects, either implicitly or explicitly, the perception of the regulator about the structure and the functioning of the market.

Although the literature specialized in 2SM and in market of payment cards is relatively new, several models have already been developed. These models are highly dependent on the assumptions and present different results according to the type of analysis undertaken. However, that caveat should not invalidate the importance of evaluating the most relevant ones in order to assess where the knowledge frontier is in that field. Such analysis is an additional factor in the understanding of the market of payment cards that contributes to the public policy making process.

### **2.1. Characteristics of Two-Sided Markets (2SM)**

The models that describe the 2SM have in common the presence of two distinct groups<sup>1</sup> of participants and the existence of positive network externalities, that are generally not internalized directly by the groups (Evans and Schmalensee, 2005b). According to Roson (2005), network externalities occur in a certain market when the utility of a consumer

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<sup>1</sup> Although literature focus on two-sided markets, it is also possible to model n-sided markets, with  $n > 2$ .

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(producer) depends on the consumption (production) of the same product or service by other agents.

Rochet and Tirole (2005) define 2SM as a market where the total amount of transactions can be affected by an increase in fees charged on one side and the respective reduction in fees on the other side. That is, the relevant variable is not the total price alone but the price distribution pattern among market participants as well. Thus, this distribution pattern should be such that both sides have incentives to enter in the market<sup>2</sup>.

In general, the 2SM is organized in a platform that puts together two distinct groups of consumers and create the conditions for them to carry out a great number of transactions. Evans and Schmalensee (2005b) cite some markets whose characteristics suggest they are organized as 2SM: matching agencies, night clubs, brokers, advertizing agencies, newspapers and magazines, computers' operational systems, video-games, shopping malls and payment cards.

Given its peculiarities, the 2SM should be thought of as having a different nature. Its structure must take into consideration the necessity to bring the final users of each side onto the marketplace. Evans and Schmalensee (2005b) identify three core economic variables in a 2SM: the price structure; the business plan; and specific rules and regulations. There are two dimensions to the price structure. The first is the sum of prices on each side. The second is the allocation of these prices between final users on each side.

The prices charged on each side of the market not only depend on its marginal cost, but also on the elasticity-price of the demand on each side, on the value generated to participants in one side by a new entrant in the other side (network externalities), and on the degree of Inter and intra-platform competition.

The elasticity-price of the demand of each side fulfills a major role in price allocation. The side whose demand is more elastic tends to charge less in order to make possible new entrants in this side. In general, the side whose demand is less sensitive to price changes tends to pay most of the costs of the industry.

Prices are twofold: price of admittance; and price of utilization. The price of utilization directly influences the level of utilization of the platform by participants. The price of admittance, given the price of utilization, determines how many participants will adhere to the

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<sup>2</sup> There are other definitions of two-sided markets, although all tend to converge. Chakravorti and Roson (2004), for instance, define 2SM as a platform that provides products and services to different types of final consumers and sets prices for each side in such a way as to boost participation in the platform, since the benefit for members in one side increases with each additional participant in the other side.

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platform. The balance between the two prices depends on both the degree of difficulty to monitor the level of utilization and on the nature of the externalities between users on both sides.

The business plan becomes important in 2SM in the presence of factors such as network externalities, the elasticity-price of the demand, and the necessity of bringing the two sides together in the marketplace.

The existence of rules and specific regulations enforced by the platform can be justified by the benefits to final users brought about by standards that promote positive externalities and limit the negative ones. The behavior of final users on both sides of the market can affect the value of the network, what may require standardization in some instances.

According to Evans and Schmalensee (2005b), the structure and the size of the 2SM are contingent on five factors: network externalities; congestion occurrence; presence of economies of scale; product differentiation; and the possibility to participate in more than one network simultaneously (multihoming<sup>3</sup>). Some of these factors may contribute to concentration in 2SM, while others would make them move into the opposite direction.

The presence of network externalities tends to favor concentration and network size. Platforms with more participants in both sides add more value to consumers than do smaller platforms. However, growing networks present diminishing marginal network externalities and become more likely to generate bottlenecks. As platforms become mature, network externalities become less important but their existence remains nevertheless essential.

The possibility of congestion limits the size and concentration of the platform, since transaction and search costs increase significantly with the size of the network. Generally, matching two sides of the network is facilitated at the optimal level. Above that, it becomes difficult to find in the other side what it has been looking for, given the magnitude of options. Such fact favors competition and reduces the potential size of platforms.

In general, platforms have significant fixed costs and, consequently, increasing returns to scale. That specificity of networks makes them more prone to concentration and expansion, what serves as a barrier-to-entry for new competing platforms. On the other hand,

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<sup>3</sup> The expression “multihoming” comes from the literature about Internet, and refers to the situation in which the user deploys several platforms. In payment card context, for instance, it means both a consumer usage or a merchant acceptance of several cards. If the final user is not able to be a member of several platforms at the same time, it will be used the expression “singlehoming”. (Rochet and Tirole, 2006)

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product differentiation favors market deconcentration and reductions of network size. The differentiation can be either vertical, associated with product price and quality, or horizontal, related to the choice of special characteristics for specific market niches.

The horizontal differentiation can drive consumers into adhering to multiple platforms (multihoming). This demand for differentiated products may trigger a market deconcentration effect, which is more easily observable when both fixed costs and entry fees are relatively small, making total costs mostly variable.

Moreover, some empirical regularities on the 2SM structure (Evans and Schmalensee, 2005b) stand out. First of all, the presence of pure monopoly in 2SM is uncommon despite the existence of network externalities and considerable returns to scale. In second place, the presence of multihoming in at least one of the sides of the platform is sufficiently common. Finally, the asymmetry of prices between the two sides is very often the case. Most of the revenues are generally generated by one side – the one whose price-elasticity is smaller, while the other side usually pays a price below marginal cost.

## **2.2. Payment cards as a Two-Sided Market**

Although the main characteristics of the payment card market have been formulated by Baxter (1983), it was only with the work of Rochet and Tirole (2002) that the literature on this subject developed at a more consistent pace. Although assumptions and results differ among different models, a commonplace found in literature is that the market of payment cards is organized as a 2SM.

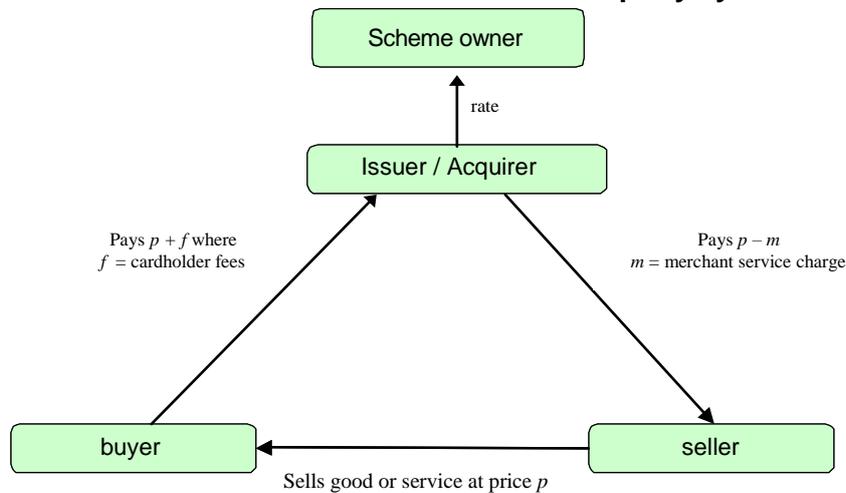
As mentioned above, one of the core characteristics of 2SM is the need of at least two distinct and interdependent groups of consumers to enable transactions through a platform. Baxter (1983) originally developed the idea that the market for payment cards is composed of two sides that are supposed to be analyzed together. The required two groups are cardholders and merchants, both consumers and final users of the platform.

The interdependence between the two groups is such that an increase in the number of participants in one side of the network adds value to participants in the other side. Therefore, a merchant is expected to choose a platform whose cards are widely used by customers, while cardholders are likely to prefer a card widely accepted by businesses.

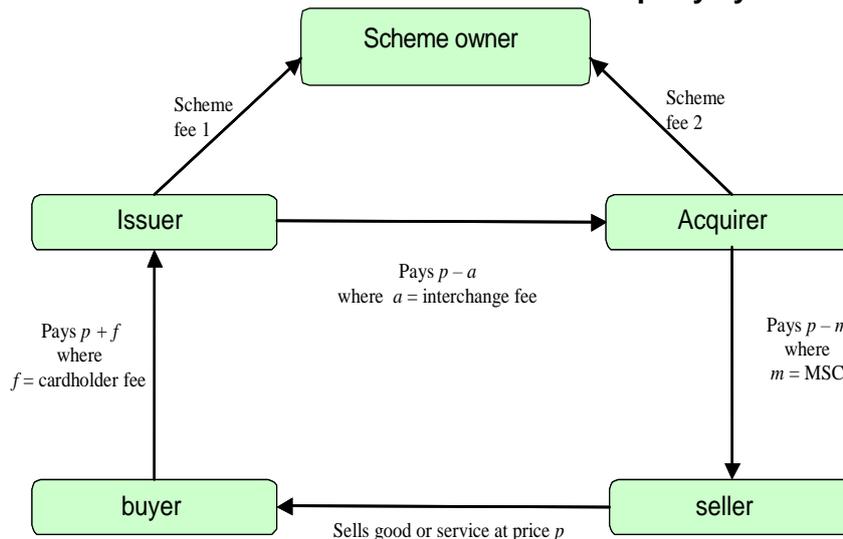
Such interdependence and value added to participants from on one side to another constitute network externalities of the payment card market. The platform's goal,

then, is to set a price structure which makes its brand attractive to both merchants and cardholders<sup>4</sup>.

**Picture 1– The flow of fees in the three-party system**



**Picture 2 – The flow of fees in the four-party system**



The payment card market is generally structured as a platform of three or four parties. The difference between the two can be found in the roles played by acquirers and

<sup>4</sup> It is worth noting that the equilibrium price distribution may not be restricted to expanding markets. Even more stable and mature 2SM tend to keep price structures consistent with elasticities and externalities in order to preserve the equilibrium between the two sides (Wright, 2004b). For Rochet (2003), the decision regarding the payment instrument in the cards market is, ultimately, taken by the consumer and that decision will determine the net costs of the merchant. Given the existence of this fundamental externality, the author considers which network externalities are relevant to mature markets too. Nonetheless, there is no consensus on that issue. Wang (2006) questions the need to keep different price structures in more mature markets. He even holds the view that the traditional approach can be applied to the payment card market. His model is discussed ahead in Section 5. Katz (2001; 2005) shares the same view. According to him, the cards market is already a mature market. That means that final users of the platform would decide on entering and using the card regardless of the utility they add to an additional user in the other side. That is, the benefit generated by one additional member in one side over members in the other side would be negligible. Therefore, at the margin, the cards market could be analyzed as a traditional market, without further implications.

issuing banks. The three-party system, as depicted in Picture 1, consists of the merchant, the cardholder and one entity combining the services of both the acquirer and issuing bank. In the four-party system, shown in Picture 2, the issuing bank and the acquirer are separate entities. The four-party system allows a better visualization of the payment card market as a 2SM.

Participants in the payment card market are the following:

- Issuer – entity (generally a bank) responsible for the overall relationship with the cardholder, including issues such as qualification requirements, identification, authorization, credit limits, financial charges, payment collection and reward programs;
- Acquirer – entity responsible for the administration of the contract with the merchant. This contract governs the participation of the latter in the payment cards scheme;
- Card scheme owner – entity that owns the card brand and sets up standards and business rules;
- Cardholder – the holder of the card, who uses it to pay for goods and services; and
- Merchant – business and service provider that accepts payments by means of cards.

The final prices are generally charged from both merchants and cardholders in such a way as to balance the demands of the two sides and keep them doing business on the network. The crucial aspect of this market, therefore, is to strike a balance between cardholders' and merchants' demands.

Picture 2 depicts the three basic prices of the payment card market: the cardholder fee,  $f$  (paid by cardholder to the issuer); the merchant discount fee,  $m$  (paid by the merchant to the acquirer); and the interchange fee  $a$  (paid by the acquirer to the issuer)<sup>5</sup>. When a cardholder uses its card to pay for a purchase, the merchant receives the price of the good or service,  $p$ , less the MSC,  $m$ . The issuer pays the acquirer the price,  $p$ , less the interchange fee,  $a$ . Besides those fees, both the issuer and the acquirer usually pay a fee to the owner of the scheme for the use of its brand and the international networking services.

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<sup>5</sup> Despite not common, it is possible to have the interchange fee flowing in the reverse way, that is, from the issuer to the acquirer, as it happens for EFTPOS (debit cards) in Australia. (Hayashi and Weiner, 2006)

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The cardholder fee is comprised of a fixed component, the recurrent annual fee, and a variable component (very often negative) related to reward programs offered by the issuer. The total cardholder fee is in many cases smaller than the marginal cost in order to stimulate the use of payment cards by customers.

The fee charged on cardholders is contingent on a series of factors. The fee increases with the cost of the issuer and decreases with the degree of competition between issuers, with the level of the interchange fee and with the degree of resistance of cardholders as well – the higher the cardholder's elasticity-price of demand for card services, the greater its resistance.

The merchant undergoes two types of costs: a variable cost, known as the merchant discount fee, based on the value of the transaction; and a fixed cost for the use of the platform. The latter usually includes equipment rental fees and software maintenance costs. The MSC is itself contingent on several variables. It increases with the cost of the acquirers and with the level of the interchange fee. It is usually a decreasing function of the degree of competition between acquirers<sup>6</sup>, and of the degree of resistance of merchants.

The level of resistance from merchants, besides being an increasing function of the elasticity-price of their demand for card services, is also related to the degree of competition between them. The more intense that competition is, the lesser the resistance is likely to be, making them more inclined to accept cards as an instrument of payment and, therefore, more willing to pay higher fees for this service. Moreover, merchants' resistance increases in line with price-elasticity of demand for goods and services being traded. Goods and services whose demand is inelastic will more easily allow for merchants to pass on the MSC to final consumers.

The acquirer generally pays the issuer the interchange fee. The methodology for its calculation may be either a percentage of the transaction value or a fixed amount per transaction, or even a combination of the two. For Schmalensee (2002), the interchange fee simplifies the market and it is necessary to internalize, either partially or completely, the network externalities of the payment card market.

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<sup>6</sup> The degree of competition among issuers and among acquirers is also related to the degree of vertical integration observed in each side of the market. The deeper that integration is, the stronger will be the barriers to new entrants, weakening competition in one side of the market. One way to promote competition in the payment card market is precisely to formulate policies supporting cooperation at the level of the infrastructure of the industry in order to allow other competitors into the market. On that respect, please see Banco Central do Brasil (2005; 2006).

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According to Baxter (1983), the main function of the interchange fee is “to connect” the two sides of the market, balancing cardholders’ and merchants’ interests. Under the assumption of a perfectly competitive environment, the optimal interchange fee would internalize the network externalities and promote the efficient use of payment cards.

The interchange fee can be established in multilateral or bilateral agreements. Multilateral agreements are signed between all members - issuers and acquirers - of an association. Bilateral agreements are made between each pair of issuer and acquirer. Although multilateral agreements are often perceived as an evidence of collusion to fix prices (cartel)<sup>7</sup>, bilateral negotiations can present very high transaction costs and serve as barrier to entry for new participants in the network.

Additionally, there are certain rules, imposed by the owner of the scheme, which have the potential to affect the level of the interchange fee. It is the case of the no-surcharge rule, the honor all cards rule, the rule for the determination of the interchange fee and restrictions related to the authorization of net issuer acquirers, which are discussed in Section 2.4.3.

## **2.3. Issues Arising from the Traditional Approach to 2SM Analysis**

As previously discussed, there is some theoretical consensus about giving the 2SM label to the market of payment cards, suggesting that traditional microeconomic approach is no longer appropriate to understand the topic. Nonetheless, regulatory practices may share concerns in common with standard approaches to competitive markets. Wright (2004b) laid out some examples of regulation with microeconomic foundations and argues that such practices may bring about efficiency losses.

The main claim is that prices in one side are perceived to be artificially inflated, indicating a possible manifestation of market power. However, the existence of market power may not be directly established from the price level in one side of the market only. Such way of thinking would be rooted in the conventional view that prices should equal marginal costs. Nevertheless, that would not be required in each side of a 2SM. Occasional discrepancies between price and marginal costs in one side only could be explained by the presence of network externalities and by differences in price-elasticities of demand between sides.

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<sup>7</sup> United Kingdom is an example of nation which has considered the multilateral agreement as collusion. Despite not having applied fines or penalties, there was public understanding that agreements establishing interchange fee would violate competition.

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One issue in traditional microeconomic analysis of 2SM arises when the two sides of the market are not considered together, ignoring the importance of price structure as a strategic instrument used by the network to balance its appeal between market sides. The structure of a 2SM does not require prices on each side to equal marginal costs. The need to bring both sides to the marketplace affects the price allocation between them in such a way as to foster a balanced growth of the platform. In a 2SM it is commonplace for the optimal price in one side to stand at a significantly higher or lower level (even into the negative territory) relative to the marginal cost. That alone may not characterize market power or predatory pricing practices. Cross-subsidy would not be a fair description either because such concept would not consider the positive network externalities generated by one side in favor of the other (Guthrie and Wright, 2003; Evans and Schmalensee, 2005b).

The theoretical framework or the understanding of the market about how to analyze 2SM affects the way it is regulated. The traditional microeconomic analysis of 2SM, which expects prices and marginal costs to converge, could bring about either a regulatory framework that would not be able to deliver the expected outcome or a situation where unwanted side effects would dwarf the pursued objectives. What could be perceived as a market failure requiring regulation may actually be, under a more appropriate perspective, the efficient way to do it.

In the case of the payments card industry, for instance, many support the view that standard antitrust policies applicable to one-sided markets are inadequate when it comes to 2SM (Roson, 2005). Wright (2004a; 2004b), Schmalensee (2002; 2003), Rochet and Tirole (2003b) and Evans and Schmalensee (2005c) argue that the current structure of the payment card market, with the interchange fee, would be validated by its 2SM nature. According to this reasoning, there would be no reason to expect that regulatory action aimed at the interchange fee would make the market more efficient. It is uncertain that a cost-based regulation or the imposition of a zero interchange fee will lead to a social welfare improvement<sup>8</sup>. Mello (2008), in a model of evolutionary games, concludes that a positive interchange fee is a necessary condition for the coexistence of two competing payment cards' schemes<sup>9</sup>.

On the other hand, authors such as Holland (2007) and Livitin (2007) argue that principles to preserve competition remain valid in any 2SM context, including that of the

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<sup>8</sup> Furthermore, a regulation affecting only four-party systems may shift market share towards three-party systems. That is because regulating the interchange fee may deviate four-party systems from their optimal price structure, while those operating in three-party arrangements would continue with the same price structure that had prevailed before the regulation. Guthrie and Wright (2003) provide a model that contemplates that issue.

<sup>9</sup> Some authors, such as Katz (2001; 2005) and Wang (2006), support the idea of imposing some form of regulation to the payment card market. Their arguments will be presented in Section 2.4.

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payment card industry. What should be modified, if anything, are the analytical instruments traditionally used by antitrust authorities, so as to incorporate the specificities of two-sided industries. As a matter of fact, competition issues observed in one-sided markets are similar to those observed in two-sided markets.

Therefore, the fact that 2SM present their own unique characteristics should not exempt them from the principles of free competitive markets. Moreover, any antitrust exemption benefiting two-sided industries would constitute unfair competition with products and services with which they compete, no matter whether they are one-sided or two-sided. As far as the payment card industry is concerned, it has been detected potentially adverse rules and behaviors, which are not found in any other 2SM. In such cases, further investigation should be conducted and, if necessary, regulation should be set forth.

### **2.3.1. Relevant market**

Establishing the boundaries of a relevant market in the payment card industry brings about two broad questions. The first, more traditional, relates to the choice of potentially competing products that should participate in the relevant market. There is no settled position as to whether credit and debit cards belong to the same market or whether private label cards and other means of payment, including cash, are close substitutes. The definition of relevant market may be subject to a certain degree of discretion according to the methodology adopted. Participants in the industry would rather see themselves as competitors in as many products as possible. The main methodology to sort out this matter is the hypothetical monopolist, also known as SSNIP test (Small but Significant Non-transitory Increase in Prices).

The second question, derived from the nature of 2SM, is about the appropriateness of considering each side as a market in its own right, that is, whether or not it is possible to study the acquiring and the issuance markets separately.

#### **2.3.1.1. Hypothetical Monopolist Test**

The hypothetical monopolist test is the classical analytical toolbox used to come up with a definition of relevant market<sup>10</sup>. Its main goal is to assess the degree of substitution among goods or services of interest. The test has the following steps:

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<sup>10</sup> The test was introduced in a document from the U.S. Justice Department called *Merger Guidelines*, in 1982 and was subsequently modified slightly, in 1984 and 1992 (Coate and Fischer, 2007).

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- Pick the smallest relevant market possible;
  - Ask a would-be monopolist in that market if it would be able to remain profitable after applying a small, but significant, non-transitory increase in prices (often referred to as SSNIP) for all products on that market<sup>11</sup>;
  - If the answer is yes then the market chosen in step 1 is a relevant market. Otherwise, include the closest substitute product in the candidate relevant market and go back to step 2. This process is repeated over and over again until a positive answer is found.

The rationale for this test is to use consumer behavior to evaluate the degree of substitutability between available goods and the good of interest. Whenever a candidate relevant market happens to be too small and exclude goods, which are actually close substitutes to the good of interest, a monopolist would not be able to raise its price above contestants' price level because that would shift customers to substitute goods. The power to raise prices profitably suggests the lack of close substitutes outside of the identified relevant market.

Referring to the test, Coate and Fischer (2007) consider that given any characterization of the products, the process of defining the relevant market is simply the search for the "Gap in the Chain of Substitutes" (Robinson, 1934). "The isolation of specific products or groups of products from noticeably more distant competitors allows the analyst to posit a market and use evidence to determine if the "gap" is material". According to the authors, the US Department of Justice's hypothetical monopolist test represents an analytical approach to this question.

If the increase in prices is consistent with the profit-maximizing nature of the firm, then the gap is material and the relevant market is defined. Otherwise, the search goes on for another gap and the test is run again. The construction of this gap may help simplifying the process of market definition, since the latter focuses on relative differences among products for analysis.

This concept of "gap", as it will be demonstrated ahead, will be essential to the analysis and, in some cases, will replace the hypothetical monopolist test, since it has logical precedence over it.

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<sup>11</sup> As a rule of thumb, price increases of 5%, 10% or 15% may be applied, according to the case.

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The authors also point out that according to the 1992 Merger Guidelines, the next-best substitute is defined “as the product, which if available in unlimited quantities at constant price, would account for the greatest value of diversion of demand in response to the SSNIP price increase.”

One way to apply the hypothetical monopolist test is the calculation of the critical loss and the real loss. The critical loss is how much sales the firm can lose due to a price increase, before its profit stop improving. The real loss is how much sales the firm actually loses as a result of a price increase. If the real loss is greater than the critical loss, the relevant market should be expanded. On this issue, Coate and Fischer (2007) underline that the critical loss methodology, introduced by Harris and Simons (1989), is perceived as an empirical application of the hypothetical monopolist test for reasonably homogeneous products at the equilibrium price.

Assuming the analyst has to decide between a broader and a more restricted market and there is evidence showing that the reduction in sales for the hypothetical monopolist was not greater than the critical loss – defined as the break-even point of the SSNIP test –, then the broader market can be rejected, since the price increase would be profitable in the restricted market. On the other hand, should the SSNIP not be profitable, (that is, the real loss is greater than the critical loss), then the broader market would be acceptable as an antitrust market. The main issue is access to data necessary to compute the critical loss as well as the information about expected loss, required to accomplish the test.

A problem often found in analyzes that use the hypothetical monopolist test is what can happen as a result of the difficulty to know which would be the competitive price of a good, from which the price would be hypothetically increased<sup>12</sup>. As the observed prices very often end up being used, even when they are above competitive prices, the relevant market according to the test may be greater than what it actually is.

That problem can be easily illustrated by thinking of a monopolized market, in which the incumbent is a profit-maximizer. Although the price chosen by the firm is presumably above the level that would prevail under a perfectly competitive market, all possible profitable increases in prices will have been done at the equilibrium. Therefore, further raises in current prices would reduce the profits and would indicate, mistakenly, that the relevant market should be broader.

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<sup>12</sup> This issue was discussed by the US Supreme Court in the case “US v du Pont de Nemours & Co., 351 U.S. 377”, in 1956, becoming known as the “Cellophane Fallacy”.

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It is interesting to note that, even when such mistake occurs, the test delivers the upper boundary for the possible relevant market. That is, if the test is properly implemented, one cannot argue that the relevant market is larger than the one found, although it could be narrower. Moreover, that pitfall does not invalidate the SSNIP as an analytical framework, since the test does not specify the price that should be used *ex-ante*. It implicitly assumes that the current price is appropriate (Bishop and Walter, 1998). One should not, however, downplay the merits of the test just because it may lead to the “cellophane fallacy” (Boshoff, Du Plessis and Theron, 2007).

### **2.3.1.2. Applicability to two-sided markets**

Given the network externalities in two-sided markets, the hypothetical monopolist test should be approached differently. Basically, that approach consists of estimating and computing appropriately the price-elasticities of demand and the real loss in sales taking into account the interactions between sides.

The main issue regarding the applicability of the hypothetical monopolist test to 2SM is the choice of which market should be used. Evans and Noel (2007) understand that the test can be applied on both sides of the market separately, should any suspicion of anticompetitive behavior be detected on one side only.

That technique is not equivalent to the conventional SSNIP test. The evidence of the existence of a two-sided market would allow both sides to react to a price increase in one side imposed by the hypothetical monopolist. Provided this peculiarity is embedded in the implementation of the test on each side individually, there is no harm to the analysis (Boshoff, Du Plessis and Theron, 2007).

Evans and Noel (2007) made an effort to systematize failures arising from poor application of the theory. They identified two types of errors: the estimation bias; and the Lerner’s bias.

In the estimation bias, suppose the analyst would estimate the demand for one of the products available in a two-sided platform using data and adopting techniques which are supposed to bring about a non-biased estimation of the short-term price-elasticity of demand. Here, short-term is the period of time elapsed between the price increase and the consumers’ direct response, but before the manifestation of feedback effects (in time, feedback effects are known to cause additional indirect responses as a result of absolute and relative changes in size of the platform).

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As the analyst's estimate does not take into account the feedback effects, the impact of the price increase over the demand is underestimated. As a result, antitrust markets are narrowly defined, and merger analysis will overestimate the gain in market power for firms in the process of merging and overestimate the unilateral expected effects of the deal over prices.

In the Lerner's bias, an opposing bias can occur when the analyst uses observed margins to calibrate the price-elasticity of the demand based on the Lerner Index of one side. This bias overestimates the true short-term price-elasticity of the demand, what leads to an estimation of the elasticity that can even surpass the actual long-term price-elasticity of the demand. In that case, long term is defined as the period of time required for all significant feedback effects to occur as a result of changes in size of the platform. The definition of market would be very broad and the expected unilateral effects of a transaction, very small.

Concluding, the hypothetical monopolist test is applicable to 2SM providing adjustments are made in order to incorporate network externalities between the two groups of users.

## **2.4. Theoretical 2SM Models Applied to Payment Cards**

The knowledge about the market of payment cards is still controversial. As it has been noted, literature on 2SM is rather recent and has developed mainly by means of the study of models. Among others factors that drive the development of this literature, there is the necessity of a better understanding of competition issues regarding 2SM. That motivation is essential in the attempt of evidencing possible pitfalls related to the use of traditional microeconomic analysis to approach 2SM. The drive for a better understanding of 2SM has been impelled by recent concerns shared by central banks and antitrust agencies in relation to practices and rules observed in payment cards arrangements.

Generally, models look for to explain the behavior of some variables, such as the interchange fee and fees charged from merchants and cardholders. With that purpose, models address different scenarios taking into consideration competition issues (both inter and intra-platform), the characteristics of the network and behavioral patterns of merchants and cardholders.

The objective of this section is to present the main models of the payment card market in order to lay out a foundation upon which to proceed with further analysis of the

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national market. The models will be presented according to their assumptions in an attempt to shed light on the degree of dependence of the results on these assumptions.

## **2.4.1. Inexistence of competition among platforms**

One of the main aspects of the approach to payment card market is the hypothesis concerning competition among platforms. The models based on the existence of only one, monopolist, platform operating in the market will be presented first. In general, the rationale for this formulation is to explore intra-platform competition issues, that is, the degree of competition in each side of the market and how that may affect the level of the interchange fee and other fees.

### **2.4.1.1. Perfect competition**

As reported, the first model that considered the market of payment cards as a 2SM was developed by Baxter (1983). His analysis is based on the assumption that the whole economy operates under perfectly competitive markets. Therefore, issuers, acquirers and merchants are mere price-takers, operating at zero economic profits. In that scenario, the conclusion is that the interchange fee is the price required to keep both groups of final users in the market. If that fee did not exist, transactions would not be fulfilled. Therefore, the interchange fee is regarded as a base price, capable of fully internalizing the network externalities present in the market<sup>13</sup>.

Carlton and Frankel (1995) work under the same hypothesis of perfectly competitive markets. The difference is that, for them, the internalization of network externalities may occur by means of some alternative instrument at the cost of the interchange fee. For that, it would be enough to exclude the no-surcharge rule, allowing merchants to price goods and services according to the payment instrument. Thus, only consumers whose marginal benefit was higher than the price difference between instruments would choose to use the card. The transactions would carry through and the costs of the payment instrument would be borne by those who effectively used it<sup>14</sup>.

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<sup>13</sup> Baxter (1983) sets even the level of the interchange fee that would maximize the social welfare, which would equal the marginal benefit of the merchant in accepting the card minus the marginal cost faced by the acquirer for making card services available.

<sup>14</sup> Although the price of payment instruments is a decisive factor for the determination of their appeal to the holder, setting prices is not a simple task as the alternative payment instruments (checks and cash for instance) are not priced directly. In that sense, direct pricing of one instrument only may bring about equilibrium with lower social welfare.

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### 2.4.1.2 Market power in the issuance side

Some models consider that only issuers have market power. Acquirers would operate in perfectly competitive markets and, therefore, would be price-takers<sup>15</sup>. Under this set of hypotheses, all profits would be concentrated on the issuance side and their profit maximization would become the platform's own objective function. The difference in conclusions to which models arrive is explained by the diversity of assumptions about merchants' behavior.

Rochet and Tirole (2002) consider that merchants compete according to the Hotelling's Law<sup>16</sup> and they have an advantage in accepting the card. That is, if the merchant did not take the card, the customer would tend to buy from another merchant who is willing to accept it. Merchants consent to pay higher merchant discount fees for card services for strategic reasons. The authors compare interchange fees that are set to maximize the profits of issuers to those defined with the maximization of social welfare in mind.

The profit maximizing interchange fee is the maximum fee that a merchant is willing to pay to access card services. The maximum level of the interchange fee merchants are willing to pay is inversely related to the degree of competition among issuers. The tighter that competition is, the higher the merchants' level of resistance will be and, consequently, the greater their bargaining power will be. The outcome tends to produce lower interchange fees<sup>17</sup>.

If merchants have a low propensity to pay for card services (their resistance level is high), then the level of the profit maximizing interchange fee and the interchange fee that maximizes social welfare tend to converge. The lower the merchants' resistance level, the more expensive tend to be the level of interchange fee that maximizes profit *vis-à-vis* the level that maximizes social welfare.

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<sup>15</sup> Models that consider market power in only one side of the market choose issuers' side. Since, in general, the interchange fee is paid by the acquirer to the issuer, whenever the issuers operate under perfect competition, their profits would be equal to zero regardless of the level of the interchange fee, what would make it undetermined.

<sup>16</sup> Hotelling's proposition in economics states that in many markets it is rational for producers to make their products as similar as possible. It is the opposite of product differentiation.

<sup>17</sup> Besides the degree of competition among issuers, Rochet and Tirole (2002) cite four factors affecting the resistance level of merchants: the split of the cardholder fee into a fixed and a variable component; the consumers' access to information (the more informed they are, the lower their resistance); the degree of competition among platforms; and the non-surcharge rule. The last two factors will be addressed later on this report.

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### **2.4.1.3 Market power in both sides of 2SMs**

Schmalensee (2002) comes up with a different model based on partial demands from both sides of the market. His objective is to present the interchange fee as the price required to balance fees charged from cardholders and merchants operating under imperfect competition in both sides of the market. The level of the interchange fee that maximizes network value will be based upon five factors: (i) the objective function of the platform; (ii) the difference between issuers' and acquirers' costs; (iii) the difference between merchants' and cardholders' price-elasticities of demand for card services; (iv) the difference between the degree of competition within each side of the market; and (v) the difference between the effects of network externality for each side of the market. The model's setup underlines the relative standing of variables for each side of the market. The conclusions are dependent upon the combination of those five factors.

Regarding the platform's objective function, holding everything else constant, the more important acquirers are, the lower the interchange fee that maximize the profit of the network tend to be. If the objective function of the platform assigns more weight to issuers, the interchange fee will be raised in order to transfer network profits to issuers, which will subsequently bring about a reduction in total network volume and social welfare.

Alternatively, the interchange fee can be perceived as a mechanism for redistributing costs between the two sides of the market. Schmalensee (2002), assuming that partial demand functions are linear and identical, came to the conclusion that the level of interchange fee that would equate costs in both sides of the market would maximize transaction volume as well. By reducing the net cost for the side facing higher costs, the fee charged from final users on this side would decrease, pushing up the demand for card services in this side of the market.

On the subject of differences in price-elasticities, the more elastic cardholders' demand is in comparison to merchants' demand, the higher tend to be the interchange fee that maximizes the network volume. Thus, prices charged to cardholders would be relatively lower and issuers' costs would have to be partially covered by the interchange fee. A price cut in the side with higher price-elasticity would raise the overall network product more than it would do a similar reduction in prices in the other side, maximizing the transaction volume.

In respect of the difference between the degrees of competition within the two sides, the profit-maximizing interchange fee is a decreasing function of the degree of

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competition among issuers and an increasing function of the degree of competition among acquirers.

Concerning the difference between the network externalities that one side exert over the other, Schmalensee (2002) states that the greater, in relative terms, is the marginal benefit of a new entrant to the opposing side of the market, the higher tend to be the price that this side would be willing to pay to enter the market. This is intuitive since the side that aggregates more utility to the opposing side tends to get more incentives to grow by means of lower prices.

The determination of the interchange fee that maximizes profit will depend on a series of factors. However, what really matter are the differences between the issuers' side and the acquirers' side. Those differences will determine how close or far away apart are the socially optimal interchange fee<sup>18</sup> from the interchange fee that maximizes the network profit and the interchange fee that maximizes the transaction volume within the platform<sup>19</sup>.

Wright (2004a) analyzes the determinants of the socially and privately optimal interchange fee, comparing it to the interchange fee that maximizes transaction volume within the platform. He assumes that consumers in general and merchants are heterogeneous, that merchants decide whether they should accept payment cards for strategic reasons<sup>20</sup> and that both issuers and acquirers may exercise some market power<sup>21</sup>.

Two factors determine whether or not the three interchange fees will converge. The first regards the ability of issuers and acquirers to pass on changes in the interchange fee to the cardholder fee and to the merchant discount fee, respectively. This factor is motivated by competition asymmetries between the two sides. Given an adjustment to the interchange

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<sup>18</sup> Katz (2001) is a forceful critic of how Schmalensee (2002) calculates the socially optimal interchange fee. He internalizes into the welfare calculation the benefit to merchants of growing sales associated with their decision to accept cards. According to Katz (2001), however, the fact that there is an increment in sales for a particular merchant related to the fact that he had chosen to accept cards does not necessarily mean that all merchants will benefit. In fact, this is a zero-sum game. A sales increase for one merchant would happen at the expense of a competing merchant's sales. The fact that the merchant accepts cards does not influence consumers into buying something they would not do otherwise.

<sup>19</sup> In general, the interchange fee that maximizes the transaction volume within the platform corresponds to the social welfare maximizing interchange fee. Schmalensee (2002) is one of a few that recognize three different fees. Nonetheless, they are not necessarily different. Under bilateral monopoly and linear demands for card services, for instance, the three are the same. Like Schmalensee (2002), Wright (2004a) also recognizes those three different interchange fees, arriving to the conclusion that they converge when the demand for card services is linear and issuers and acquirers pass on costs similarly (providing merchants do not have a strategic motive to accept cards).

<sup>20</sup> The strategic motive is related to "business stealing", that is, merchants who accept cards may divert customers from their competitors who do not take cards because customers have a preference for payment cards.

<sup>21</sup> Note that Wright (2004a) drops simultaneously two assumptions that were relaxed separately by Rochet and Tirole (2002) and Schmalensee (2002): the issue of the strategic behavior of merchants and of the possible evidence of market power in both sides, respectively.

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fee, were issuers less competitive, for instance, then they would be able to pass on to cardholders relatively less than what was passed on from acquirers to merchants. As they hold more market power, they may capture for themselves part of the adjustment. In that case, there would be a constraint to the number of transactions and the profit-maximizing interchange fee would be greater than the socially optimal interchange fee.

The second factor relates to the asymmetry of benefits and externalities perceived by consumers and merchants. Given an increase in the interchange fee and its effect over other prices, the welfare-maximizing interchange fee can be greater or less than the profit-maximizing interchange fee. It will be greater if the sum of gains in benefit accrued by the marginal cardholder and the by the merchants in general is greater than the sum of losses in benefit suffered by merchants who left the arrangement and by the community of cardholders.

According to Wright (2004a), the profit maximizing interchange fee can be greater or less than the welfare maximizing interchange fee, involving greater or less amount of transactions, depending of the interplay between the network externality perceived by each group of final users and the degree of competition among issuers and among acquirers.

Gans & King (2002) and Manenti & Somma (2002) also assume the possibility of imperfect competition in both sides of the market. For Gans and King (2002), the degree of competition among acquirers affects only the profit-maximizing interchange fee of the platform. For them, the tighter that competition, the greater tend to be the profit-maximizing interchange fee, since acquirers would have less leverage and would have to accept higher prices to remain in the market.

For Manenti and Somma (2002), when profit margins in both sides are equal, the overall profit of the platform is independent of the interchange fee because it will be passed on to final users. When competition is tighter in one side, the interchange fee will be fixed in such a way that prices for final users will raise more within the less competitive side of the market.

## **2.4.2. Competition among platforms**

Some authors have investigated the effects of competition among platforms over prices in the payment card market. Rochet and Tirole (2002) analyzed competition among platforms without paying attention to intra-platform competition. For them, the fee charged to singlehoming cardholders is not affected by intra-platform competition. Each platform in

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isolation is regarded as a monopoly. Instead, for multihoming cardholders, the interchange fee tends to be smaller. In the presence of competing platforms, merchants would have more bargain power because they would have the option to accept only cards from the platform with the lowest interchange fee. Moreover, cardholders would likely pay lower fees (or greater rewards) in an attempt to make them loyal to a particular brand.

Guthrie and Wright (2003) also considered competition among platforms. The results are similar to Rochet and Tirole (2002). The competition among platforms may not lead to lower interchange fees when consumers hold just one card. However, the equilibrium interchange fee for multihoming cardholders stands at a lower level comparing to a situation in which the platform is monopolist. That equilibrium, though, does not depend on the degree of competition among platforms only. It is also influenced by the degree of competition among merchants. The tighter that competition is, the greater tend to be the interchange fee, since merchants' resistance would be lower. Therefore, competition among platforms *per se* does not necessarily lead to a lower interchange fee. There are other important variables that should also be accounted for when assessing the factors causing reductions in the interchange fee.

Similarly, the model developed by Hayashi (2005) seeks to demonstrate that incentives to competition among card networks would not necessarily lead to lower interchange fees. The model explores the percentage of multihoming cardholders required for the competition among platforms to produce a lower interchange fee and, once that reduction takes place, how much it would be. The author concludes that competition among platforms does not necessarily lead to a lower interchange fee when merchants have a strategic motive to accept cards. The number of multihoming cardholders needs to be representative for platforms to charge interchange fees that are lower than those charged by a monopolist platform.

In general, models agree that the effects of inter-platform competition may vary according to the behavior of other variables. Competition among networks may drive prices down when there is multihoming. In the absence of multihoming, many models conclude that inter-platform competition does not delivery lower interchange fees.

Wang (2006) studies the impact of platforms operating under monopoly or oligopoly. His analysis is unique in the sense that interactions of market participants are modeled in terms of industrial equilibrium, with no role given to network externalities. Wang (2006) argues that network externalities derived from the use of payment cards would not be so relevant in mature platforms, and this would be valid even accepting the payment card

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market as a 2SM, and despite the fact that network externalities have been important during the earlier development stages of the market.

The conclusions are the same for platforms operating under monopoly or oligopoly. If they are able to exercise their market power, platforms under an oligopoly would tend to form a cartel in order to set interchange fees at the monopoly level. The main result is that the interchange fee set by a monopolist is, in general, greater than the socially optimal level, and this happens due to the fact that platforms demand higher interchange fees so as to maximize the profit of issuers<sup>22</sup> as there are gains of efficiency<sup>23</sup> for payment cards or tighter competition among issuers. Consequently, there would be an increase in volume of card transactions and also an improvement in rewards to cardholders offered by issuers. Those gains would not necessarily result in bigger consumer surplus or in better profits for merchants but they may worsen the social welfare.

On the other hand, a reduction in the interchange fee would result in lower profits for every issuer, lower number of issuers in the market, lower profits for platforms, and also lower prices of goods and services. Subsequently, consumption and social welfare would rise. From the economic policy perspective, authorities would have an incentive to regulate the level of the interchange fee in such a way as to reduce it.

One way to regulate the interchange fee would be to define an upper limit, higher than zero but lesser than the one a monopolist would charge. In addition to generate a surplus for the producer, it would allow consumers to benefit from technological progress and from tighter competition.

Wang (2006) admits that regulation of the payment card market is not an easy task, and also that direct price regulation is not necessarily the best policy. According to this author, alternatives such as providing incentives for both intra and inter-platform competition, and for the development of competing payment instruments, as well as enhancing monitoring of the market, and use of moral suasion should also be considered.

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<sup>22</sup> One of the assumptions in the model is that acquirers just pass the interchange fee on to the merchant discount fee.

<sup>23</sup> The efficiency of payment cards is characterized by a series of exogenous variables directly associated with technological progress.

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## 2.4.3. Business Rules in the Payment card industry

### 2.4.3.1. No-Surcharge Rule

The no-surcharge rule bans any price differentiation based on the payment instrument used. Thus, the merchant is not allowed to apply a surcharge to customers because they have chosen to pay for their purchases with payment cards, rather than with cash or any other alternative instrument. The no-surcharge rule is also presented as a prohibition to give discounts to customers using instruments other than payment cards, unless the same discount is also offered to cardholders. The rule may also combine both prohibitions.

A fair share of the literature on payment card market treats the no-surcharge rule as an important topic where potential effects stemming from anticompetitive practices in the payment card market are analyzed. Theoretically, the existence of a constraint on merchants' freedom to set prices may bring about distortions in terms of efficiency and competition. The possibility of discriminating prices may distort the nature of the competition among payment instruments, leading consumers to use more often one instrument which is not necessarily the least costly to society (Katz, 2001)<sup>24</sup>. Furthermore, the no-surcharge rule would imply the existence of an implicit cross subsidy from consumers who do not use the more expensive payment instrument towards those who do.

Concerning the use of payment cards, the merchant discount fee, which has the interchange fee as its main component, is a cost that merchants pass on to the final price of goods and services, no matter which payment instrument is used. As a result, consumers who choose not to use cards are paying more to allow others to use their payment cards<sup>25</sup>.

In theory, the concern about this rule is justified on the basis of two aspects. Firstly, the no-surcharge rule may cause distortions and thus reduce efficiency in the payment card market. The second aspect is about the policy implications drawn from some models.

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<sup>24</sup> It should be pointed out that payments fulfill a role of public good, which prevents all instruments to be priced directly. Paper money is an example of payment instrument not directly priced, whose production and distribution costs are not passed on to the buyer or to the seller in a commercial transaction. Thus, while the absence of price differentiation may bring about allocation problems, price discrimination in one payment instrument may create a competitive disadvantage *vis-à-vis* other instruments.

<sup>25</sup> Every payment instrument – cash, check, credit card, debit card, electronic transfer etc. – has a distinct production cost. For a subsidy to really exist, the costs of every instrument should be reflected in the final price of goods and services, which are, however, sold by a merchant at a single price. Rochet and Tirole (2003) argue that, considering that the costs of each payment instrument are not born by the consumers who use them, the suppression of the non-surcharge rule would be a deterrent to the use of electronic instruments and it would not accomplish gains in terms of economic efficiency.

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Some authors believe that outlawing the no-surcharge rule would be enough to correct possible market failures regarding the definition of the interchange fee.

Alvarenga (2006) develops a model using the game theory tool kit to study the no-surcharge rule in payment card markets. The main result of the model is the recognition of a cross subsidy from low to high-income consumers, since the former do not have access to payment cards while the latter do<sup>26</sup>. For that reason, the author suggests the prohibition of the no-surcharge rule in order to eliminate that distortion.

For Rochet and Tirole (2002), in view of the market power of issuers and perfect competition among acquirers, the interchange fee would be neutral in the absence of the no-surcharge rule. Thus, the aggregate price level of the platform is what matters most, not the price distribution between the two sides. Consequently, there would be a suboptimal provision of payment card services, and the utilization rate of the instrument would stand below the socially optimal level since prices of goods and services would be higher for consumers using cards as the payment instrument. Moreover, the suppression of the no-surcharge rule would not necessarily lead to social welfare gains. That would depend on the joint effects of two factors: issuers' market power; and merchants' level of resistance.

If issuers had high market power, the possibility of overpricing would reduce the social welfare as prices charged to cardholders would be too high, driving card utilization down below the socially optimal level. If merchants' resistance were greater, there would be an increment in social welfare because the maximum interchange fee merchants would be willing to pay would be lower, which would narrow the price gap between payment instruments.

Wright (2003) assesses the implications of the suppression of the no-surcharge rule and relates them to the degree of competition between merchants. If merchants were monopolists, their ability to practice overpricing would reduce the social welfare because in doing so the demand would not fall accordingly. As a result, there would be underutilization of the instrument due to excessive cost of goods and services to cardholders<sup>27</sup>. If merchants'

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<sup>26</sup> In Brazil, there is empirical support for an increasing participation of low-income customers in the payment card market. According to estimates from Itaucard (2007), the number of low income cardholders more than doubled in the preceding four years (growth rate of 135%), while for the other income segments, the rate of growth was 58%.

<sup>27</sup> Katz (2001) holds a different view. He states that, had Wright adopted a more realistic hypothesis, he would have come to the conclusion that, even with monopolistic merchants and the possibility of overprice, there could have been an overutilization of cards. The room for price increases for merchants, including monopolists, is nevertheless bound by the demand curve they face.

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operate under a Bertrand competition<sup>28</sup>, there would be specialization. Merchants selling low cost goods and services would accept only cash and those selling at expensive prices would take cards only. Under that configuration, the profit of participants and the social welfare would be independent of interchange fee and the no-surcharge rule, which would make all participants indifferent to those rules.

Gans and King (2003) developed a model whose main result supports the neutrality of interchange fee in the absence of the no-surcharge rule<sup>29</sup>. That result would hold regardless of the assumptions about the behavior of issuers, acquirers, cardholders or merchants. If surcharges over card transactions were possible, an increase in the interchange fee would tend to move issuers' profit upward and acquirers' profits downwards. However, since the initial competition setup would remain the same, fees charged by issuers and acquirers would be adjusted.

Similarly, merchants would pass the merchant discount fee on to final prices whenever payment cards are used. Thus, the cardholder would bear the entire cost of the interchange fee through increases in final prices of goods and services. However, as the effect of a price increase is offset by reductions in fees charged by issuers, all operators involved would end up in the same situation that had prevailed before the adjustment of the interchange fee. As for the policy implications, the simple suppression of the no-surcharge rule would present better results than any other direct regulation of the interchange fee.

Katz (2001) believes there are two mechanisms for the internalization of network externalities in the payment card market. The first would be the interchange fee, and the second the freedom for merchants to practice price differentiation based on the cost of the payment instrument used. However, the use of the interchange fee may bring about distortions to the card market by influencing merchants' and customers' decisions regarding entering the system and using the card. Depending either on the market structure and on which institutions control the market, the interchange fee could be set at a level that would bring about adverse effects over economic efficiency and social welfare. Thus, the interchange fee would be a mechanism to promote the internalization of network externalities at the expense of possible efficiency and welfare losses.

On the other hand, the surcharge possibility would be able to offset possible negative effects of the interchange fee while allowing for the internalization of the network

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<sup>28</sup> When there is a Hotelling competition, results would be the same, provided there is a low degree of product differentiation.

<sup>29</sup> Alternatively, in the presence of perfect competition among merchants.

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externalities. The suppression of the no-surcharge rule would allow merchants to use prices for signaling costs of each payment instrument, promoting economic efficiency. Furthermore, it would boost consumption from no-cardholders (as they would pay less), would adjust card transaction volumes towards a socially optimal level, and would enlarge card acceptance among merchants. In terms of policy, that would be the simplest way to avoid distortions in the cards market.

#### **2.4.3.2. Honor all cards rule**

The honor all cards rule can be interpreted in two ways. In its “weak version”, the rule means that the owner of the scheme may require merchants to accept all cards belonging to his brand no matter who the issuer is. This formulation aims directly at standardization of acceptance and network procedures. On the other hand, in its “strong version”, the rule requires merchants and service providers who wish to be authorized to accept a certain product from one particular brand to accept all products from that brand, specially its credit and debit cards.

Assuming that there is competition in debit transactions, that there is not substitution effect between debit and credit functions, and also that merchants are homogeneous, Rochet and Tirole (2006) come to the conclusion that the honor all cards rule make interchange fee applicable to debit cards to stand below the socially optimal level, while the interchange fee on credit cards tend to be optimal or too high depending on issuers’ and acquirers’ market power. In that sense, tying the sale of the two functions, which is what the second interpretation of the rule is about, would be one way of structuring the interchange fees in such a way as to bring about positive social welfare impacts. The model results, however, are very dependent on its assumptions. Relaxing just one assumption and assuming credit and debit card are substitutes, the outcome is that the presence of an honor all cards rule would actually lead to a lower social welfare.

#### **2.4.3.3. Determination of the interchange fee**

The definition of the interchange fee may be agreed upon multilaterally or bilaterally, or defined by the scheme owner.

Litan and Pollock (2006) show that the interchange fee reflects the bargain power of parties on each side. According to the authors, a bilateral agreement would give rise to several fees, and because of the differences in size and power among banks, smaller issuing institutions could face competitive disadvantage, deepening concentration in that side

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of the market. The same would happen to acquirers: the larger ones would be able to negotiate better fees with the banks, exploring a competitive advantage over smaller acquirers.

It is interesting to point out that the multilateral determination of the interchange fee undergoes important influences from the honor all cards rule, in any of its forms. In particular, if merchants, in four-party systems should accept all cards from one association, it is necessary that the interchange fees for every possible issuer-acquirer pair be defined, so as to make transactions possible. If the interchange fee is multilateral, this is not an issue. In bilateral fee negotiations, the honor all cards rule grants considerable bargain power to issuers, as their cardholders should be accepted by all merchants authorized by any acquirer in the other side.

Perhaps more relevant than that is the potential influence of the bilateral determination of the interchange fee over access conditions to the acquiring side in four-party systems. In fact, the need to accept all cards puts any issuer in a position to virtually refuse the entry of any acquirer to the system by imposing a sufficiently high interchange fee (in the most common case in which the acquirer pays the fee). Combined with the net issuer acquirer rule, defined ahead, that situation leaves to market incumbents the decision whether or not to admit a new acquirer.

#### **2.4.3.4. Net issuer acquirer rule**

In terms of restrictions to access the network, there may be a rule that limits the participation of issuers in the acquiring business, also known as the net issuer acquirer rule. That rule may be accompanied by other requirements such as, for instance: acquirers should have a minimum number of authorized merchants; issuers should have a minimum number of outstanding cards; and application of fines to institutions operating as net acquirers for a considerable period of time.

One justification for that rule is to avoid “cherry picking”, that is, the possibility that acquirers would thrive just by selecting a small set of highly profitable merchants, without significantly contributing to the expansion of the system.

The downside of that rule is that it creates a barrier-to-entry in the acquiring side. Since only issuing banks have access to the other side of the business, it is quite common for acquirers to be selected among large retail banks whose large number of clients allow for large scale issuance activity.

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Restrictions to access may also take place at the issuance side. As a general rule, the scheme owner requires would-be issuers to be a banking institution or one of its subsidiaries. In the latter case, payment cards should be its main business.



# 3

## International Experience

This chapter reviews the main international regulatory experiences concerning the payment card industry, and is a counterpoint to the theoretical background presented in the preceding chapter.

In the countries surveyed<sup>30</sup>, the issues that have led to antitrust inquiries in card industries are very similar to those recurrently found in traditional markets: high concentration in one or more links of the production chain; barriers to entry, often embedded in contracts; price-fixing agreements; seemingly extraordinary profits in the sector; and consumer and competitor complaints.

As assessments in each country proceed, authorities have become increasingly aware of the particularities of the payment card industry, although the regulatory implications of those findings are not always self-evident.

### 3.1. Payment Card Industry Rules

Many countries have challenged the rules adopted by members of payment card schemes, especially those in four-party arrangements.

The honor all cards rule has not been questioned in its weak form, according to which merchants accept all cards regardless of its issuer. It has actually been deemed necessary to enable four-party systems to offer widely accepted means of payment.

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<sup>30</sup> Countries surveyed: Australia, United Kingdom, Mexico, Netherlands, Chile and United States.

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On the other hand, the most common argument for the strong version (according to which merchants are obliged to take all cards belonging to one brand) is the need to provide international acceptance, a competitive advantage of international brands in comparison with local schemes that have emerged in several countries. Another line of reasoning in support of that version argues that it opens up the possibilities for product innovation, since a new product can benefit from existing networks to become viable, improving social welfare in the process. That, the argument goes on, would have been the case of debit cards at the time of their beginning in the United Kingdom and in the United States.

In Chile, the only acquiring company in operation used to provide merchants with an all-or-nothing offer by which all card brands present in the country were offered in a bundle. After authorities' intervention, only the weak version of the honor all cards rule came to be accepted.

The strong version of the honor all cards was also outlawed by authorities in Australia (the regulation was imposed on Visa, and voluntarily adopted by MasterCard) and in Mexico. In the United Kingdom, when Visa debit cards were first introduced, there were signs of market power abuse when the Barclays Bank went as far as interrupting acquiring services for two merchants. In the United States, the disputes gave way to a Wal-Mart huge lawsuit, resulting in Visa and MasterCard paying billions of dollars in settlements and forcing them to switch to the weak version of the rule in 2003.

The no-surcharge rule, in its turn, raised some concerns about its impact on prices in general. In the United Kingdom, some equated the rule with a tax as it forced consumers using other payment instruments to share the costs of card payment systems<sup>31</sup>.

Those supporting the rule argued that its removal would generate transaction costs as there would be multiple prices for the same product. Furthermore, it would enable merchants to circumvent the honor all cards rule by imposing prohibitive surcharges on cards they did not want to accept.

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<sup>31</sup> This formulation appeared in investigations held in the United Kingdom. The European Commission also concedes that consumers who do not use cards subsidize those who do, and that constituted a motivation for the investigation of MasterCard multilateral interchange fees. (see <http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/07/832&format=HTML&aged=0&language=EN&guiLanguage=en>)

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In the United Kingdom, in 1991, the removal of the no-surcharge rule came together with a surcharge limitation<sup>32</sup> in order to give the honor all cards rule some solace. The rule was also banned in the Netherlands (1997) and in Australia (2003), and modified in Mexico, allowing for discounts for cash transactions.

The net issuer acquirer rule (a restriction to participation) is in a certain form contemplated in the Chilean legislation, which regards acquiring as issuers' activity but allows for outsourcing, and it still holds in Mexico. In the United Kingdom, the Credit Cards (Merchant Acquisition) Order 1990 regulated the rule, but it was not eliminated the possibility of an issuance plan which only be feasible to large retail banks. Thus, although there is no longer an obligation of having the cards issued before an acquiring license is granted, an entry barrier in the acquiring activity linked to issuance still remained. In Australia, the rule was abolished in 2004.

As for the multilateral determination of the interchange fees, the possibility that it might work as a restriction to competition was analyzed and the mechanism was considered acceptable in the United Kingdom, although the resulting levels of the multilateral interchange fees have been questioned.

It is worth noting that in the Australian POS scheme, in which bilateral determination of the interchange fees is used, the authorities judged necessary to regulate the access to the system in 2006, leveling the playing field for new entrants. In the United Kingdom, there is the possibility of bilateral negotiation, but there are fallback interchange fees that become valid whenever a consensus is not reached. In the end of the 90's this was the case of 90% of the transactions.

Another issue related to restrictions imposed by schemes onto their members is the use of exclusivity clause. In the United States, this assumed two forms. Initially, Visa decided to prohibit its members of participating in schemes of other brands. However, given the position taken by authorities in the Worthen case, Visa changed its conduct in 1976. In the end of the 80's, Visa responded to Sears attempt of entering the scheme with the imposition of a new rule, forbidding entrance of members that issued Discover or American Express payment cards. In 1990, Sears acquired a Visa member institution, originating the MountainWest case, which culminated with the victory of Visa.

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<sup>32</sup> This limit relates to the cost of accepting cards faced by merchants.

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After that, the American Department of Justice (DOJ) started investigating issues related to exclusivity. Visa and MasterCard permitted the participation of their members in one another, but prohibited their participation in the American Express or Discover scheme. The DOJ considered this harmful to competition, but it also decided that participation in the governance of multiple schemes were detrimental to competition. In 2001, a court rejected the claims against duality, but accepted those against exclusivity, requiring the removal of contractual clauses that enforced it.

The exclusivity rule was also challenged in Mexico and removed by Visa. In the United Kingdom, there was no contractual restriction to simultaneous participation in more than one scheme. Nevertheless, duality did not emerge until 1988.

Finally, it is worth noting that some participation restrictions in the payment card industry result from local legislation. In Mexico, for instance, acquiring is exclusively performed by banks, because they are the only entities allowed to participate in POS networks. In opposition, non-bank institutions hold a significant market share in the United States. In Australia, non-financial institutions are permitted, and they take part in the provision of network services and in the acquiring business.

## **3.2. Relevant Market**

The definition of relevant market in analyses concerning payment card industry differs according to the country surveyed. One recurring fact in all of them, however, was that cards were not regarded as belonging to the same relevant market as cash or checks. Surveys were restricted to cards within the national geographic dimension.

Also important is the two-sided market characteristic of the payment card industry. In Chile, for instance, the competition authority leading the investigation (*Fiscalía Nacional Económica – FNE*) defined the acquiring market for general purpose payment card (credit and debit) as relevant. Nevertheless, a court decision (*Tribunal de Defensa de La Libre Competencia*) invalidated the one-side approach to analyzing the market.

In the United Kingdom, the first study concerning the sector, presented in 1980, considered only the acquiring side of universal credit and charge cards. In a subsequent study conducted between 1987 and 1989, charge cards were excluded, but the issuance side was also object of scrutiny.

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Again in the United Kingdom, the Cruickshank Report defined three relevant markets: wholesale, the market between issuers and acquirers; acquiring market and issuance market. Hypothetical monopolist tests were applied to MasterCard's wholesale and acquiring markets, which justified them being considered separate markets. As for the issuance side, MasterCard cards were regarded as close substitutes to Visa ones, given their functionality. In the Netherlands, the test was also used and led to the conclusion that network services for PIN transactions was a relevant market.

### **3.3. Concentration and Profit Analysis**

Issues of concentration and extraordinary profit were also important elements determining authorities' response. In Chile, the presence of a single acquiring firm owned by major issuers, Transbank, motivated an investigation that found extraordinary profits covered by questionable accounting practices. There was also a monopsony held by the same firm in the provision of POS equipment. In a settlement with the authorities, the firm accepted to give open access to its network, charging a non-discriminatory fee. This allowed issuers to acquire directly, if so they wished, choosing their own merchant discount fees. Merchants, in turn, were given the right to buy their own POS terminals and connect them to the Transbank network, following a technical approval process.

In the Netherlands, Interpay was established as the only acquirer and network service provider for payment cards. It was regarded as a "cooperative joint venture" by authorities, who considered that it did not conduct business based on its own decisions and that it had been used by banks to eliminate competition between them. Interpay's profits were understood as extraordinary. Interpay cooperated for the solution of this problem, compromising in reaching some targets established by the government authorities. Furthermore, given the transfer of PIN transactions acquiring business to the shareholder banks, in March 2004, the competition law infraction ceased existing. As a consequence, fees charged to merchants have been reduced.

In Mexico, there was the perception that the industry was underdeveloped, reaching few cardholders and presenting high degree of concentration in the issuance and acquiring businesses. The investigations also concluded that the sector exhibited extraordinary profits. In the United States, on the other hand, both sides of the market

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are regarded as highly competitive. Issuance of debit card may be an exception, as they are attached to current accounts, but this understanding is subject to changes.

In the United Kingdom, initially there was in practice a sole acquirer for Visa (Barclays) and another for MasterCard (JCCC), while in the issuance side, no bank worked with both brands. In 1988/89, this situation changed when JCCC's shareholders entered the acquiring business and with the emergence of duality in issuance side. A study carried out at that time found extraordinary profits, but no measures were taken because that might have affected the transformations of the industry structure already under way. In 1997/98, the three largest acquirers accounted for 85% of the credit and debit cards transactions.

### **3.4. Definition of fees**

In the Netherlands, reductions in merchant discount fees were obtained in cooperation with the industry, while in Chile that outcome was imposed by authorities. Transbank was obliged to present a new table of merchant discount fees, passing gains of scale on to merchants.

In Mexico, interchange fees were reduced in cooperation with banks. The most prominent case, and also the one with the largest degree of regulatory intervention, occurred in Australia, where cost-based methods for the calculation of the interchange fees were instituted. Although this regulation did not count on a theoretical foundation asserting its optimality, it was implemented as a simple rule for interchange fee determination and as a stage in a gradual transition towards the possibility of its complete removal in the future. The rules imposing a cap on interchange fees for credit cards came into force in the end of 2003 (average interchange fees fell from 0.95% to 0.55%). The measures taken towards Visa debit (interchange fee cap) and EFTPOS (floor and cap) were announced in April 2006.

In 2008, the Australian central bank (Reserve Bank of Australia) conducted an evaluation of the payment card industry regulation. As a preliminary conclusion, it was recognized that significant progress in terms of competitiveness and efficiency in the Australian payment system had been achieved as a result of the reform. This evolution is related mainly to the removal of restrictions on merchants' choices, gains in transparency towards market participants, better price signaling to consumers and improvements in the access arrangements to systems. Despite these

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advancements , the Reserve Bank of Australia considered the possibility of removing direct regulation over interchange fees, leaving open the possibility of returning to regulatory actions would the interchange fees increase.

In the United Kingdom, the antitrust authority (Office of Fair Trading – OFT) contested the multilateral interchange fee of the MasterCard system arguing that it was recovering costs not directly related to payment transmission, even though OFC was aware of the fact that a smaller interchange fee might not be optimal as far as social welfare is concerned. The decision stating that the MasterCard scheme participants had violated antitrust laws was overruled by the Competition Appeal Tribunal, once OFT changed its position and started favoring a zero interchange fee.



# 4

## **Payment Card Industry in Brazil**

### **4.1. Data and Methodology**

#### **4.1.1. Data**

To carry out this study, information has been collected through specific questionnaires, which were answered by four distinct payment card industry's participant groups: payment card scheme owners; issuers; acquirers; and merchants. For this purpose, meetings were held with representatives of these entities in order to present them the proposed study, clarify doubts and get suggestions.

The scope of this study is restricted to credit and debit cards related to the brands Visa, MasterCard, Cheque Eletrônico, American Express, Hipercard, and Diners<sup>33</sup>. Private label and prepaid cards were not included, and neither were banking cards allowing withdrawals only. Transactions carried out in Brazil through cards issued abroad and those carried out abroad through cards issued in Brazil were not considered either.

The quantitative data are referred to the period January 2001 to December 2007, and they were provided in quarterly basis.

Quantitative and qualitative data regarding issuance activity were collected from thirty-eight financial conglomerates, which include all entities issuing payment cards in Brazil. For each conglomerate, the aggregated data were provided by the relevant leader institution, and, if an issuing institution was acquired by another one in

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<sup>33</sup> Banks' own-branded payment cards have been also considered, as well as those relating to brands with lesser penetration in the market.

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the period January 2001 to December 2006, data referred to the former related to the mentioned period were provided by the latter. The same procedure was observed where an institution has bought just the payment card activities of another institution.

#### **4.1.1.1. Data on Issuers**

The data were grouped into four items: cardholder fees; revenues and costs; volume and value of transactions; and period of time a cardholder has to pay his purchases. Additional information on fees was addressed in the qualitative questionnaire, which, furthermore, addressed issues relating to issuers' participation in the process of defining the interchange fee and the scheme's rules.

The quantitative information was desegregated by payment card arrangement, function of the payment card (debit or credit), product<sup>34</sup> and modality, which was classified into three categories:

- Pure: payment card issued with credit and debit functions only, without association with any commercial, industrial or non-for profit organization;
- Hybrid: payment card issued in partnership with a merchant through which a credit limit is conceded to the holder by the relevant issuing bank, which applies to purchases carried out in any establishment participating in the relevant arrangement. This kind of payment card also entitles the holder to some benefits offered by the associate merchant;
- Co-branded: credit card issued in partnership with a firm and whose aim is to get the holder fidelity through his affinity with the associate firm's brand.

The analysis of issuance market concentration is based on data on the number of active payment cards, volume and value of national and international transactions carried out through them, and revolving credit related to credit cards. These data were disaggregated by scheme, function, product and modality. To be considered as "active", a payment card should have to be used at least once in the period of twelve months ending at the end of the relevant quarter. Payment cards were

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<sup>34</sup> Category attributed to a payment card having a certain denomination that differentiates it from others issued under the same brand, and that entitles the cardholder to some benefits. "Golden" and "Platinum" are examples of categories.

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counted by function and scheme (not by number of cards that have been issued), and also taking into account both principal and additional cards. The value of revolving credit in effective use was considered as the difference between the value of the purchases carried out in a certain period and the amount effectively paid by the cardholder, without considering debit refinancing.

The responding institutions were asked to inform the components of their revenues and costs. Where necessary, apportionment of revenues and costs was done by the responding institution itself.

#### **4.1.1.2. Data on Acquirers**

Quantitative and qualitative data were collected from the acquirers Visanet (Visa), Redecard (MasterCard and Diners), TecBan (*Cheque Eletrônico*), Hipercard (Hipercard) and Bankpar<sup>35</sup> (American Express).

Data relating to interchange fees, volume and value of transactions were disaggregated by brand, function, modality, product, capture form, number of installments, and merchant's market segment.

Information relating to a transaction can be captured in cardholder's presence or not. The first capture form is divided into electronic capture (payment card having a magnetic stripe or chip) and non-electronic capture. For identification of the market segment in which merchants acted, the acquirer was asked to group them into one of twenty codes, or into "others" just in case. The number of installments refers to the number of months chosen by the cardholders to pay their purchases, according to alternatives offered to them by the merchant itself (sight transactions were classified into "single installment").

For each segment, it was also collected data on merchant discount fees, value and volume of transactions relating to the fifteen merchants with the highest number of transactions. Also, in the aggregate form, the same information was collected concerning the two hundred smallest merchants.

It was also collected information on both the total number of acquired merchants and the number of merchants effectively participating in the relevant scheme, disaggregated by scheme and by function, and also on the number of installed POS terminals per each scheme and per Brazilian State. Concerning each quarter, a

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<sup>35</sup> This institution is part of the Bradesco conglomerate.

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merchant was considered to be effectively participating in the scheme if it carried out at least one transaction in the last six months.

Regarding profitability, acquirers were asked to provide information on their revenues and costs. Revenues were disaggregated into the following items: gross merchant discount fee, which includes interchange fee passed on to issuers; interconnection fee; POS terminal rental; and other revenues, including those from account management services. Costs were divided into the following items: interchange fee; marketing expenditures; expenditures relating to risk; fees paid to have access to the schemes; front-end and back-end processing costs; and other costs.

Acquirers were also required to inform the average term they observe to credit the payment into the account of the merchant after the cardholder makes a purchase (both the simple arithmetic average and the average weighted by the value of transactions).

They were also asked to provide information on the degree of vertical integration of their activities, including outsourced parts of them. Specifically, each acquirer was asked to answer "true" or "false" to the questions, and one point was scored for each "true" answer.

#### **4.1.1.3. Data on Scheme Owners**

The entities responsible for the brands Visa, MasterCard, Diners, *Cheque Eletrônico*, Hipercard and American Express were requested to provide qualitative information comprising issues on governance such as: participants' main rights and obligations regarding the usage of the brand; distribution of profits; incentives to payment card issuance; participants' right to vote in decisions concerning the network; fees; and possibility of being participant in another payment card scheme.

It was also demanded information on the process used to set the interchange fee, and on the conditions for participating in the scheme as issuer or acquirer, such as: minimum capital; need to be a bank or not; need to be an institution supervised by the Central Bank or not; and existence of entrance fee charged from the issuer or the acquirer.

It was also requested information on: which network rules are applicable in each scheme; how the risk of fraud is managed, including concerning chargebacks, and

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who at the end incurs in this risk (the owner of the scheme, the acquirer, the merchant etc); and how is addressed an issuer's payment failure.

### **4.1.2. Methodology**

The data collected were subjected to statistical tests to verify possible extreme observations (outliers). The statistics that showed significant deviations were subjected to review, where the provider of the information was asked to correct or confirm them. Not satisfactorily explained outliers were excluded from the sample.

After adjustments, it was observed that some groups of data were unbalanced in the sense that they did not contain all data, or part of them, for all the considered period. The biggest gaps were concentrated in the first quarters of the analyzed period, and this fact, according to the providers of information, was due to either technical limitations to capture data or absence of information.

## **4.2. Organization of Payment Card Industry in Brazil**

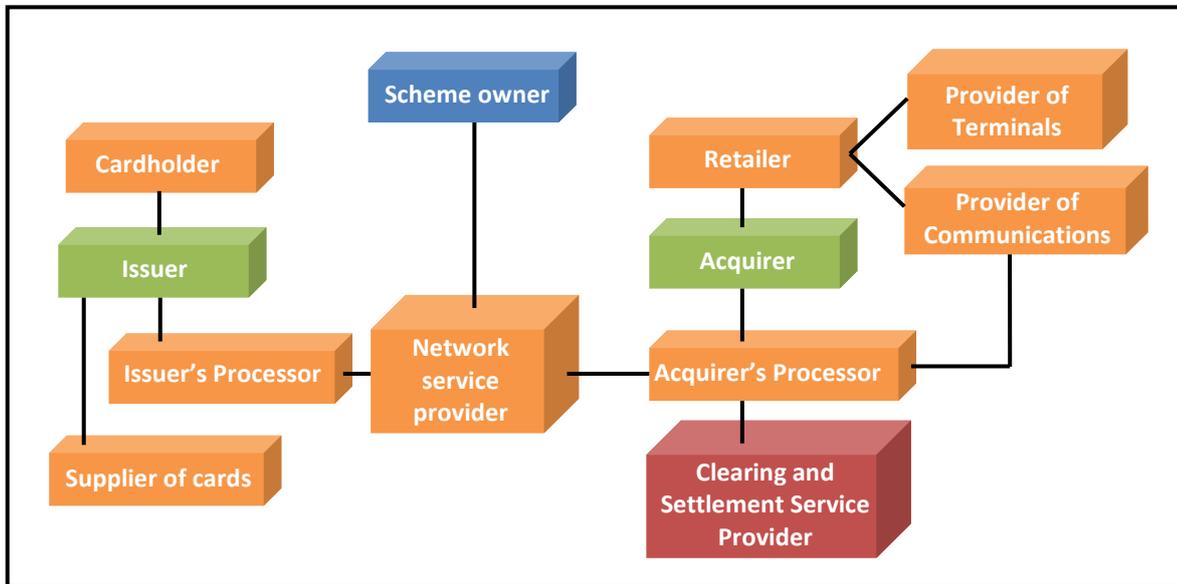
The payment card market counts on the following direct participants: scheme owners; issuers; acquirers; merchants; and cardholders. Furthermore, other agents have an important role in this industry such as: POS terminal providers; local communication service providers; payment card suppliers; processing service providers; network service providers; and clearing and settlement service providers.

From the point of view of service supply and regarding the level of vertical integration, the payment card industry framework varies from country to country. In countries where there is not complete vertical integration, it is common the presence of a single network service provider which serves several acquirers and issuers participating in different schemes, that is, using different brands. Its main function is to drive the requests of payment authorization. It is not uncommon that it also supplies POS terminals, as well as transactions' capture and processing services.

Although this kind of service allows increasing gains of scale, it is possible the existence of more than one network service provider. In this case, typically, there is interoperability among the networks, which is the possibility of a network service provider to exchange information with the providers of other participants (issuers, acquires and scheme owners). Thus, interoperability implies the existence of standards

that allow any POS to read any card regardless its brand, and the existence of open access networks that allow any merchant to interact with any acquirer , and also any acquirer to interact with any issuer. The following diagram shows the payment card industry framework.

**Picture 3 – Payment card industry's general framework**



The next sections show how the payment card industry is organized in Brazil.

#### **4.2.1. Scheme Owners**

In Brazil, the main schemes observing the four-party model are those operating under Visa, MasterCard or *Cheque Eletrônico* brands, and each one of them uses a single acquirer, namely Visanet, Redecard and TecBan, respectively.

The main schemes following the three-party model are American Express, Hipercard and Diners, whose acquirers are *Banco Bradesco Cartões S.A.*, Hipercard and Citibank, respectively.

##### **4.2.1.1. Visa**

Until recently, Visa was formed by Visa International (which comprised Visa Asia-Pacific, Visa Latin America and Caribbean, Visa Eastern and Central Europe, and Visa Middle Eastern and Africa), Visa Canada, Visa Europe, Visa USA, and

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Inovant. *Visa do Brasil Empreendimentos Ltda* was a Visa International's integral subsidiary.

In October of 2007, there was a initial public offering, and the Visa Group was restructured with the emergence of a new corporation, i.e., Visa Inc. In the new arrangement, Visa USA, Visa International, Visa Canada and Inovant became subsidiaries of Visa Inc, while Visa Europe remained owned by European member financial institutions, maintaining contractual relationship with Visa Inc. On the other hand, the Visa Latin America and Caribbean's members held on as members of Visa International. The Brazilian members maintain contractual relationship with Visa International, and to participate in the Visa scheme they must hold Visa International's class C shares (only class A shares give right to vote).

To act as issuer or acquirer, an institution must have financial nature or be controlled by financial institutions. In the second case, the entity should have payment card activity as its main business. To operate as acquirer, in addition, the institution should be principal member, affiliate<sup>36</sup> member or acquirer member. In Brazil, there is a single acquirer, Visanet, which, according to a contractual provision, carry out this activity on exclusivity basis.

In principle, in order to be an issuer, an institution must be a principal or affiliate member. In Brazil, currently, there are forty-four principal members and twenty-three affiliate members issuing Visa payment cards.

In addition, a non-member institution can act as a licensee for issuance and acquiring purposes. In Brazil, there is just one institution in this situation, which was authorized in 2007.

Visa started its operations in Brazil in the 70's, operating through multiple acquirers that had their own and vertical operational structure, without interoperability among them. In 1995, the Visa's Brazilian members decided to create the *Companhia Brasileira de Meios de Pagamentos* (Visanet), having Visa International as a minor shareholder partner. Visanet is the above-mentioned single acquirer.

As a general rule, Visa guarantees the settlement of all issuers' and acquirers' obligations. However, in Brazil, part of the risk is assumed by Visanet, which demands guarantees from the issuers in order to manage the settlement risk.

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<sup>36</sup> Before the IPO, a principal member was differed from an affiliate member by having the right to vote, by information provided, and by the entry fee charged. Currently, the difference remains concerning the two latter points only.

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The main fees charged by the scheme owner from both issuers and acquirers are: an entry fee; an ad valorem rate on the financial volume of transactions; and a rate per number of transactions processed. Exclusively from issuers are charged, additionally, a rate on the number of cards issued, which is related to insurance and relevant services.

#### **4.2.1.2. MasterCard**

MasterCard International (MCI), which is liable for administering the use of the MasterCard brand, is an operational subsidiary of MasterCard Inc. It's up to MCI to license MasterCard members worldwide, which are financial institutions that can act as issuer or acquirer.

MasterCard Inc. has three types of shares: A, B and M. The A shares, publicly offered, give right to vote and dividends. The B class is restricted to members of MCI. Besides the right to be issuer and acquirer, these shares give right to dividends, but not to vote. The M class is exclusive to MCI's main members; they give right to vote only in case of the company's restructuring.

MCI and MasterCard Inc share the same board, which is elected by shareholders of the former. The MCI' members have not right to vote.

MasterCard Brasil Soluções de Pagamento Ltda. is a MCI's integral subsidiary. MasterCard started its operation in Brazil in 1987, having Credicard as the single issuer and acquirer. In its turn, Credicard was created in the 70's, when The First National Bank, a Brazilian subsidiary of Citibank, launched the Citicard. In 1983, Credicard established an association with Visa International, which was replaced by an association with MasterCard International in 1987, when it changed the brand of its cards.

To be issuer or acquirer, an institution has to be a MasterCard's principal member or affiliate member. Only financial institutions and entities whose main activities are card-related can be principal members. Any entity controlled by one or more financial institutions, which have been accepted as principal member, can be an affiliate member. MasterCard can adopt others criterions of eligibility, which varies from country to country.

MCI does not establish restrictions to the number of institutions that can participate as acquirer in the Brazilian MasterCard scheme. Currently, Redecard, *Banco*

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*Santander* and *Banco IBI* are licensed as acquirers, but only Redecard is effectively carrying out this activity. MasterCard rules do not prohibit its acquirers to offer their services to other brands.

MCI guarantees the payment of obligations between issuers and acquirers and, thus, it will honor the obligation whenever one part fails to pay.

To allow the use of its brand in the related products and services, MasterCard collects several rates from institutions participating in the scheme. The initial license rate is charged according to the nature of the institution, i.e., there are different rates for affiliate members and non-affiliate members.

#### **4.2.1.3. Cheque Eletrônico**

*Cheque Eletrônico* is a Brazilian debit card scheme created in 1982, whose proprietary is TecBan (*Tecnologia Bancária S.A.*),

According to the scheme's rules, to be an issuer the participant must be a *Banco Central do Brasil*-authorized banking institution, should accept the TecBan's operational rules, and comply with the related technical specifications.

TecBan is the *Cheque Eletrônico*-brand single acquirer, and the merchant bank has to be a TecBan Clearinghouse's participant. According to the rules, another brand can be showed in its payment cards along with its own brand.

The *Cheque Eletrônico* brand can be used in payment cards issued by all banks participating in the scheme, which are allowed to participate in any other payment card scheme.

TecBan Clearinghouse has legal liability to guarantee the payment of all obligations among the *Cheque Eletrônico* scheme's participants. For this purpose, issuing banks are required to post government securities as collateral, which will be foreclosed in case of payment failure.

A membership fee is charged from the financial institution participating in the scheme, which value is directly negotiated with TecBan. Merchant fees are defined by the TecBan's commercial area, subject to the approval of its Board of Directors. The issuers do not participate in this decision.

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#### **4.2.1.4. American Express**

American Express scheme is administrated by American Express Limited (AEL), which is an integral subsidiary of American Express Company, a North American corporation. Issuers can be licensed to issue Centurion Card or Network Card, both of them accepted by American Express global network. The first license allows issuance of payment cards observing the classic format and design of American Express cards in the three-party scheme, and is usually granted to one licensed institution as independent operator. In Brasil, this license has been granted to *Banco Bradesco Cartões*, which acts as issuer and acquirer. The second category of issuance license follows the four-party model, and in Brazil it has been granted to *Banco Itaú* and HSBC.

American Express scheme's issuers and acquires are licensed by AEL, and they do not participate in the management of the scheme, and neither have right to vote in issues relating the scheme, including those concerning fees. On the other hand, they are authorized to participate in any other payment card scheme.

American Express issuers and acquirers are required to post collateral, which are used to protect the corporation in case of payment failure. Since it is three-party scheme, interchange fee is not used. In the case of *Banco Itaú* and HSBC, where a four-party model is applied, the interchange fee-equivalent rate is set through bilateral negotiation.

#### **4.2.1.5. Hipercard**

The Hipercard scheme initiated its activities in the 70's as a private label card related to *Bompreço Group*, a supermarket chain located in the Northeast Region of the country. At that time, it was called "Cartão Hiper", which were issued by HiperCred.

As the number of cardholders increased, the payment card began to be accepted by other merchants located in the same premises used by the HiperCenters. By this moment, the *Cartão Hiper* became a hybrid card, still under HiperCred's administration. In 1991, the card changed its name to Hipercard, and in 1993 became a typical credit card. In March 2004, *Unibanco* bought the payment card scheme, and Wal-Mart Stores Inc. bought *Bompreço* supermarkets. The Hipercard's Board of Directors, which is liable for strategic and marketing decisions, is composed by Unibanco and Wal-Mart representatives.

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#### **4.2.1.6. Diners Club**

Diners Club is composed of forty-seven franchises, seventeen sub-franchises and nine agencies worldwide, all of them called participants. Citigroup operates directly fourteen franchises. Each franchise is licensed by Diners Club International (DCI), which grants to the licensee exclusivity to be the Diners Club issuer and acquirer in a certain market, for a certain period of time, in form order to constitute a close network.

The licensee can pass the acquiring right to a third party (sub-licensee), but the responsibility of all acquiring process is of the former. The participants should promote the issuance of corporate and personal cards, coordinate the business with the other Diners Club licensees around the world, and serve all worldwide Diners Club cardholders and acquired merchants.

In Brazil, *Banco Citicard S.A.*, the single licensee, acts as issuer and acquirer, but has outsourced the latter function to Redecard. According to the scheme's rules, the acquirer can provide services to other payment card schemes. Redecard determines which bank should be used by each merchant in the context of the scheme. Unless it is allowed according to a specific contract, the use of another brand in Diners Club cards is prohibited.

#### **4.2.2. Acquirer**

The main activity of an acquirer is to affiliate merchants to the payment scheme. The activity comprises prospection of potential participants, risk analysis and formal relationship with acquired merchants, including signature of related contracts. Others activities typically include account and information management, and resolution of disputes.

In Brazil, other non-typical activities are also carried out by acquirers. The following table shows the high level of vertical integration in acquiring activity in Brazil.<sup>37</sup>

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<sup>37</sup> Each positive answer counts one point, and an acquirer can have five points as maximum score.

**Table 1 - Acquirers' level of integration**

| Activity                                     | TecBan   | Redecard | Bradesco Cartões | Visanet  | Hipercard |
|----------------------------------------------|----------|----------|------------------|----------|-----------|
| Merchant acquiring                           | Yes      | Yes      | Yes              | Yes      | Yes       |
| Selling/rental of POS terminals to merchants | Yes      | Yes      | Yes              | Yes      | Yes       |
| Transaction capture and processing           | Yes      | Yes      | Yes              | Yes      | Yes       |
| Routing of authorization requests            | Yes      | Yes      | Yes              | Yes      | Yes       |
| Clearing and settlement                      | Yes      | Yes      | Yes              | Yes      | Yes       |
| <b>Level of integration</b>                  | <b>5</b> | <b>5</b> | <b>5</b>         | <b>5</b> | <b>5</b>  |

Despite the high level of integration, it is usual the outsourcing of some activities, as it is the case of acquiring: all acquirers partially outsourced this activity. The provision of network services is partially outsourced as well, but there is not interoperability among the networks.

There is an alternative solution to individual POS for capturing of transactions in the point of sale. This solution, which is called “PDV” by market participants, consists of multiple points of capture connected to a concentrator. It is owned by the merchant and complies with technical operational standards defined by each scheme. However, even in this case the merchant must have a distinct connection with each acquirer, implying that it has to pay multiple connectivity fees.

Redecard and Visanet, respectively MasterCard single acquirer and Visa single acquirer, are the main acquirers in Brazil, accounting for 94% of the payment card transactions in volume, and 90% in value (2006). The former is a public company, and the latter a limited liability company. Both of them are Brazilian enterprises, whose ownership is depicted in the following table.

**Table 2 - Redecard and Visanet ownership's shares<sup>38</sup>**

| Redecard          |       | Visanet            |       |
|-------------------|-------|--------------------|-------|
| Citibank          | 17.00 | Bradesco           | 39.49 |
| Itaucard          | 23.21 | Banco do Brasil    | 32.00 |
| Unibanco          | 23.21 | ABN                | 14.38 |
| <i>Free float</i> | 36.58 | Visa               | 10.01 |
|                   |       | Other institutions | 4.12  |

### 4.2.3. Clearing and settlement service provider

Clearing and settlement services apply only to four-party schemes, because they involve inter-bank relationship among different issuers and acquirers.

<sup>38</sup> Source: Redecard's and Visanet's balance sheets, the former published on the Internet.

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In Brazil, clearing and settlement services concerning each scheme are carried out by the respective acquirer. In order to provide these services, the provider must be licensed by the scheme owner to act as settlement agent, and authorized by *Banco Central do Brasil*.

This service involves the payment of obligations among issuers and acquirers, and begins when the clearing and settlement service provider receives the results relating to the authorized transactions, which are provided by the scheme owner. The settlement of obligations between the cardholder and its issuer, and between the merchant and its acquirer is out of the scope this report.

In credit card transactions, the average time between the date the cardholder carries out a purchase and the date the relevant payment is due is, on average, twenty-seven days. On the other hand, the merchant receives the payment, on average, thirty days after the selling date. This payment lag is contractually set, and can vary according to the merchant segment. Thus, issuers and acquires do not incur in opportunity costs regarding this payment lag.

Due to the payment lag, merchants typically count on credit lines which are offered to them by their relevant merchant banks, and are based on the "receivables" related to the sales made through payment cards whose payments were not received yet.

In Brazil, the authorization of credit and debit card payments occurs at the moment the transaction is captured in the point of sale. For debit cards, this authorization is made concomitantly with the relevant debit in the cardholder's checking account.

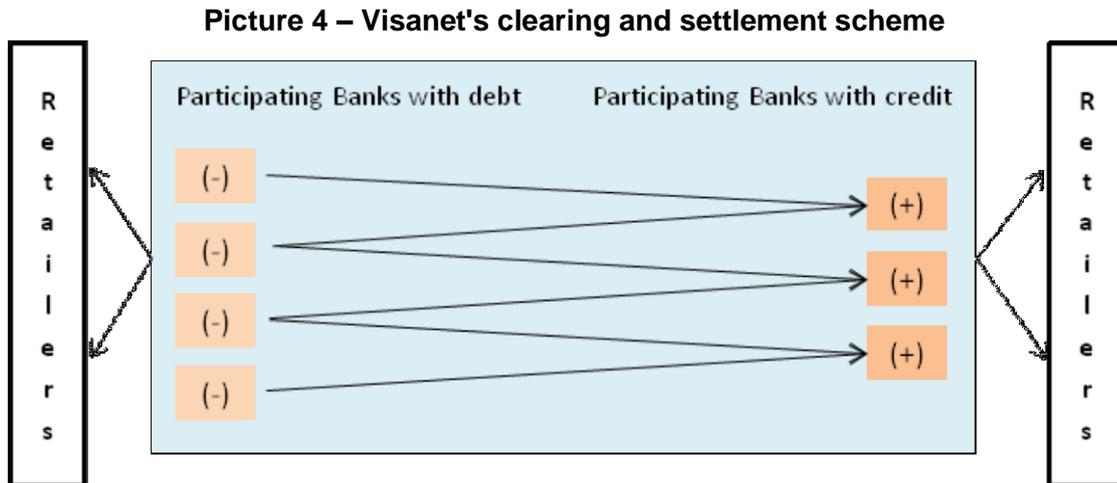
The three existing clearing and settlement service providers for payment card transactions follow different procedures and models, as it is shown bellow.

#### **4.2.3.1. Visanet**

Picture 4 shows the Visa scheme's clearing and settlement procedures for credit and debit cards, which include the payments from the acquirer to the merchant's banks. The scheme owner informs Visanet the net positions of issuers and acquirers.

Considering also its own information on merchant banks' positions, Visanet calculates their multilateral net results<sup>39</sup>, which will be considered for settlement purposes.

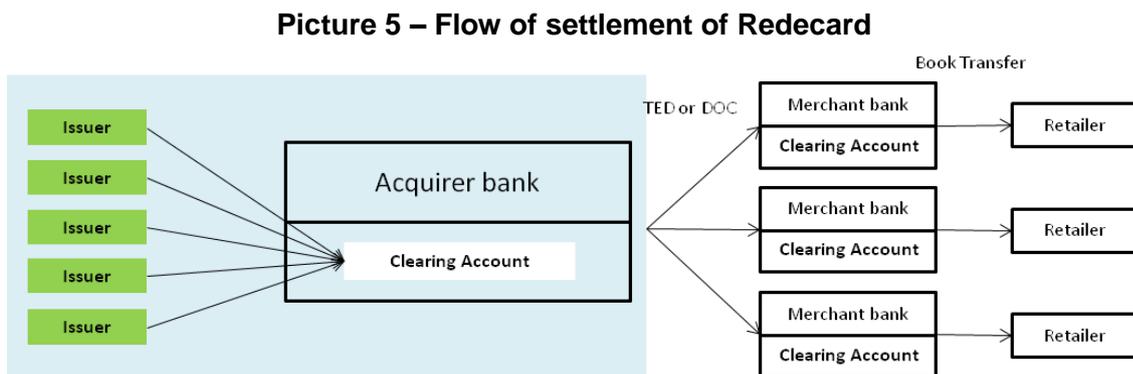
Banks having debt net positions transfer funds directly to banks having credit net positions, since Visanet does not hold an account in a settlement bank. Based on information provided by Visanet, the merchant banks credit the merchants' accounts.



**4.2.3.2. Redecard**

Picture 5 shows the MasterCard settlement model for credit cards. For debit cards, Redecard uses scheme similar to the one observed by Visanet, which is shown in Picture 4.

Redecard holds an account in each merchant bank, and also a specific account in its settlement bank where it centralizes funds received from the issuers. Through credit transfers (Doc or Ted), Redecard transfer funds from its settlement bank to its accounts in the merchant banks. Finally, it uses intra-bank funds transfers to pay the merchants having account in the same bank.



<sup>39</sup> Visanet calculates distinct net results for credit and debit cards.

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### **4.2.3.3. TecBan**

The clearance and settlement procedures related to *Cheque Eletrônico* include funds transfer from the acquirer to the merchant banks.

TecBan calculates the participant banks' multilateral net results, and those having debit position transfer funds to the TecBan's clearing account, which will be transferred to banks having credit positions.

## **4.2.4. Application of payment card business rules in Brazil**

### **4.2.4.1. No-surcharge rule**

Federal legislation restricts price differentiation based on payment instrument used by consumers. This practice is considered as abusive by the Department for Consumer Protection and Defense, since it would not be supported by the Consumer Defense Code. Besides that, based on opinion issued by the Ministry of Finance in 1994, municipal and state consumer defense bodies, the so-called PROCONs, have the opinion that there should not be price differentiation in purchases made through credit cards, as compared with purchases made through check or cash (Brazil, 1994).

Visa, MasterCard and Hipercard prohibit surcharge on payments using their cards, but allow discount for payments using other payment instruments. Since there is not direct contractual relation between the scheme owners and the merchants, the acquirers are liable for the application of this rule. American Express, Diners and TecBan do not prohibit prices differentiation.

Reflecting this scenario, a research carried out with merchants (Annex D) showed that 65% of them do not practice price differentiation based on the payment instrument used by consumers. Among those that do differentiate prices, some 90% offer a discount if the payment is made in cash. According to the research, with the discount practice, these merchants aim mainly to get clients' loyalty.

### **4.2.4.2. Honor all cards rule**

The strongest version of the honor all cards rule, i.e. the merchant obligation in accepting credit cards together with debit cards, is not observed by any payment card scheme in Brazil. It is, however, applied in its weakest version, which

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establishes that a merchant cannot discriminate payment card acceptance based on who is the issuer, or what is the payment card modality or product.

Therefore, the payment card acceptance and the merchants' certainty regarding receiving the payments do not depend on who are the issuers of the payment cards used by the cardholders.

If there were discrimination regarding the payment card issuer, modality or product, the cardholders could face constraint at the point of sale, with consequent reduction in the use of payment cards and loss of credibility concerning the system as a whole.

#### **4.2.4.3. Determination of interchange fee**

In Brazil, currently the interchange fee is set by the scheme owners. In case of international schemes, this fee is set without considering the Brazilian market's idiosyncrasies.

In debit card transactions, the interchange fee is usually set as a percentage of the merchant fee charged to merchants.

There is no differentiation according to the kind of participant, that is, all issuing banks are subject to the same rules regarding the interchange fee.

#### **4.2.4.4. Restriction to access**

In the Visa scheme, an acquirer has neither to be necessarily an issuer nor an issuer-owned institution. Also, for the same purpose, there is no requirement regarding minimum number of issued cards or minimum value of settled transactions. Both issuers and acquirers must be banks authorized to take sight deposits, or an bank-owned institution dedicated mainly to banking card business.

MasterCard rules applicable to Latin America and Caribbean require that MCI's members issue a reasonable number of cards, but there is neither a pre-set minimum number of cards nor a value of transactions to be achieved. All issuers have to be central bank-supervised financial institutions

For the same purpose, TecBan's issuers also have to be Banco Central do Brasil-authorized financial institutions taking sight deposits, and they should also

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participate in both the Brazilian RTGS system, the so-called STR, and the TecBan's Clearing House.

Diners issuers and acquirers must also be supervised financial institutions, in order to guarantee the scheme's safety.

### **4.3 Relevant Market**

To define the relevant market for a product of the payment card industry, the main question is whether existing payment instruments such as cash, check, credit transfer, debit card, credit card and private label card are part of the same market. Depending on the chosen methodology, the definition of the market will be subject to a lower or higher level of arbitrariness.

Thus, in any antitrust investigation, participants try to influence the decision on the relevant market aiming to enlarge it, since the larger the relevant market, the lower will be the share of each participant, and consequently the lower will be the possibility of attributing to some of them the exercise of market power. In case of the payment card industry, service providers argue that all payment instruments are close substitutes to payment cards, whether for cardholders or merchants, since, at the moment of the transaction, they have the option to chose the payment instrument to be used to make the payment or to receive the payment, respectively. According to this reasoning, all payment instruments should be part of the same relevant market. For instance, Visa claimed to Australian competition authority, in 2008<sup>40</sup>, that its credit cards were part of an extremely competitive market, which included several other payment instruments such as cash, checks, debit cards, pre-paid cards, and gift cards.

However, the fact that all these instruments are used for the same purpose does not imply that they belong to the same relevant market. As defined by Brasil (2001), only products whose level of substitutability is strong enough so as to redirect consumers to alternative products in case of significant price augment should be included in the same relevant market. Thus, to decide whether two products are substitutes, it is necessary consider not only its purpose, but all factors that influence consumer's choice such as price, quality, practicality and variety.

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<sup>40</sup> Submission by Visa Inc. Regarding the Payment System Board of the Reserve Bank of Australia's Assessment in the Preliminary Conclusions of The 2007/08 Review.

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According to these arguments, it is possible to number several elements to support the non-inclusion of all payment instruments in the same relevant market, taking into account the two groups of final users, that is, cardholders and merchants.

From the cardholders' point of view, payment cards are different from other payment instruments due to its practicality, quickness and safety. Credit cards also differentiate from other payment instruments regarding the credit extended to the cardholders, since, if the monthly bill is fully paid at the scheduled date, they will pay no interest rate. That is, the credit card issuer put funds at the disposal of the cardholder, and he will not have to pay any interest rate in the mentioned situation, even though, on average, the correspondent payment to the merchant is also deferred. In addition, issuers usually offer to the cardholders some reward programs based on the frequency and/or value of transactions carried out by means of credit cards. This kind of program, together with the interest rate-free period offered to the cardholders, decreases the level of substitutability between credit cards and other payment instruments, once consumers have incentives to use credit cards even when they have available funds and can use other instruments to pay their purchases.

Payment cards also differ from other payment instruments in aspects related to costs imputed to their users. Banks typically charge the issuance of a check, sometimes including the cost in a package of services, others charging this cost in individual basis. Bank notes are subject to costs if they are withdrawn from an ATM or in a banking branch, and in addition they are subjected to robbery. Electronic funds transfers are charged by occurrence, and the related cost can be fixed or proportional to the value of the transaction, according to the type of electronic transfer order. Debit cards are usually offered to banking clients free of charge, and no cost is charged by transaction. In its turn, credit cards imply a cost to the cardholders in the form of an annual payment, which collection, however, has been less common as the time goes by. Therefore, from the cardholder's point of view, all in all, the costs related to credit cards can be even negative.

For merchants, payment cards also present advantages as compared to other payment instrument, such as certainty of payment, higher level of control regarding their sale transactions, and lower specific costs. In addition, there is evidence that merchants are compelled to accept payment cards due to consumers' preference (Hayashi 2006). Indeed, despite the increasing complains about fees charged to them

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by acquirers, there has been a significant augment in the number of merchants accepting payment cards, which seems to corroborate the mentioned statement.

Payment card costs for merchants are also very different from those related to other payment instruments. In case of payment cards, merchants incur in costs concerning POS terminal rent, merchant fee, and financial costs, once in Brazil payments are transferred to merchants on average 30 days after the sale date in case of credit cards, and 2 days in case of debit cards.

On the other hand, once private labels are accepted only at the establishment issuing them, they can barely contest pure (general purpose) cards. Hence, private label cards can be excluded from credit cards' relevant market without prejudice to the analysis.

In sum, due to differences in terms of advantages and costs to both consumers and merchants, it seems to be little probable that substitutability between payment cards and other payment instruments is strong enough so as to inhibit significant and non-transitory augments in the costs related to the use of payment cards.

Also based on their specific characteristics, it seems to be clear that credit cards and debit cards should be included in different relevant markets. From the issuer side, credit free of interest rate offered to cardholders, possibility of paying the purchase in installments, and also availability of a revolving credit make difficult the substitution between credit cards and payment cards. In addition, reward programs related to the use of credit cards make more intense the differences between them, which is clearly shown by the credit cards' higher level of activation, as compared to debit cards (see Section 4.4).

Another issue concerns the possibility of access, since debit cards are restricted to those holding a checking account, while issuers are required to carry out a risk analysis in case of credit cards, implying that their supply is more limited. The larger number of issued debit cards, as compared to issued credit cards, illustrates this fact (see Section 4.4).

On the other hand, some consumers may prefer to use debit cards because they believe it is easier to control their expenditures, or they prefer to keep credit cards' credit limits for adverse moments. Thus, it is reasonable to consider that the substitution between credit and debit cards is difficult or, at least, inconvenient.

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Taking into account that, for a certain brand, the issuance side of credit cards is not part of the same relevant market for the issuance side of debit cards, it seems to be reasonable to consider that, except in a marginal way, the acceptance of credit cards cannot be replaced by the acceptance of debit cards, and vice-versa. This can be corroborated by the fact that merchants do not cease to accept credit cards, even though transactions using debit cards are subject to lower merchant fees, and the payment lag is shorter.

### **4.3.1. Geographical Relevant Market**

For both credit cards and payment cards, the geographical relevant market was defined as being the national market. Several factors, which are common to both sort of payment card, support this definition:

- Supply side coverage: final consumers – cardholders and merchants – do not have access to services supplied by firms based abroad. For merchants, this restriction is due to infrastructure issues. They can only hire acquiring, processing and network services from providers located in the same country they are located. On the other hand, typically, cardholders can only hold cards issued by national issuers, since, usually, cardholders are required to live within a certain geographical region;
- Network of merchants accepting payment card: although plenty of consumers may value international usage, the majority of transactions are carried out in local and national markets. Thus, the quantity of issued payment cards and the size of the network of merchants accepting them are the main factors for a payment card scheme to compete in the market;
- Territorial principle: as a general rule, the scheme owner licenses issuers and acquirers to act only in a limited territory, usually a country;
- Strategies and business rules: even concerning international schemes, the rules and commercial terms applying to issuers and acquirers vary from country to country. Moreover, strategic business decisions such as price, network expansion and promotional campaigns are based on

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national level, considering conditions and specificities of each market; and

- Barriers to entrance: potential competitors from other countries, on both sides of the market, face barriers to entry in a given national market.

Theoretically, the existence of a narrower relevant market cannot be excluded. However, regional products do not contest national products in a significant way, while the opposite is possible.

### **4.3.2. Product's relevant market**

The product's relevant market was defined based on separate analysis for credit and debit cards. The credit cards' relevant market was defined based on quantitative analysis, whose details are shown in Annex G. On the other hand, qualitative analysis was enough to define the debit cards' relevant market.

#### **4.3.2.1. Credit Cards**

Each side of credit card market was analyzed separately, taking into account the existence of network externalities. Hypothetical monopolist test was not necessary in its strict form, due to low substitutability among schemes<sup>41</sup>.

For acquiring side, the related activity of each major scheme, Visa and MasterCard, was initially tested against the acquiring activity of other scheme. Evidence of substitutability among them was not found. In fact, some degree of complementary was observed. This finding is corroborated by the behavior of the Brazilian merchants: according to the research carried out by the Banco Central do Brasil, 95% of merchants said to accept more than one brand, mainly Visa and MasterCard. If these brands were really substitutes, it would be expected that few merchants accepted more than one brand. Thus, taking into account that the closest substitute it is not a relevant substitute, the acquiring activity of each one of these brands will be considered as a relevant market.

In the issuance side, as in the acquiring side, it was considered which substitutes could be part of the same market. The analysis carried out has indicated to

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<sup>41</sup> For more details, see annex G.

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the change of the issuing bank within the same scheme, and not to the change of the brand. This break in the substitute chain delimited the relevant market. Thus, in the issuance side, entities issuing credit cards related to a certain brand and entities issuing credit cards related to the other brand are not part of the same relevant market.

The three-party credit card schemes, namely American Express, Diners and Hipercard, were not considered due mainly to its low participation in the market, about 10% of the total transactions in the fourth quarter of 2007. Hence, this report will not consider further investigation on the relevant market concerning these brands. In addition, it is important to highlight that three-party schemes face more difficulties to expand, since they do not count on the participation of other large banks, which usually have important role concerning retail payment schemes' acceptance.

It is worth mentioning that, in the consumer side, gross substitution among goods does not require symmetry. Therefore, taking into account the issuance side, for instance, it is possible that Visa and MasterCard credit cards, which have a large acceptance, are substitutes to three-party schemes' credit cards, while the inverse occurs in a limited scale.

#### **4.3.2.2. Debit Cards**

Taking into account that, for each scheme, debit cards were separated from credit cards, it is important to consider the possibility of substitution among debit cards using different brands, that is, in the context of this report, Visa and MasterCard. In the issuance side, according to market practices, banks usually charge no fee to cardholders concerning issuance and usage of debit card<sup>42</sup>. Another issue is that large banks do prefer to issue debit cards related to the acquirer, that is, Redecard or Visanet, from which they are shareholders. Hence, it is not possible to observe empirically substitution in the issuance of debit cards.

Concerning acquiring side, since Visa and MasterCard schemes have issued a significant number of debit cards, and therefore there is critical mass in both schemes, merchants usually opt for accepting both of them. As a consequence, there is low level of substitution in the acquiring side. Thus, one should treat the Visa Electron acquiring market and Maestro acquiring market as two separate relevant markets.

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<sup>42</sup> Besides this, National Monetary Council's Resolution 3518 has prohibited banks from charging fees to their clients concerning issuance of debit cards.

Due to its small and decreasing participation in the market, some 0.4% of the volume of transactions in the fourth quarter of 2007, *Cheque Eletrônico* is not being considered in the analysis regarding relevant market, as can be seen in section 4.5.

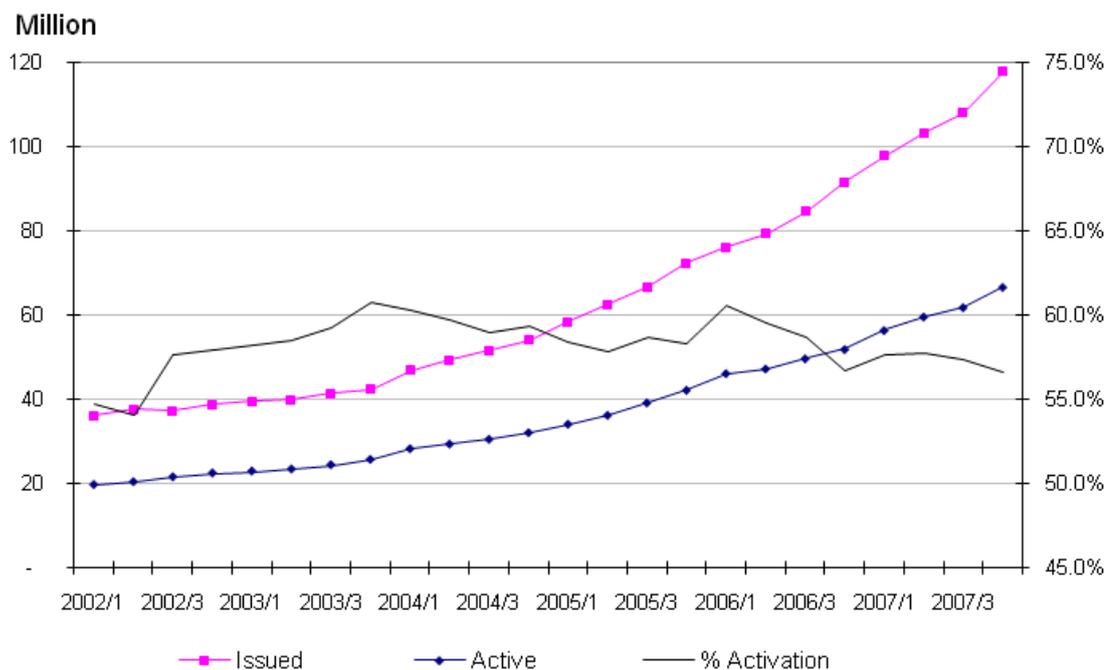
## 4.4. Payment Card Market Evolution

### 4.4.1. Payment cards – credit function

The stock of issued credit cards increased from 39 million in the first quarter of 2003 to 118 million in the fourth quarter of 2007, which represents a raise of about 200% in the period. In the same period, the stock of active credit cards<sup>43</sup> has risen 190%, reaching the mark of 66.6 million cards, with activation level<sup>44</sup> of 57%.

The two most used brands, Visa and MasterCard, represented 91% of the active credit cards in the fourth quarter of 2007.

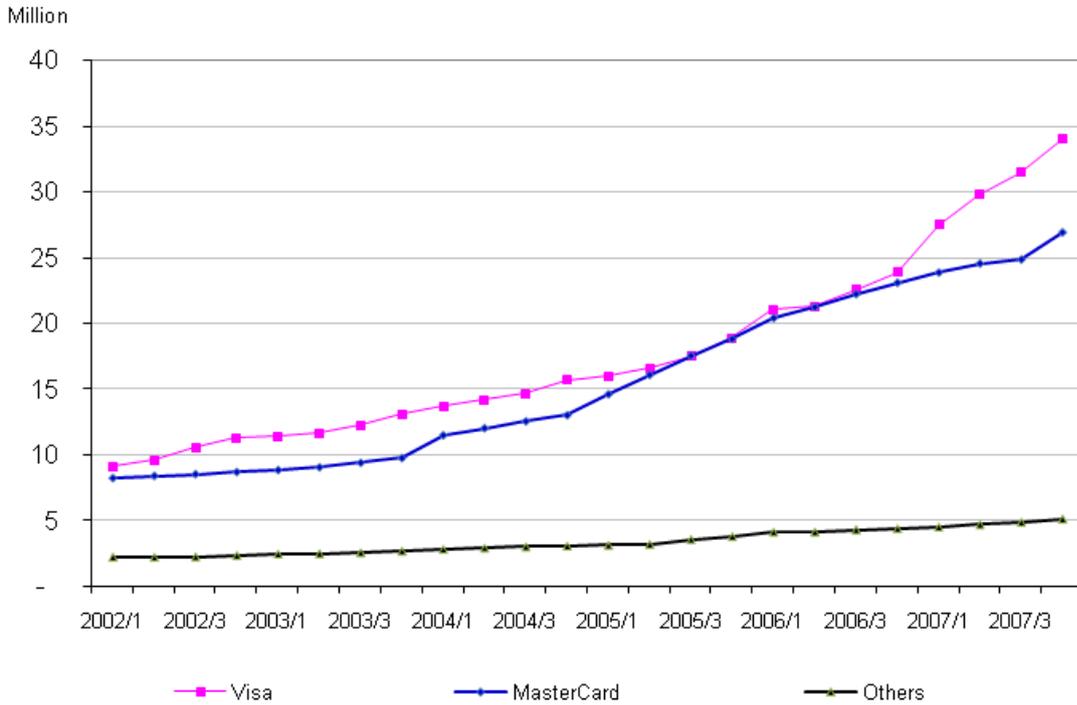
**Graph 1 – Number of credit cards**



<sup>43</sup> Active card is a card that has been effectively used at least once in the twelve months before the last day of the referential quarter.

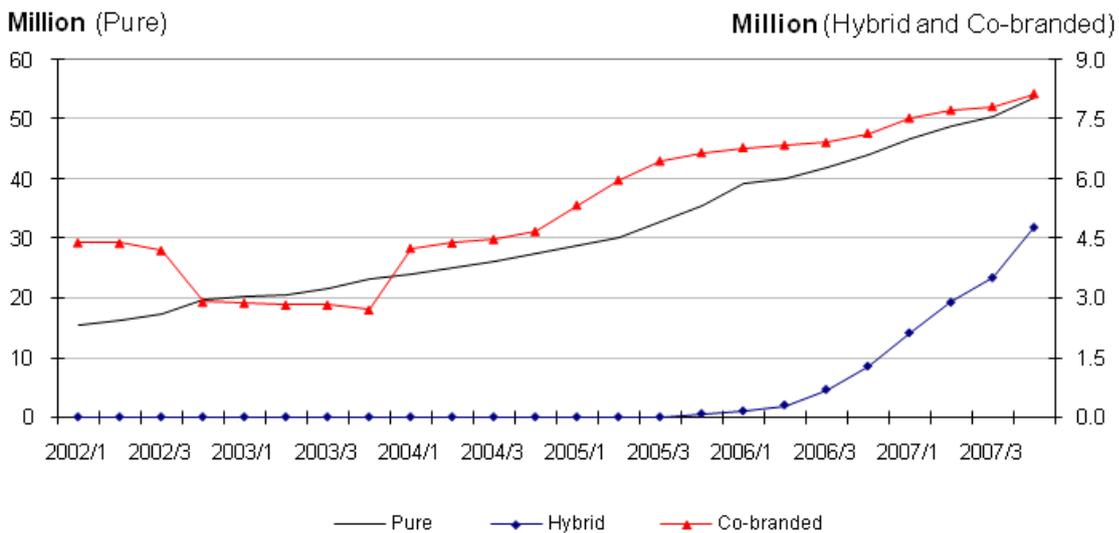
<sup>44</sup> Activation level is the relation between the quantity of active cards and the quantity of issued cards.

**Graph 2 – Number of credit cards per card scheme**



The quantity of active credit cards by modality has been changing along the time. Pure cards and co-branded cards showed an increment of 249% and 85%, respectively, from the beginning of 2002 to the end of 2007. Hybrid cards began to be issued in 2005, and since then experienced a great expansion: they reached 4.7 million of units in the end of 2007.

**Graph 3 – Number of active credit cards per card scheme**



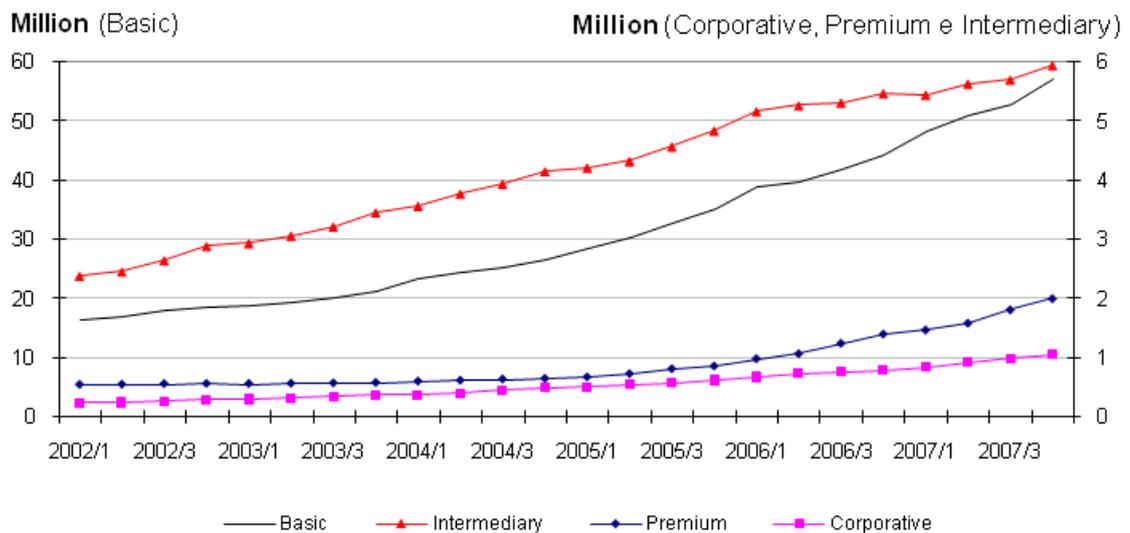
For comparison purposes, active credit cards were grouped into four categories<sup>45</sup>, taking into account the benefits they offer: “basic”, “intermediary”,

<sup>45</sup> **Basic:** MasterCard Standard (National and International), Visa Classic (National and International), and American Express Professional and Blue; **Intermediary:** mainly Gold Cards of all brands; **Premium:**

“premium” and “corporate”. Some 57 million cards, the majority of the active credit cards, belong to the “basic” category, which presented an increase of 249% from the first quarter of 2002 to the end of 2007.

In the same period, the growth of the other categories was 149%, 274% and 360%, respectively, for “intermediary”, “premium” and “corporate” credit cards.

**Graph 4 – Number of credit cards per category of product**

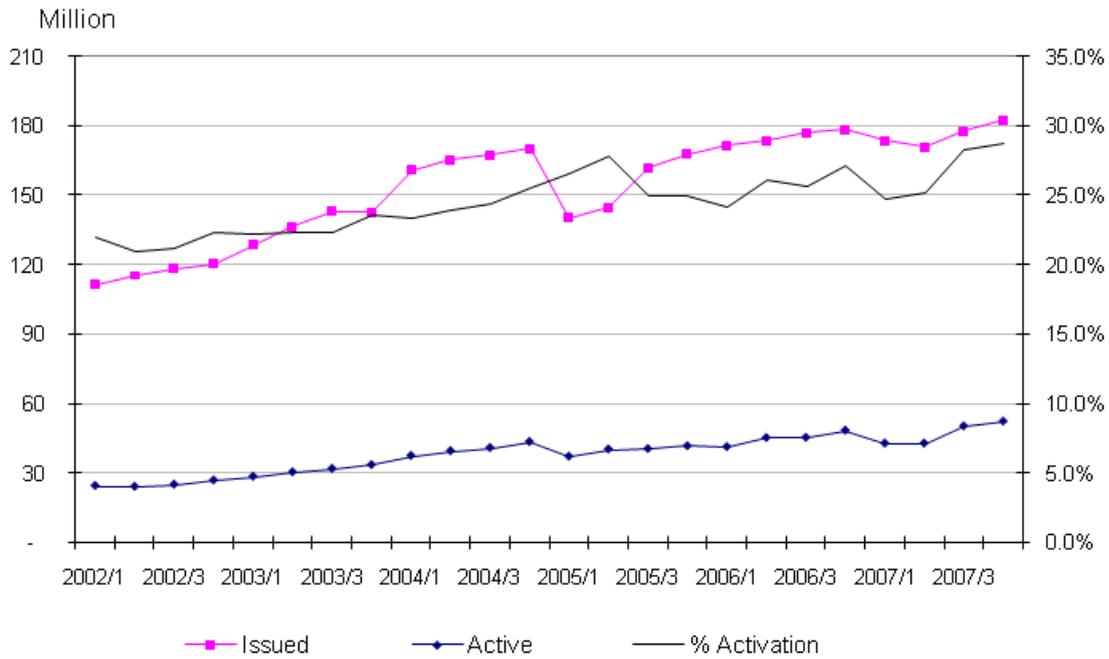


#### 4.4.2. Payment cards – debit function

The stock of issued debit cards increased 64% between the first quarter of 2002 and the fourth quarter of 2007, increasing from 111 million to 182 million, so that they maintained a reasonably stable relation with the number of checking accounts existing in the period. By the end of the fourth quarter of 2007, active debit cards amounted to some 52.3 million, with a growth of 114% in the period.

The debit card activation level reached some 29%. Although this means a lower level of activation as compared to credit cards, in the end of 2007 the stocks of debit cards and credit cards were not so different (52 million and 67 million, respectively). On the other hand, the stock of issued debit cards is larger than the stock of issued credit card, since the issuance of the former does not require a credit analysis.

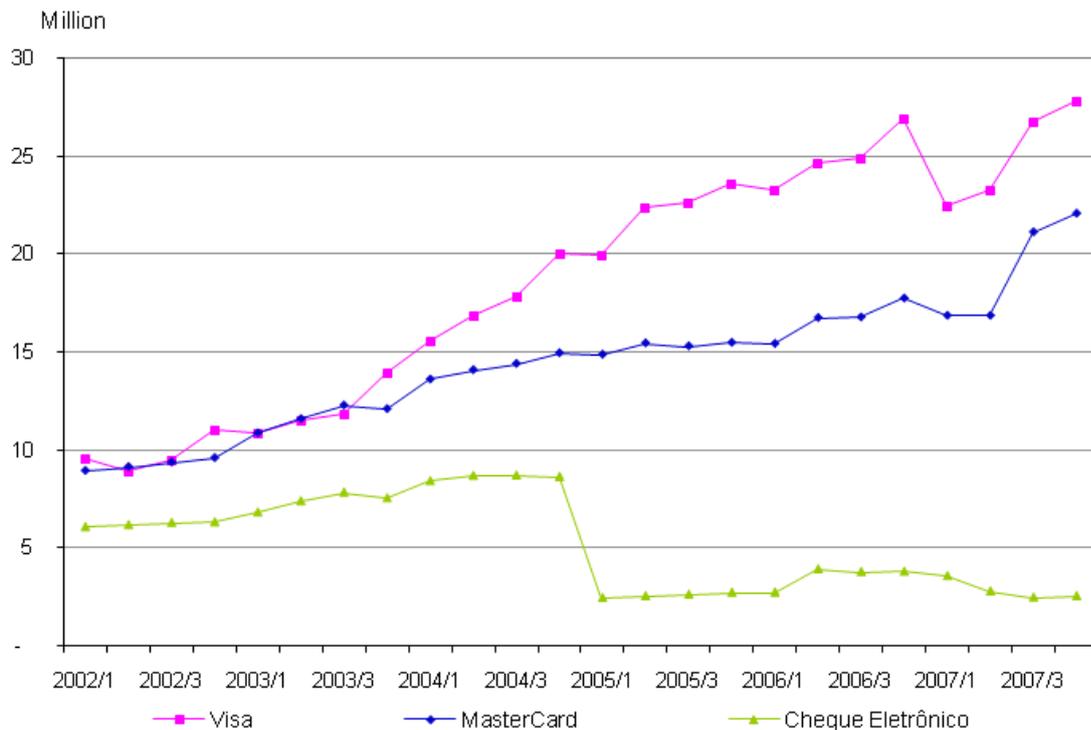
**Graph 5 – Number of debit cards**



The abrupt fall observed in issued debit cards in the end of 2004 was due to the fact that, at that moment, a large financial institution stopped issuing *Cheque Eletrônico*-branded debit cards.

Concerning active debit cards, Visa and MasterCard are also the main brands, accounting for 27.8 million units and 22 million units, respectively .

**Graph 6 – Number of active debit cards**



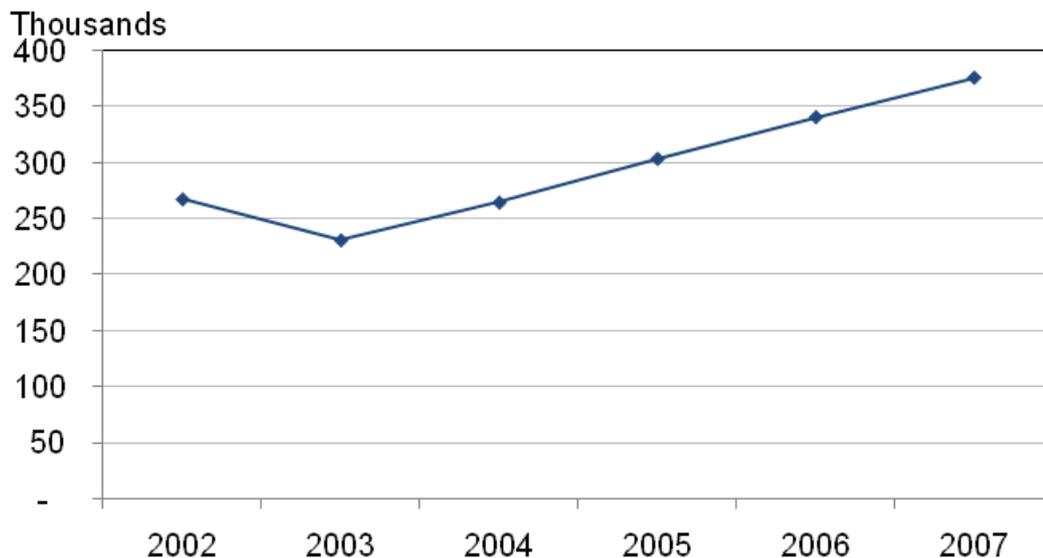
### 4.4.3. Merchants accepting payment cards

#### 4.4.3.1. Quantity of acquired merchants

Two brands lead the acquiring market concerning credit cards. In the end of 2007, considering all brands, the largest acquirer counted on 846 thousand active merchants <sup>46</sup>, and the smallest acquirer on 142 thousand,

A research conducted with merchants (Annex J) shows that Visa is the most used brand in 80.6% of the merchants, and MasterCard was cited as the second one by 71% of them. Graph 7 shows the average number of active merchants in the period from 2002 to 2007.

**Graph 7 – Average number of active merchants concerning credit function**

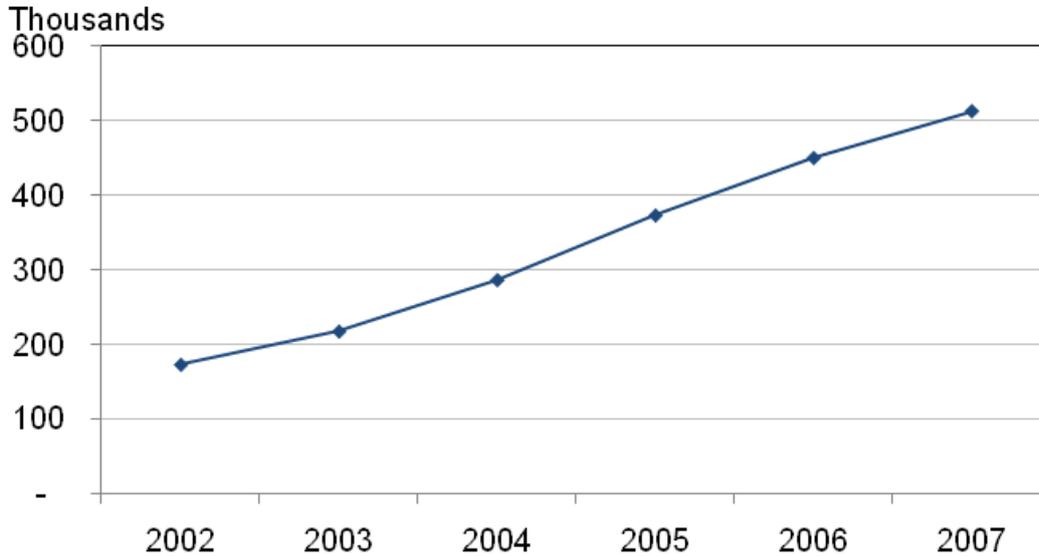


With regard to debit cards, the situation is similar. The acquirer having the largest merchant network counted on some 818 thousand merchants in 2007. There was a reduction in the growth rate of acquired merchants as a whole, which reflects the loss of merchants by the smallest acquirer that had only 19 thousand merchants by the end of 2007. This scenario may reflect a strategic decision of the Brazilian banks aimed at reducing the number of debit cards relating to a specific scheme from the beginning of 2005. Thus, as one of the most important factor relating to the acceptance of a brand is the quantity of cardholders (see Annex D), the reduction in the number of its cardholders usually make the merchants to have lesser interest in this brand.

<sup>46</sup> A merchant is considered “active” if there was at least one transaction with payment cards in the period of 180 days previous to the last day of the referential quarter.

The following graph shows the evolution of active merchants (debit function).

**Graph 8 – Average number of active merchants concerning debit function**

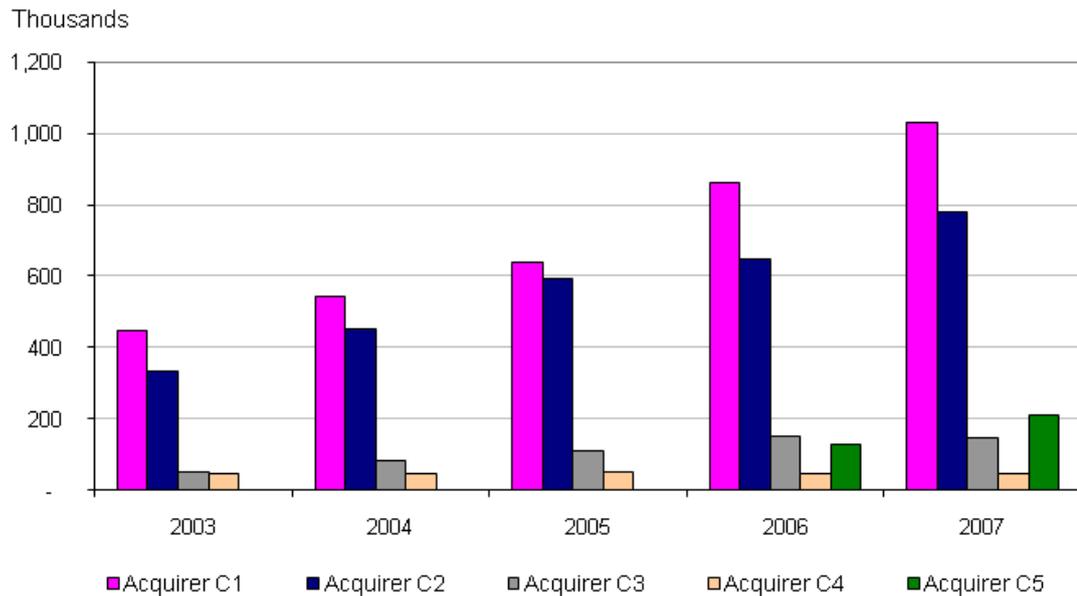


#### **4.4.3.2. Quantity of POS**

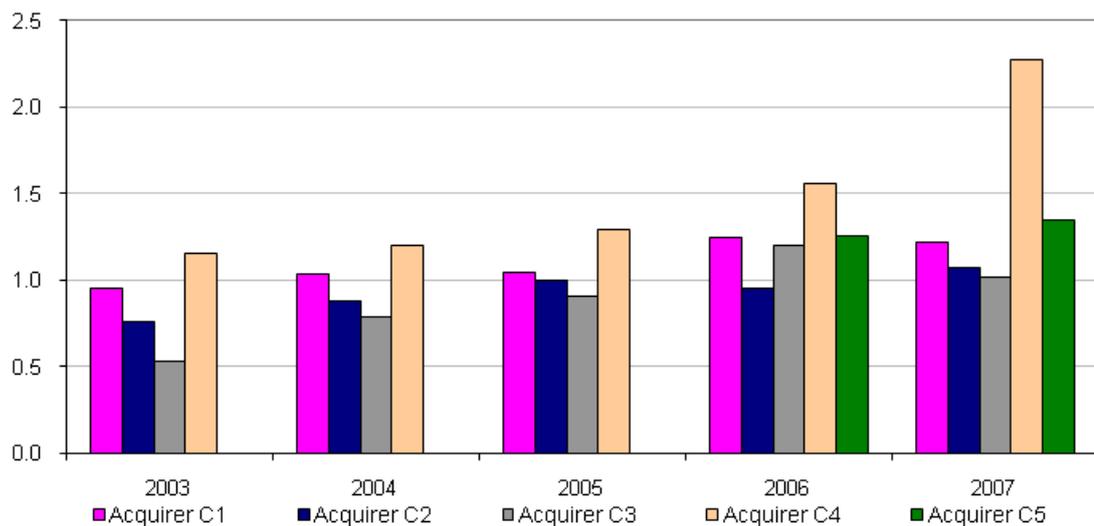
The main acquirers in Brazil use non-interoperable proprietary networks of POS terminals to capture transactions carried out through payment cards of respective schemes.<sup>47</sup>

In the end of 2007, the acquirer with the largest number of terminals had about one million POS terminals, while the smallest had around 44 thousand terminals.

<sup>47</sup> Bradesco (American Express) and Hipercard use the GetNet's network in the transaction capture process.

**Graph 9 – Number of terminals by acquirer**

The next graph shows that the rate of POS terminals by merchant is usually less than one, due to adoption of the so-called PDV by large merchants. The growth of this relation can be explained by a relative increment in the number of small merchants, which do not use the PDV solution. According to the research done with merchants (Annex D), 82.39% of them use individual POS terminals, 9.72% use only PDV, and 7.89% use both solutions.

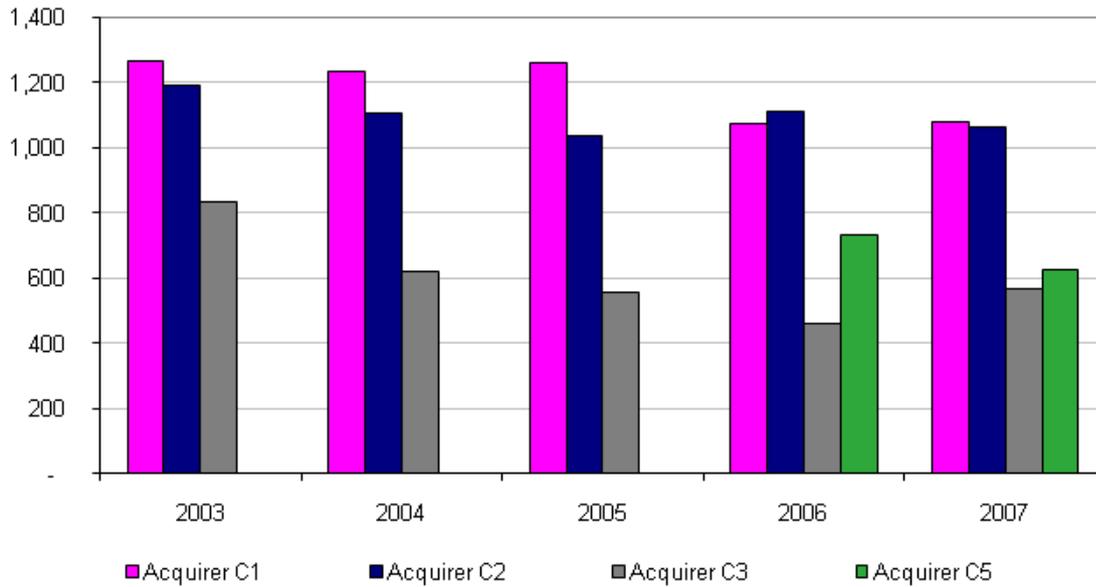
**Graph 10 – Number of POS terminals by active merchant<sup>48</sup>**

For the two largest networks, the average number of transactions per POS terminal (including both credit and debit cards), some 1000 transactions a year, is similar. It should be noted that the acquirer having the smallest POS terminal network

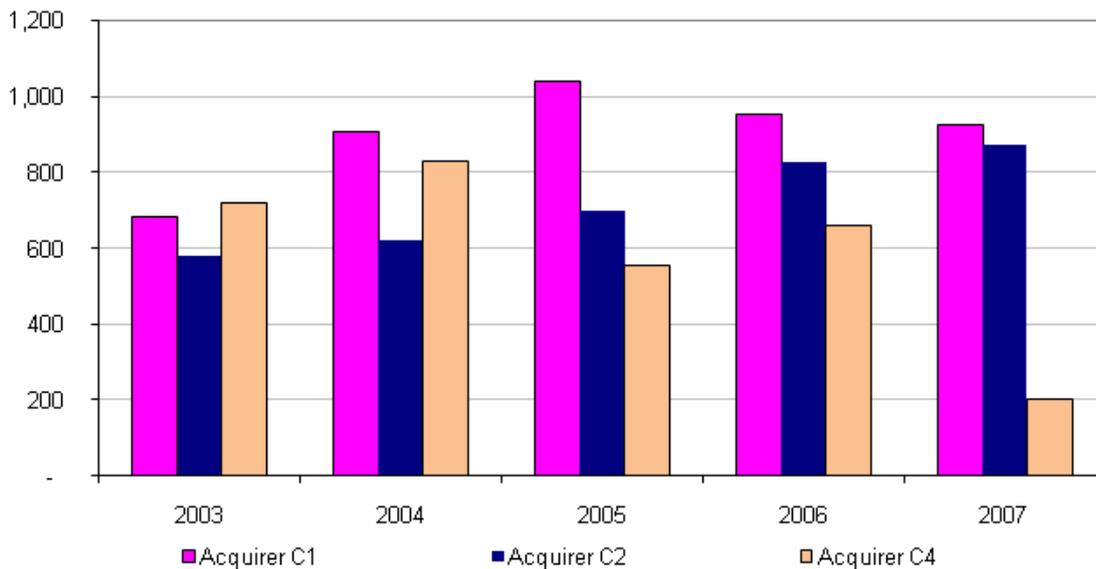
<sup>48</sup> Acquirer C5 only informed its data from 2006 on.

has experienced a continuous decrease in the number of transactions per terminal, which seems also to be a reflex of the aforementioned Brazilian banks' strategy regarding this debit card scheme.

**Graph 11 – Annual average number of transactions per POS terminal – Credit function**



**Graph 12 – Annual average number of transactions per POS terminal – Debit function**

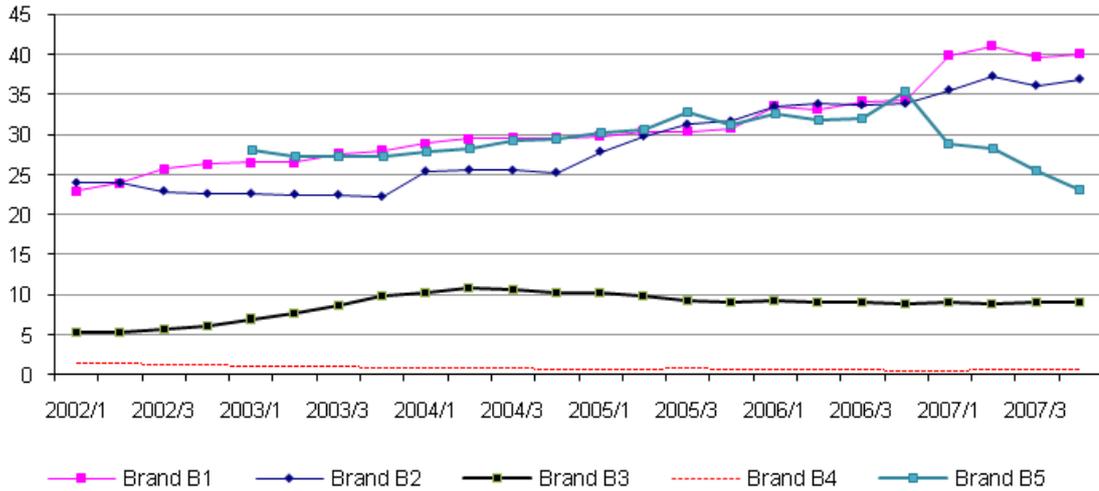


**4.4.3.3. Average quantity of payment cards per merchant**

For the two most used schemes, the growth rate of active credit cards has surpassed the inclusion rate of new merchants. This may indicate that there has been more incentive on the issuance side as compared to the acquiring side, increasing the

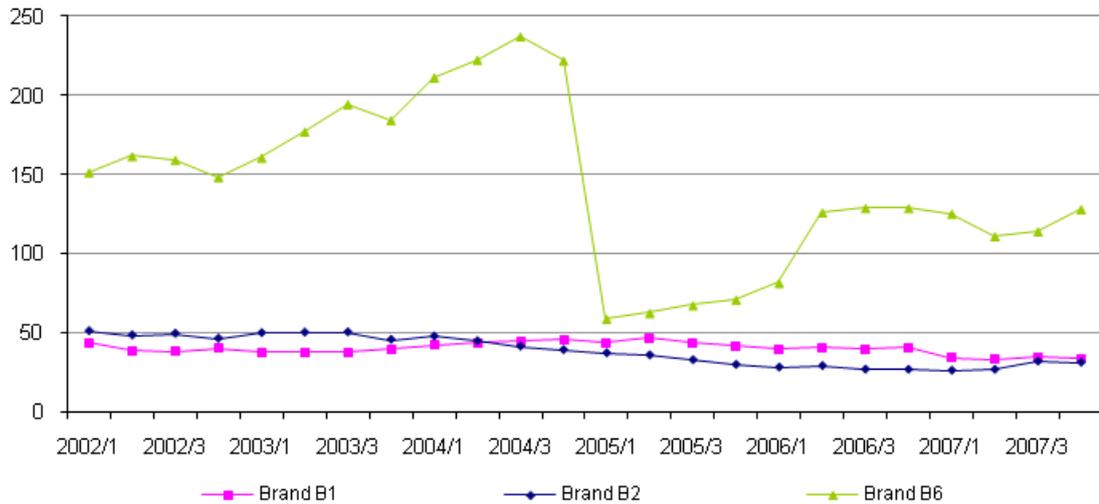
number of active cards per merchant, which reflects the existence of different price-elasticity in the two sides of the market. Moreover, the research involving merchants<sup>49</sup> showed that, when choosing a brand, the merchant does not consider the interchange fee as a key factor.

**Graph 13 – Number of active credit cards per acquired merchant**



Concerning debit cards, this relation has been stable in the last years for the two main brands. The growth in the number of debit cards is, in part, linked to creation of new checking accounts.

**Graph 14 – Number of active debit cards per acquired merchant**



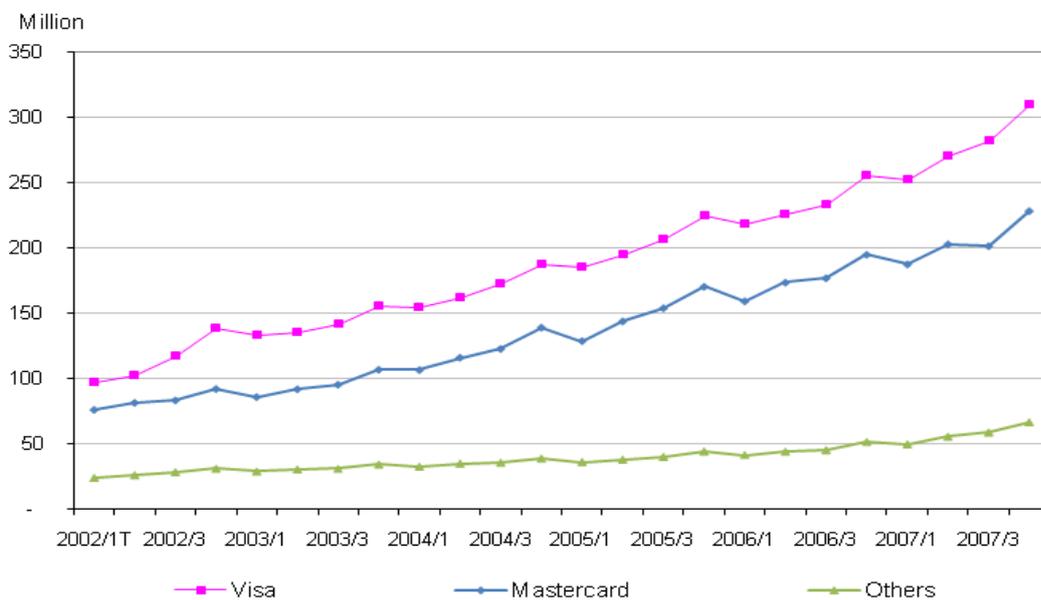
<sup>49</sup> See Annex J.

#### 4.4.4. Number of transactions

The number of transactions with credit cards has been growing up consistently since 2002, from 195 million in the first quarter of 2002 to 603 million in the fourth quarter of 2007. This represents a growth of 209% in the period.

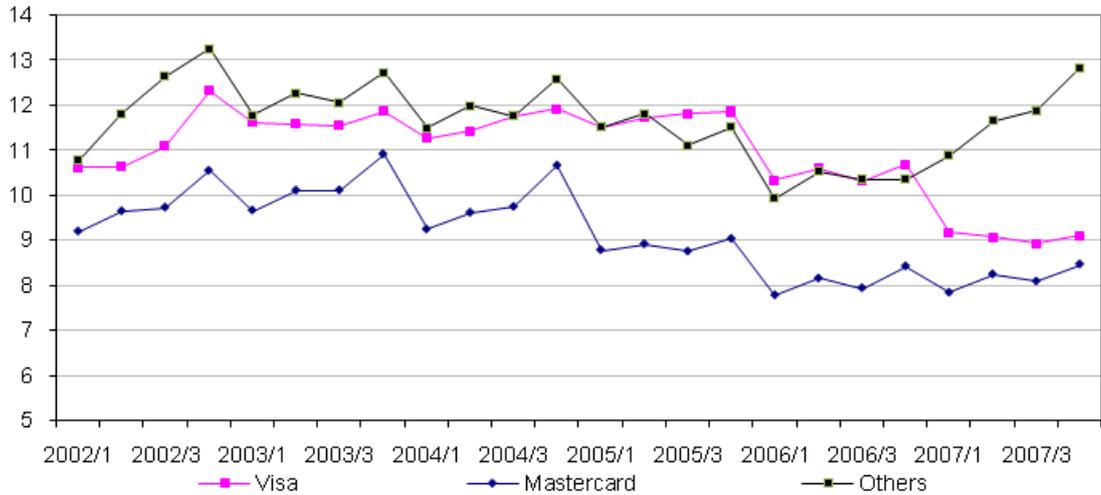
Between 2002 and 2007, the number of transactions in the Visa scheme grew 220%, and in the MasterCard scheme, 201%. The number of transactions involving other schemes increased some 183% in the same period, but one of them showed negative growth rate of 1%.

**Graph 15 – Number of credit card transactions**



The number of transactions per active credit card has been decreasing for both Visa and MasterCard schemes, while for the other schemes as a whole this relation has been increasing. This may reflect an increasing participation of people with smaller purchasing power in the composition of cardholders.

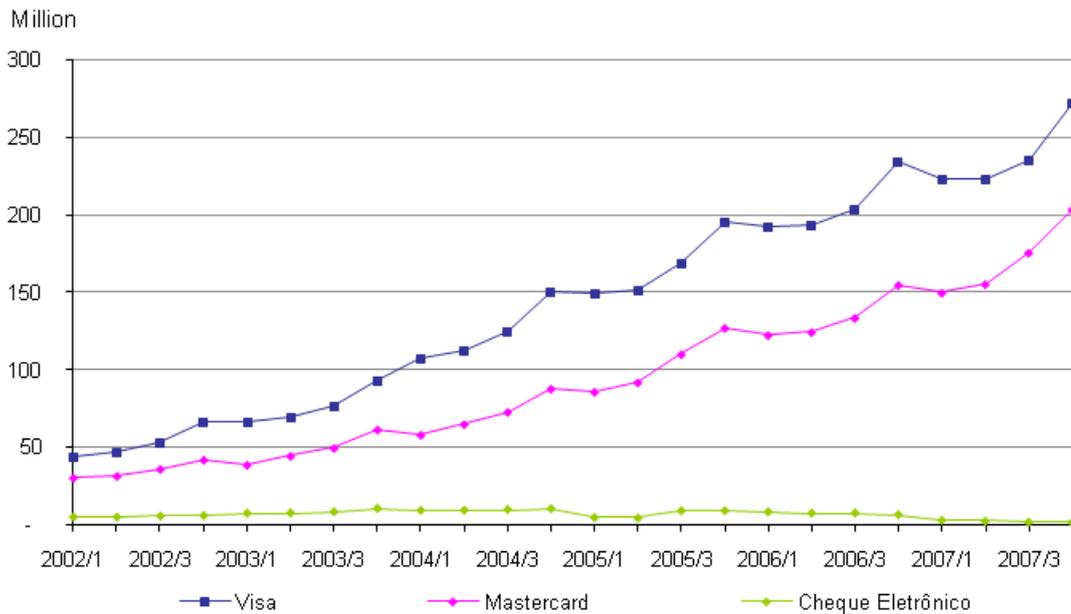
**Graph 16 – Number of transactions per active credit card**



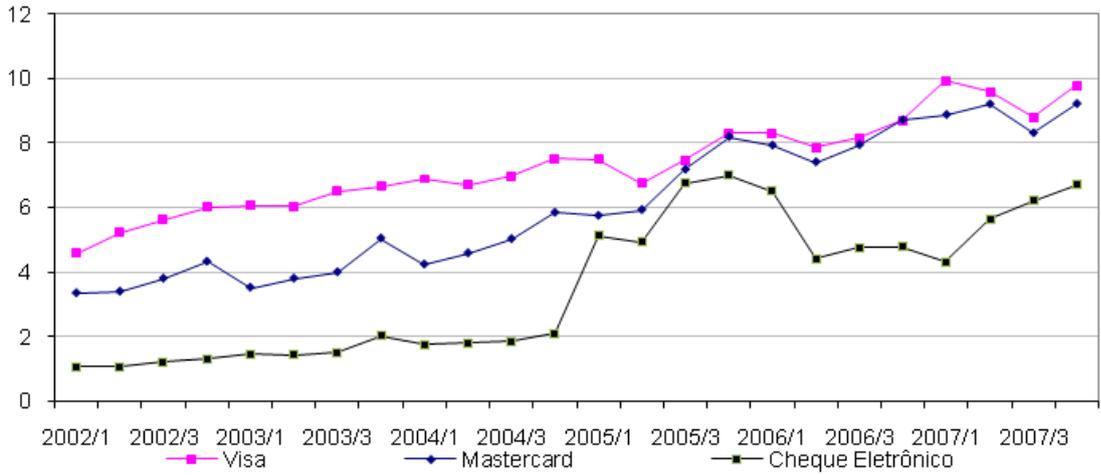
The number of debit card transactions grew consistently since 2002, from 80 million units in the first quarter of that year to 492 million in the fourth quarter of 2007, that is, a growth of 515% in the period.

This market is dominated by Visa and MasterCard schemes, which have been increasing their market due mainly to the reduction in the number of transactions involving *Cheque Eletrônico*, as a consequence of the reducing number of issued cards using this brand.

**Graph 17 – Number of debit card transactions**



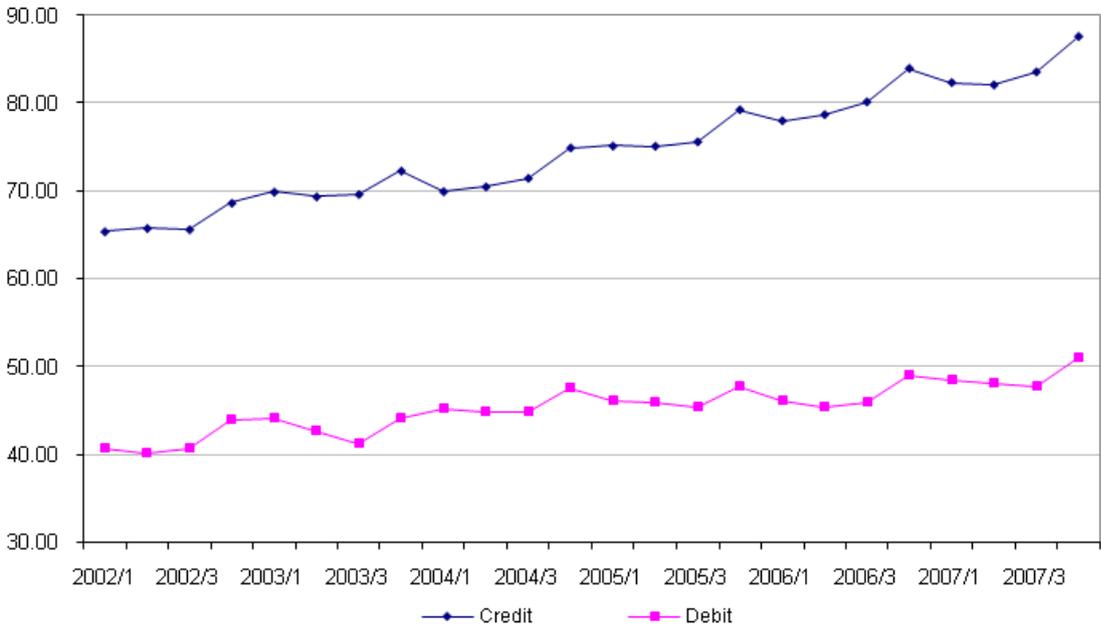
**Graph 18 – Number of transactions per active debit card**



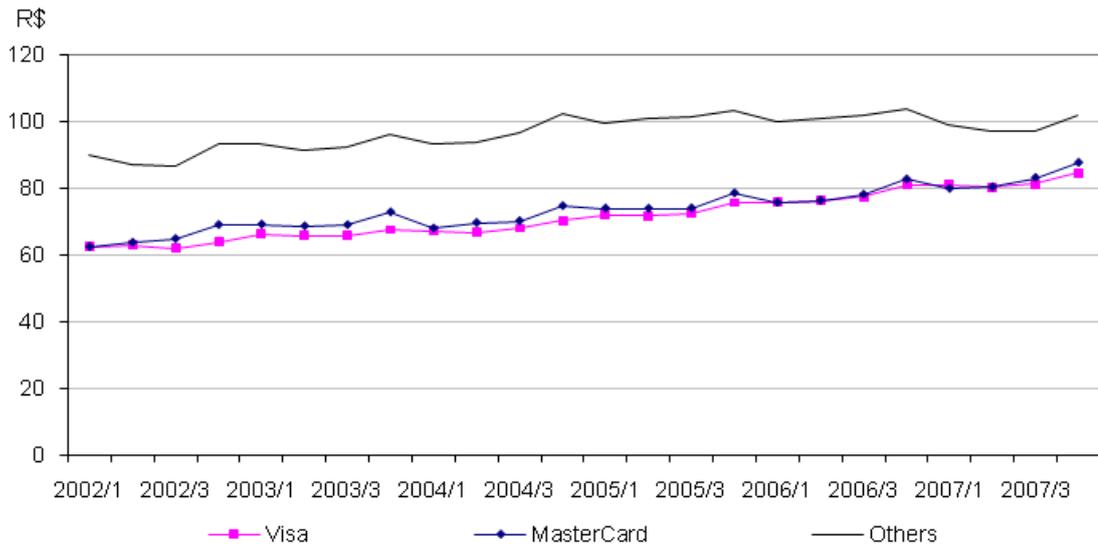
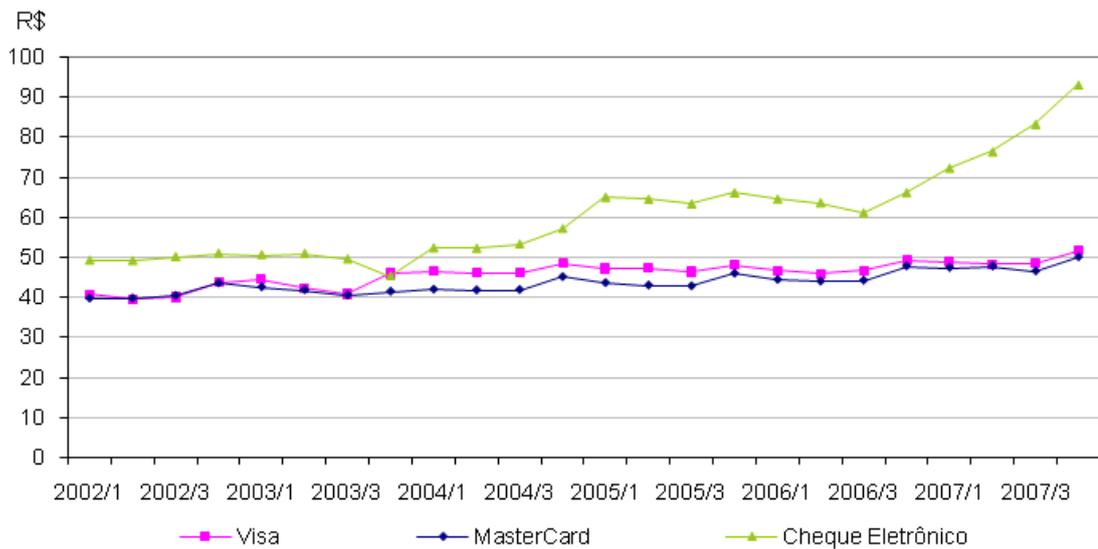
**4.4.4.1. Average value per transaction**

The average value per transaction shows that cardholders use payment cards mainly in small value purchases. It should be also highlighted that the average value per credit card transaction is larger than in debit card ones. This can be explained by the fact that, in Brazil, credit cards can be used for purchasing goods in installments with no interest rate (merchants' credit).

**Graph 19 – Average value per payment card transaction**



Concerning credit function, differences in average value of transaction show that each scheme focuses different market niches. This pattern cannot be found in debit transactions, as the divergence showed reflects a smaller sample of one of the brands.

**Graph 20 – Average value per credit card transaction****Graph 21 – Average value per debit card transaction**

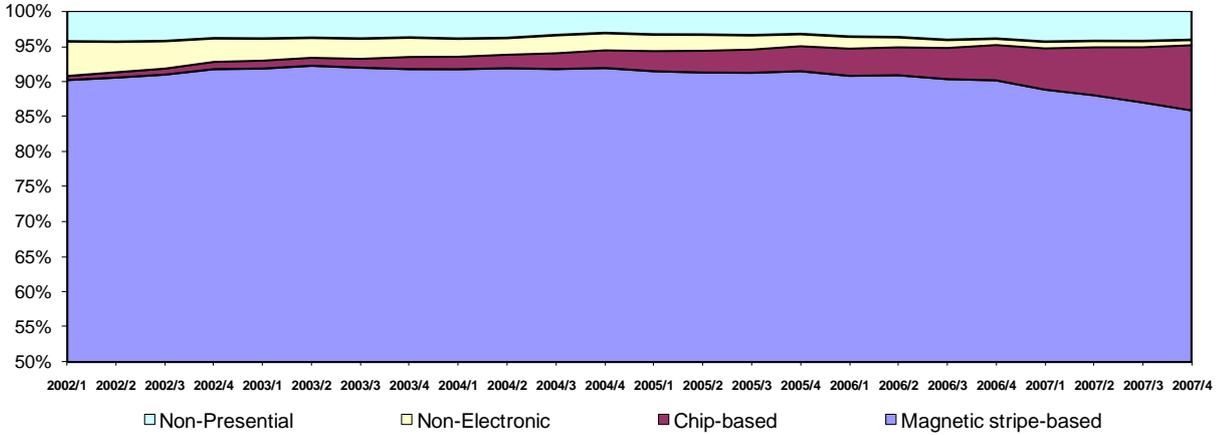
#### 4.4.4.2. Per Capture

The capture of transactions is done mainly by electronic means and in the presence of cardholder. In the fourth quarter of 2007, this form of capture represented about 86% of the credit card transactions. The non-electronic capture has been drastically reduced along the time, showing a residual participation (less than 1%) in the fourth quarter of 2007. Capture without cardholder's presence was quite stable during the period, reaching 4.1% of the total.

The capture involving chip-based payment cards and cardholder presence has been growing, reaching 9.3% of the total transactions in the fourth quarter of 2007. The crescent use of chip-based payment cards indicates a move towards safety in the

payment card industry, which has been adopted by Visa and MasterCard, and its introduction requires coordinated action among issuers, scheme owners and acquirers, with incentives for all participants of the network.

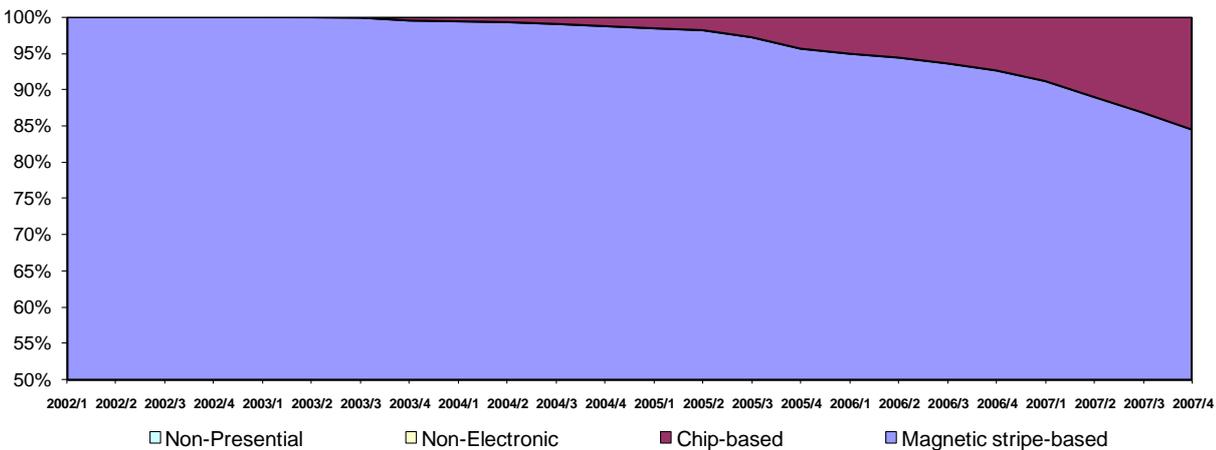
**Graph 22 – Percentage of transactions – capture – Credit function**



For debit card transaction, the main form of capture is electronic and involves mainly magnetic stripe-based cards, which represents about 84.5% of the 494 million transactions carried out in the fourth quarter of 2007.

The transactions without cardholder presence are still quite restricted, reaching just 15 thousand transactions in the fourth quarter of 2007. The electronic capture involving chip-based cards has grown, reaching 15.5% of the total transactions in the same period.

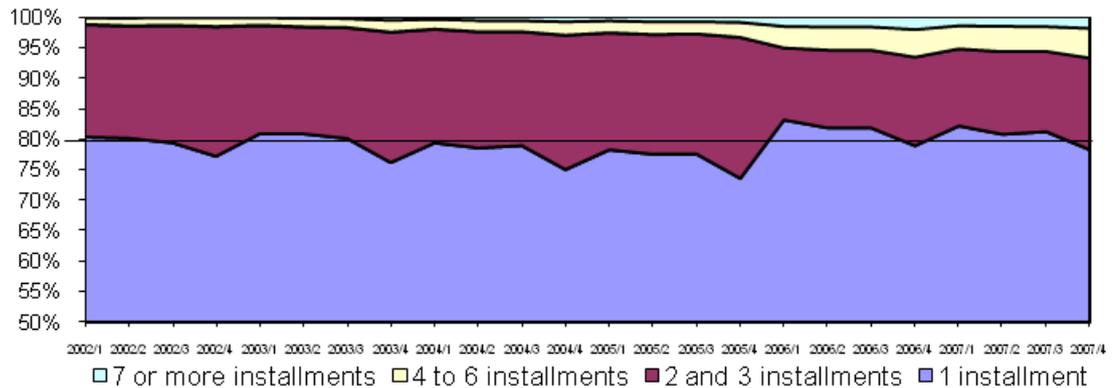
**Graph 23 – Percentage of transactions – capture – Debit function**



#### 4.4.4.3. Per form of payment (number of installments)

Most purchases using credit cards (78.2%) are done for payment in just one installment. However, the number of purchases involving a larger number of installments has been increasing along the time.

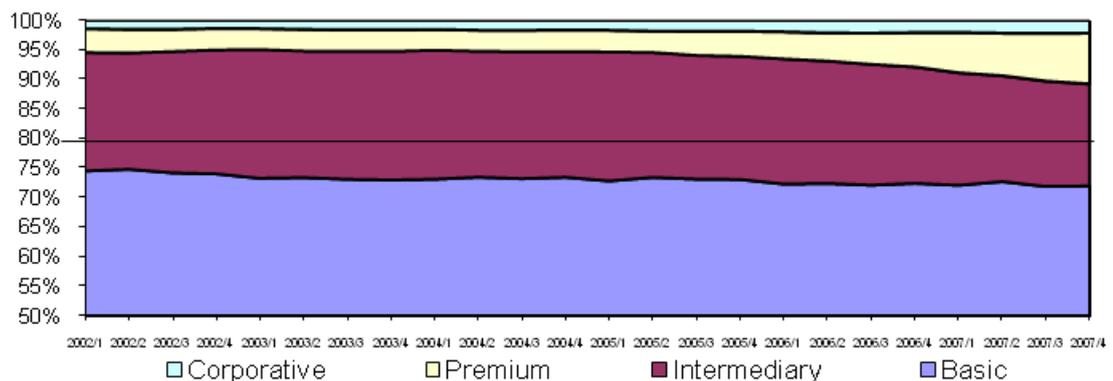
**Graph 24 – Percentage of transactions according the number of installments (credit function)**



#### 4.4.4.4. Per product category

Transactions involving “basic” credit cards represented, in the end of 2007, 72% of the total. The “premium” category has experienced a major increase, with a growth of 556% between 2002 and 2007, while transactions with “intermediary” cards increased 165%, reducing its relative participation.

**Graph 25 – Percentage of transactions per product category – Credit function**

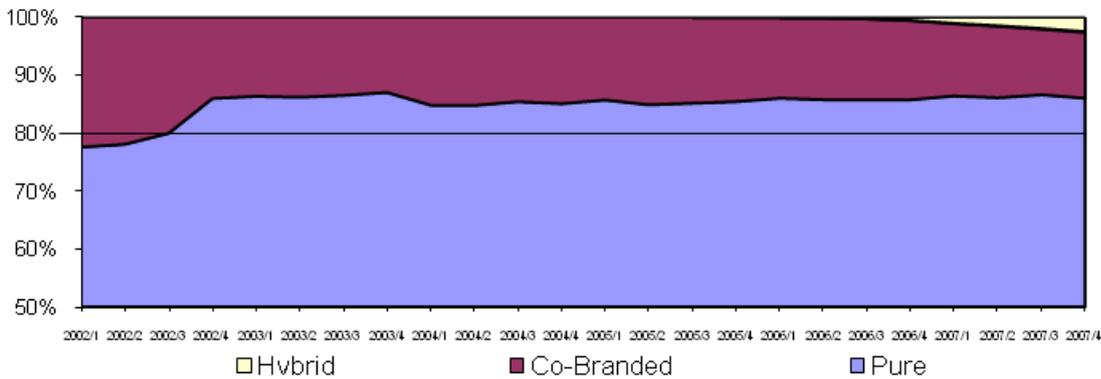


#### 4.4.4.5. Per payment card modality

In the end of 2007, in spite of hybrid cards had a relative participation of 7.2% in the total of issued cards, they represented just 2.6% of the total transactions carried out through credit cards. On the other hand, pure cards had participation of 80.6% in terms of issued cards, and represented 86% of the total transactions. Co-

branded cards had practically the same participation regarding the number of issued cards, 12.2%, and the number of transactions, 11.4%.

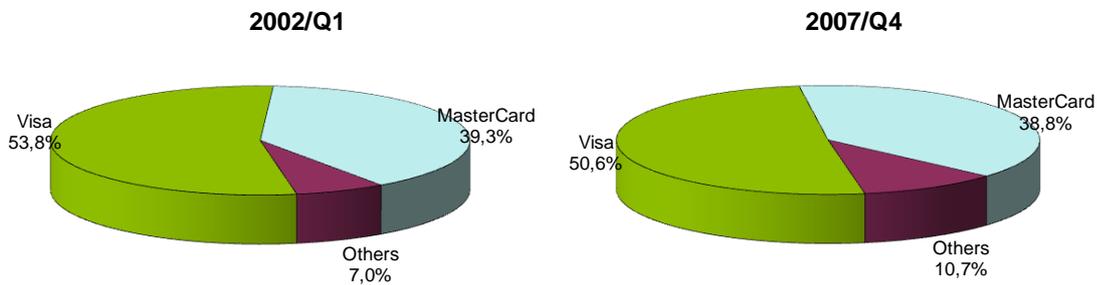
**Graph 26 – Percentage of transactions per credit card modality – Credit function**



### 4.5. Concentration

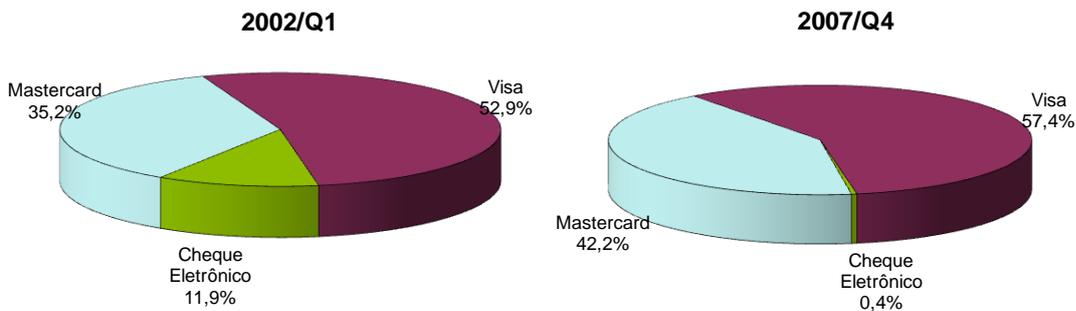
Considering the number of credit card transactions, the market share of each brand was relatively stable when comparing the first quarter of 2002 to the fourth quarter of 2007.

**Graph 27 – Market share (number of transactions) – Credit function**



In the market of debit cards, there was a strong reduction in transactions concerning *Cheque Eletrônico* scheme, which had a residual participation in the end of 2007.

**Graph 28 – Market share (Quantity of transactions) – Debit function**



### 4.5.1. Issuers

In what follows, information on concentration inside each scheme (scenario "a") is presented, as well as for all schemes as a whole (scenario "b"), separately for credit and debit cards.

Concerning the first approach, it is worth highlighting that in three-party schemes there is just one issuing institution. For American Express, Hipercard and Diners, the issuers are, respectively, Banco Bradesco Cartões S.A, Unibanco and Citibank. Therefore, no concentration analysis was performed regarding issuance side for these schemes.

In four-party schemes there are several issuers that compete among them, and the concentration indicators are influenced by the Brazilian banking system structure. For these schemes, the participation of the four largest issuers will be compared to the others, and the Herfindahl-Hirschman Index (HHI) will be calculated taking into account data available for the last quarter of the years 2003-2007. The following table shows the limits of this index:

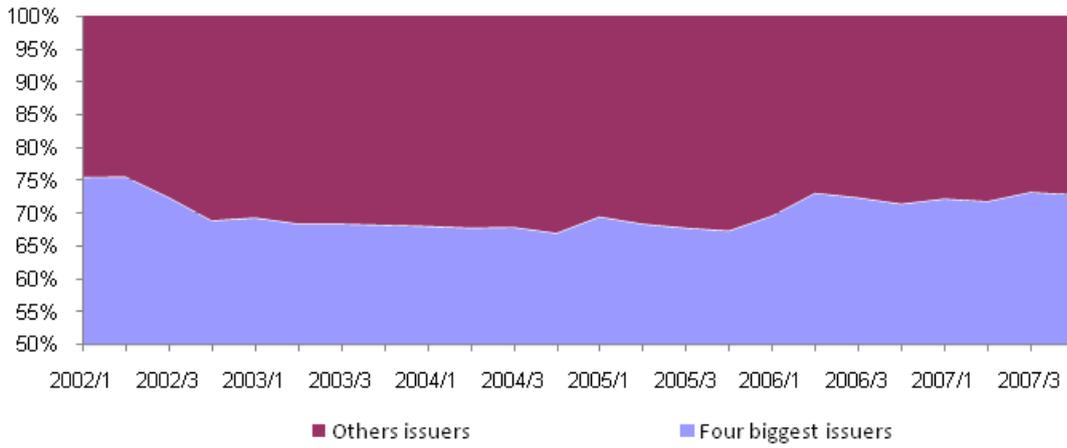
| <b>Market Concentration</b>                                                                          |                        |
|------------------------------------------------------------------------------------------------------|------------------------|
| HHI < 0,1000                                                                                         | Low concentration      |
| 0,10000 < HHI < 0,1800                                                                               | Moderate concentration |
| HHI > 0,1800                                                                                         | High concentration     |
| According Horizontal Merger Guidelines - USDOJ and Federal Trade<br>Comission, Issued: April2, 1992. |                        |

#### 4.5.1.1. Credit function

##### *Visa Main Issuers*

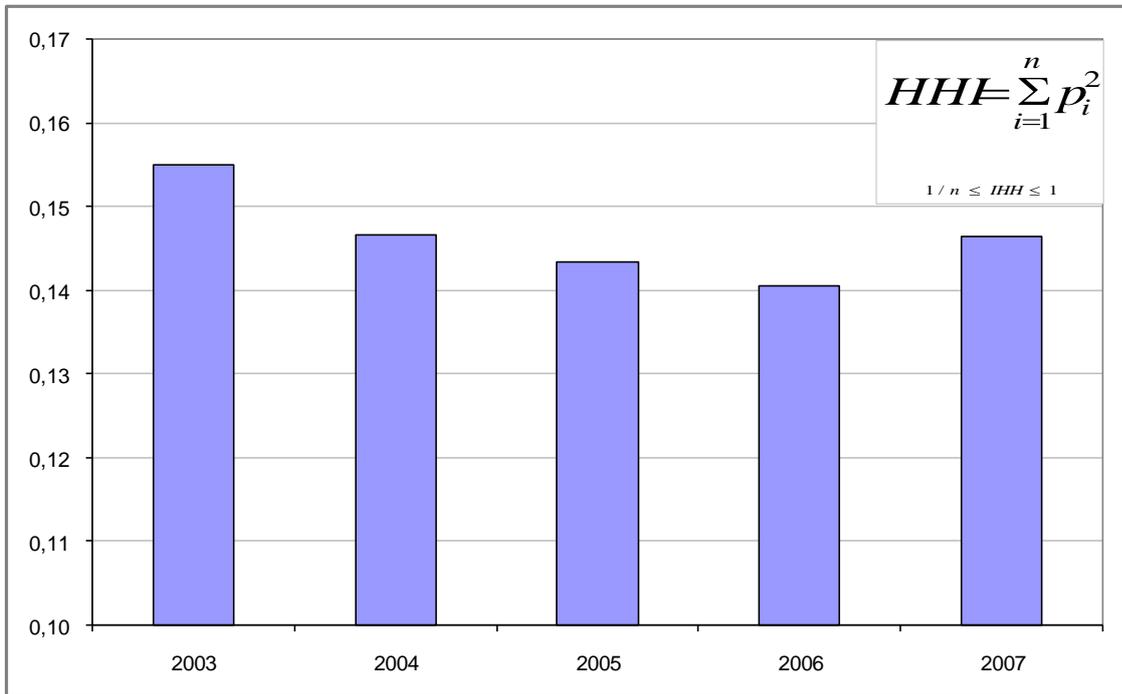
In the fourth quarter of 2007, the Visa scheme's four largest issuers accounted for about 69% of the active credit cards, and 72.8% of the number of transactions. In the same period, the three major Visanet shareholders accounted for 58.2% of the number of transactions. Graph 29 shows the four largest Visa issuers' market share along the period from 2002 to 2007 (number of transactions). It can be noted that, in the analyzed period, there was a small decreasing in the level of concentration, moving from 75.4% in the first quarter of 2002 to 72.8% in the fourth quarter of 2007.

**Graph 29 – Market share of the four largest Visa issuers – Credit function (number of transactions)**



The evolution of HHI regarding Visa issuers indicates the existence of moderate concentration, which is in part explained by the current banking structure.

**Graph 30 – Visa scheme's concentration index – Credit card issuers (number of transactions)**

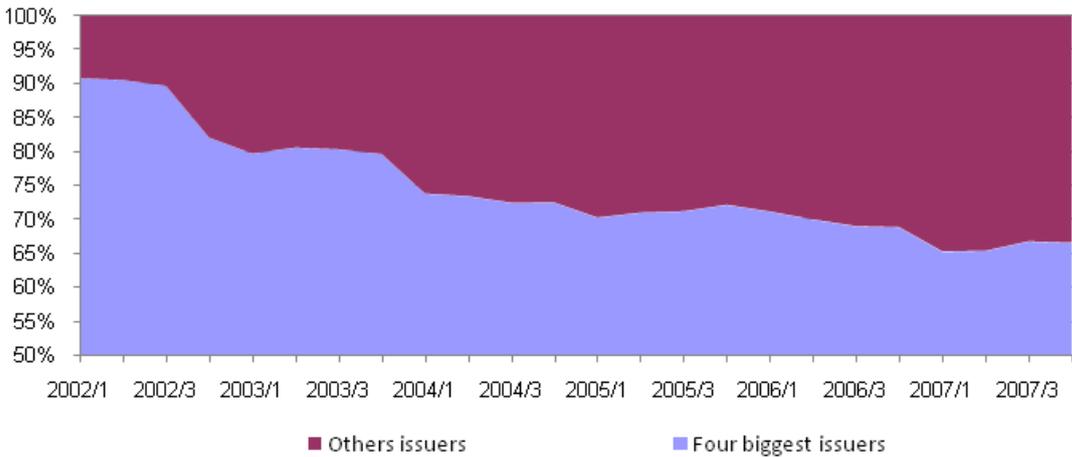


**MasterCard main issuers**

In December of 2007, the four largest MasterCard issuers were responsible for about 66% of active credit cards, and those issuers that were Redecard's shareholders accounted for 56.2% of them. Taking into account the number of transactions, the four largest issuers held about 66.4% of transactions, and the Redecard's shareholders, 57.4%.

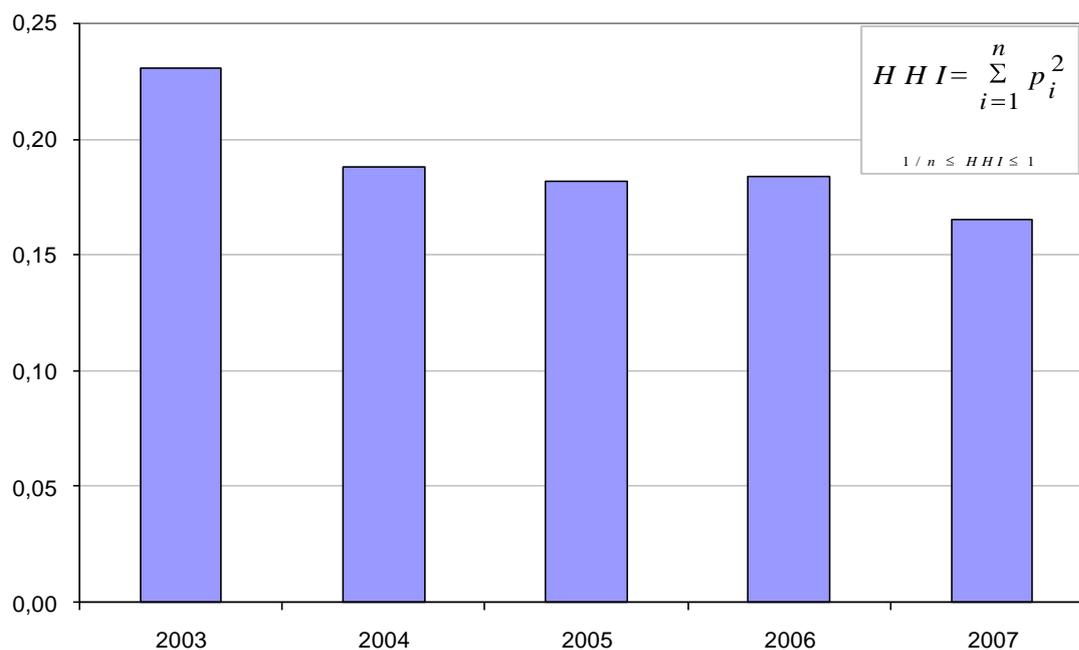
Graph 31 shows that concentration in MasterCard’s scheme has fallen more strongly than the reduction observed in Visa scheme.

**Graph 31 – Market share of the four largest MasterCard issuers – Credit function (number of transactions)**



The HHI for issuers in MasterCard’s credit card market in the period from 2003 to 2006 was above 0.18, indicating a high degree of concentration. In 2007, the index indicated moderate concentration.

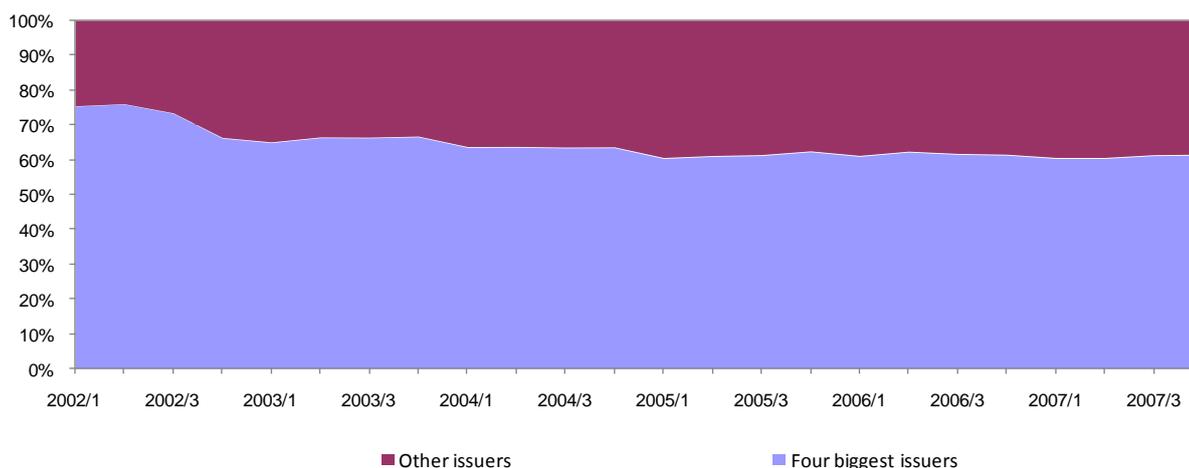
**Graph 32 – MasterCard scheme's concentration index – Credit card issuers  
(Number of transactions)**



**Main Issuers considering the credit card issuance market as a whole (all schemes)**

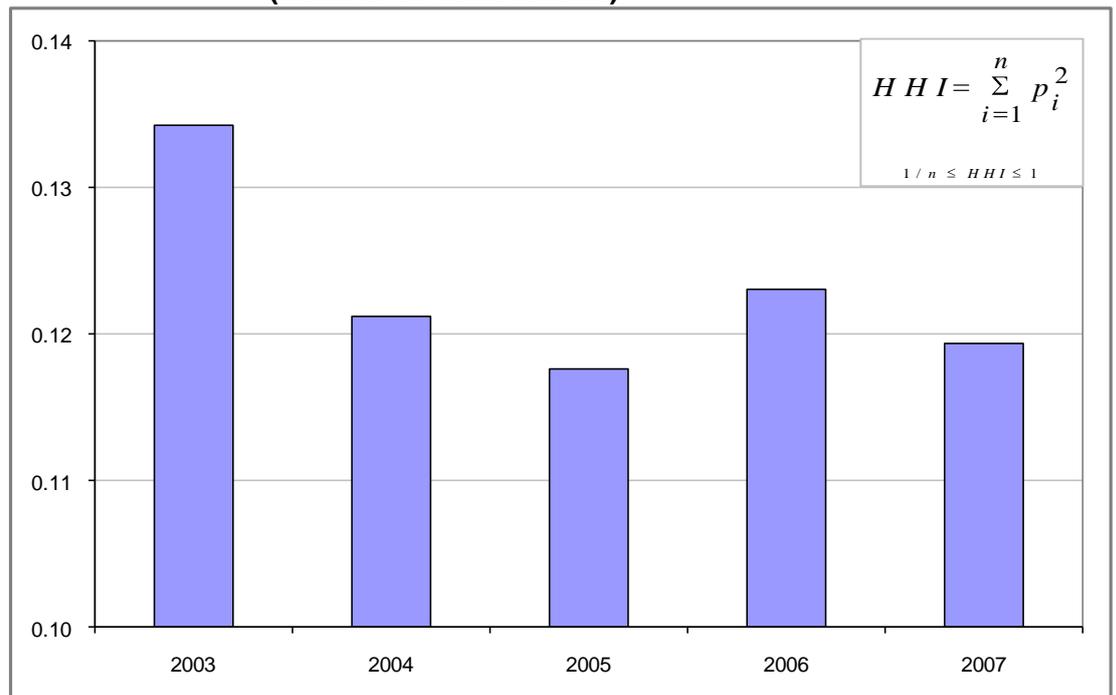
Considering the banking system structure in December 2007, the four largest issuers accounted for some 64% of the active credit cards. In the last quarter of 2007, these issuers accounted for 61% of the relevant transactions in terms of volume.

**Graph 33 – Market share of the four largest issuers – Credit function  
(Number of transactions)**



In the period 2003-2007, the credit card market showed an HHI between 0.10 and 0.18, indicating moderate concentration.

**Graph 34 – All schemes' concentration index – Credit card issuers  
(Number of transactions)**



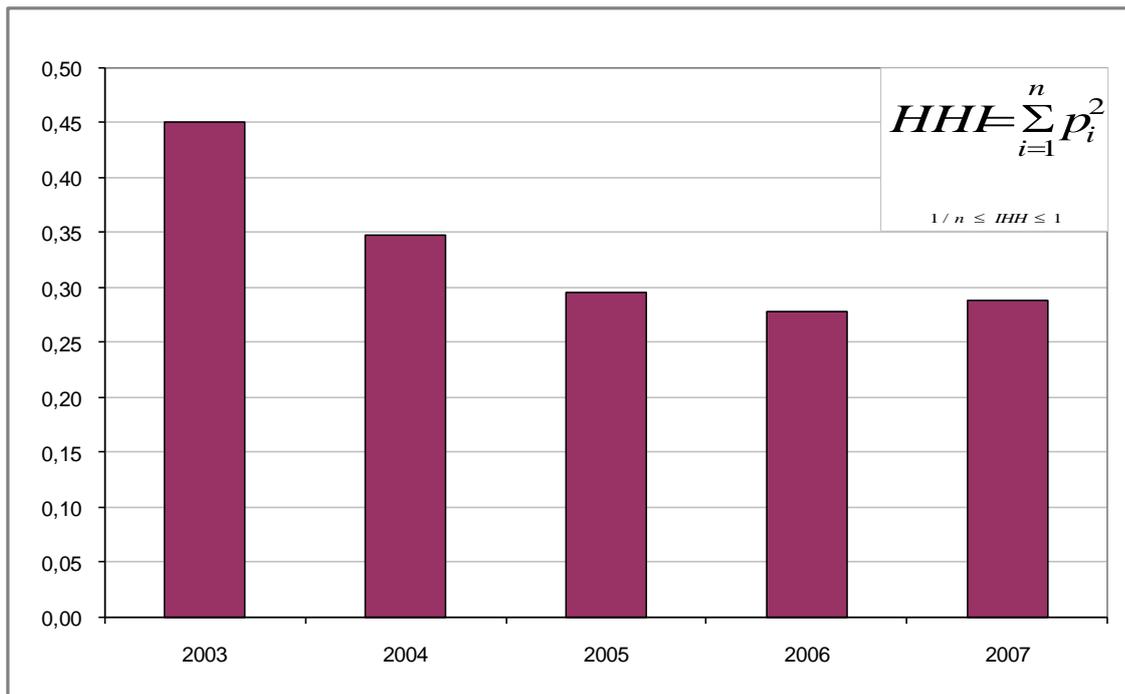
#### **4.5.1.2. Debit function**

##### ***Visa main issuers***

The four largest Visa debit card issuers accounted for about 90% of active cards in the fourth quarter of 2007, which reflects the effect of the Brazilian banking market concentration together with the fact that they are shareholders of the relevant acquirer, that is, Visanet. The three partners of Visanet accounted for 83.7% of the Visa active cards by the end of 2007. In the same period, the four largest issuers were responsible for 92.7% of Visa debit card transactions, while the Visanet's three major shareholders held 87.4% of these transactions.

The concentration index in the debit card market was high and showed a larger variation when compared to concentration index relating to credit card market. Along the analyzed period, in spite of the tendency of reduction, the index still shows a large concentration in the market.

**Graph 35 – Visa scheme's concentration index - Debit cards issuers  
(Number of transactions)**

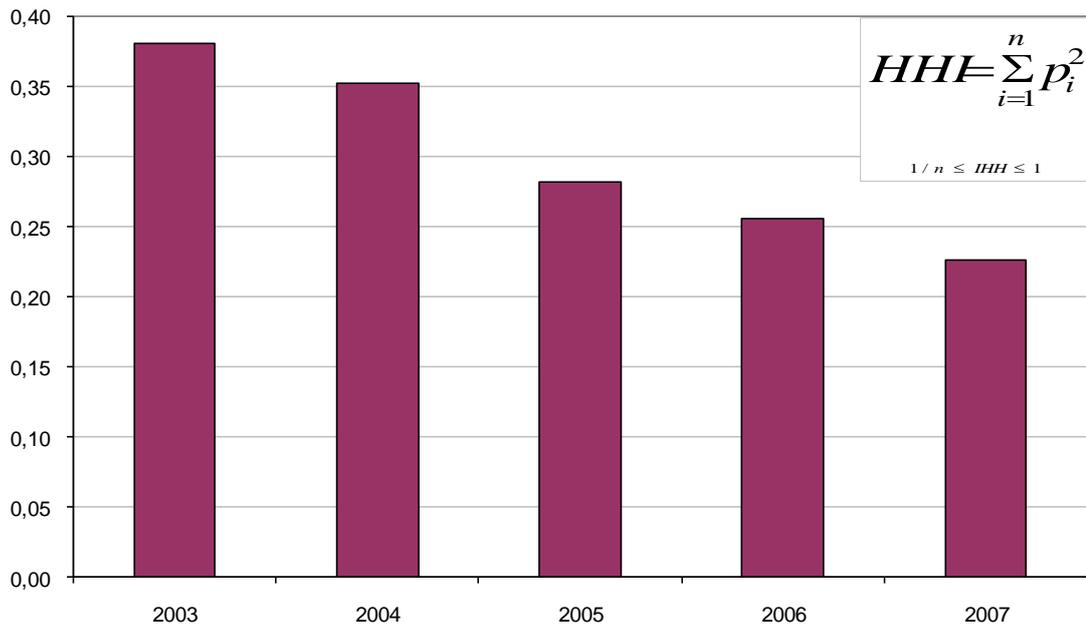


### **MasterCard main issuers**

The four largest issuers were responsible for about 76.4% of active debit cards in the fourth quarter of 2007, and some 77% of the total transactions.

As in the Visa debit card market, there was a reduction in the concentration index, which, however, still indicates a high level of concentration.

**Graph 36 – MasterCard scheme's concentration index – Debit card issuers  
(Number of transactions)**



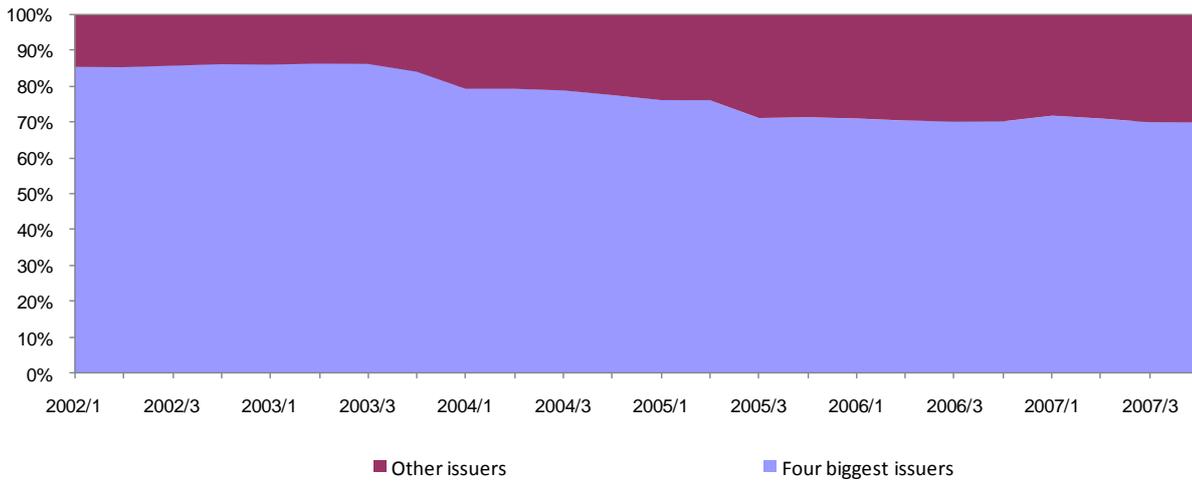
### ***Cheque Eletrônico main issuers***

In the fourth quarter of 2007, the four largest *Cheque Eletrônico* issuers were responsible for 88.7% of the active debit cards, and 98.4% of the transactions.

### ***Main Issuers considering the debit card issuance market as a whole (all schemes)***

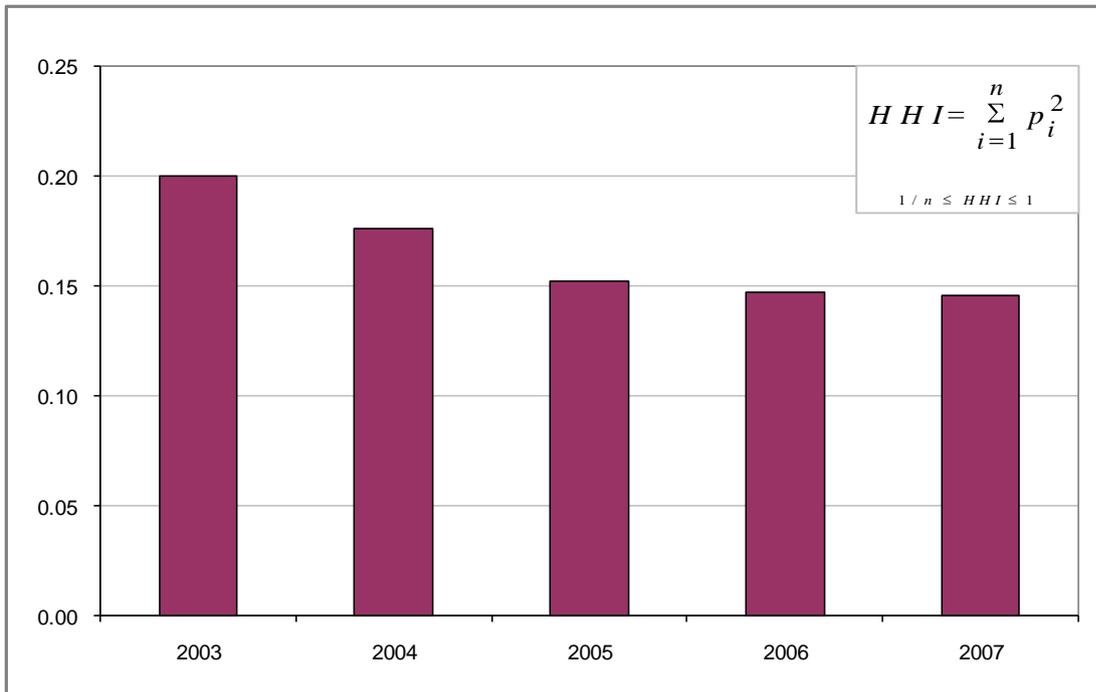
Considering the banking system structure in December 2007, the four largest issuers accounted for some 61% of the active debit cards. In the fourth quarter of 2007, these issuers accounted for some 70% of the relevant transactions in terms of volume.

**Graph 37 – Market share of the four largest issuers – Debit function (number of transactions)**



The debit card issuance market changed the concentration level along the period, changing from highly concentrated in 2003 to moderately concentrated in 2007.

**Graph 38 – Concentration index considering all schemes – Debit cards issuers (number of transactions)**



**4.5.2. Acquirers**

As in the case of issuers (item 4.5.1), it is important to note that three-party systems are designed to operate with just one acquirer. In the case of American Express,

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the acquirer is the Bankpar; in the Hipercard scheme, Unibanco, and in Diners scheme, Citibank. Thus, a concentration analysis is not appropriate.

On the other hand, there can be multiple acquirers in four-party schemes, although in Brazil there is a single acquirer in each one of them. That is the case of Visa scheme, where Visanet has contractual exclusivity, and MasterCard scheme, where Redecard is effectively the single acquirer even though in this case there is no contractual exclusivity.

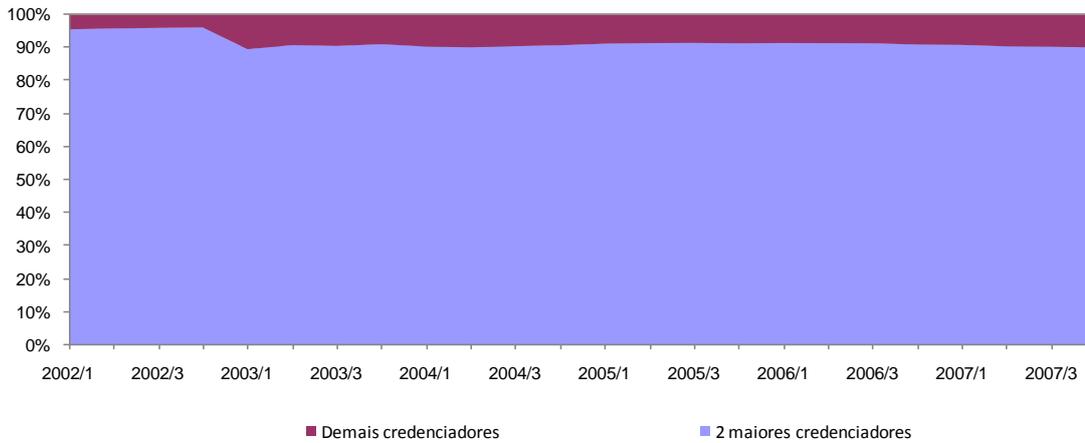
Besides the possibility of licensing new acquirers, there are three other aspects that should be looked after in order to foster competition in this market. First, it would be important to have neutrality regarding clearing and settlement service providers, so that new acquirers could not be dependent upon the current acquires in relation to these services. Second, the lack of interoperability among the network service providers, which is also a result of the current acquirers' vertical integration, makes it difficult for new entrants to provide acquiring services. Once this activity is subjected to economies of scale, which are not present in acquiring services, network services tend to be performed by a small number of participants. Third, the contractual exclusivity between Visa and Visanet concerning acquiring services in the Brazilian market is a barrier to new entrants.

As a consequence of this structure, the value perceived by new entrants that face this scenario is reduced, which decreases contestability in the market.

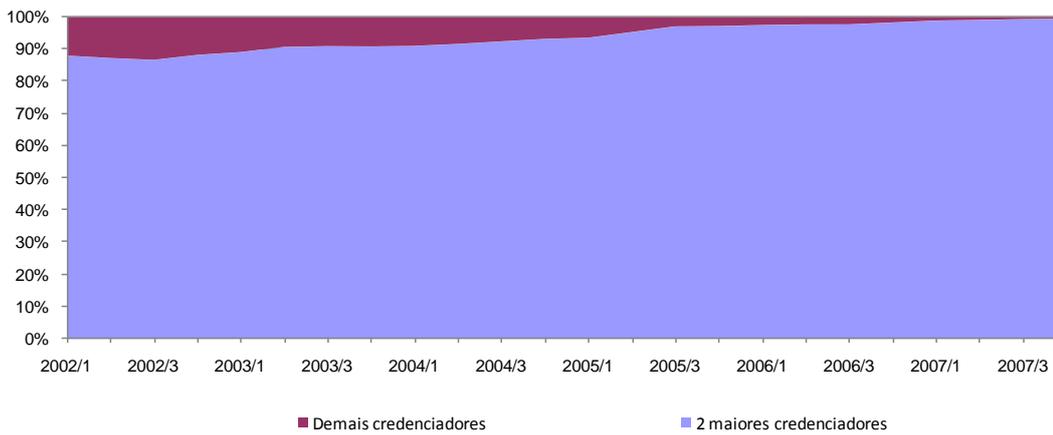
***Main acquirers considering the acquiring market as a whole (all schemes)***

In December 2007, the two largest acquirers accounted for some 90% of credit card transactions, and for 99.6% of debit card transactions.

**Graph 39: Two largest acquirers' market share  
(Number of credit card transactions)**

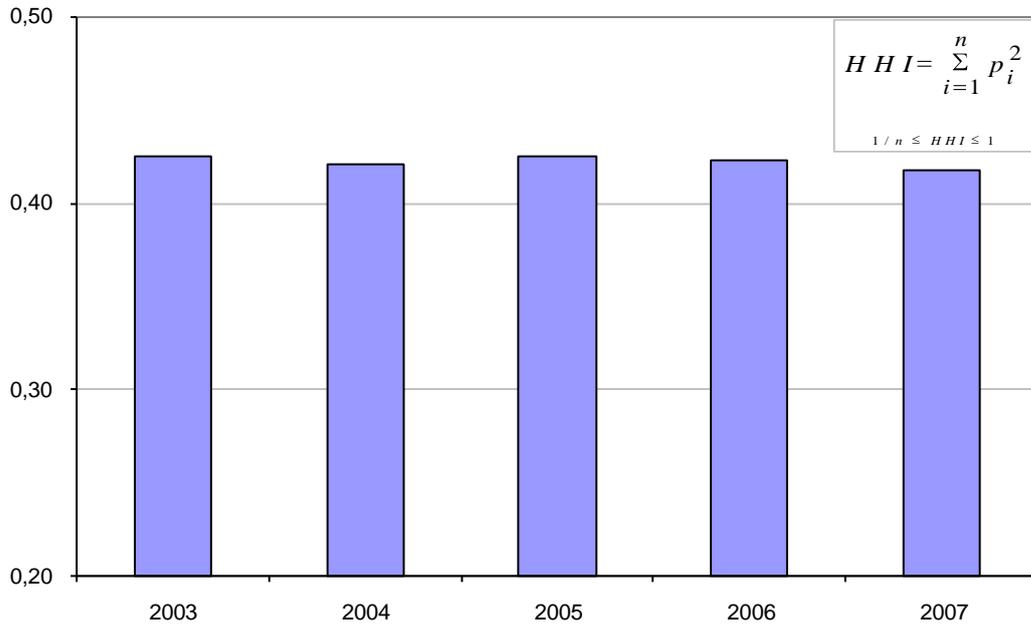


**Graph 40: Two largest acquirers' share  
(Number of debit card transactions)**

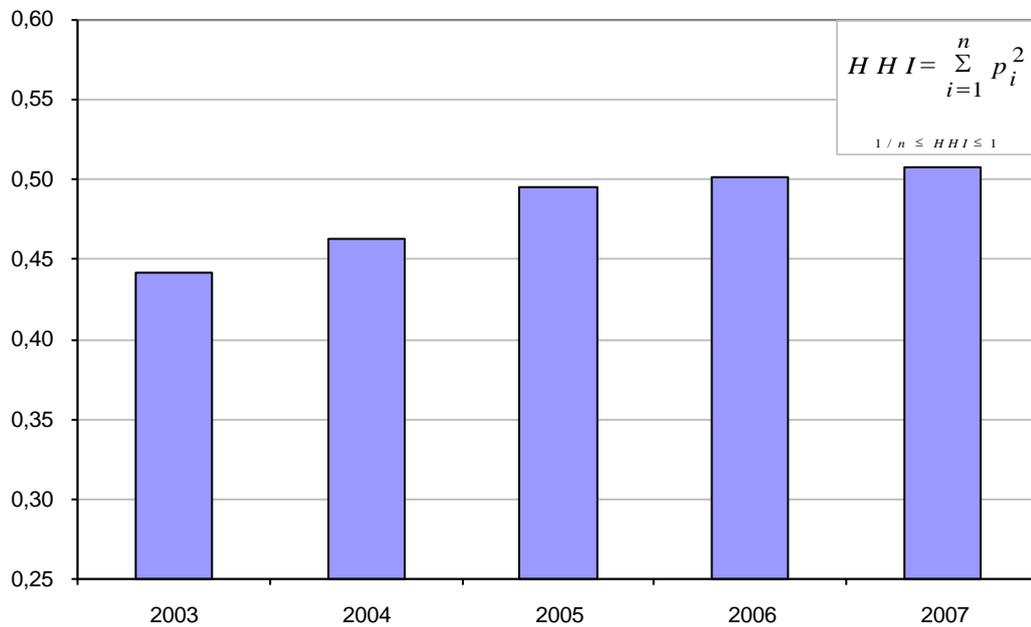


Concerning the credit card market, the HHI varied between 0.42 and 0.43 in the period 2003-2007, indicating high level of concentration. The same conclusion applies to the debit card market, which HHI varied between 0.44 and 0.51 in the same period.

**Graph 41: Concentration level in the credit card market  
(Number of transactions)**



**Graphic 42: Concentration level in the debit card market  
(Number of transactions)**



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## 4.6. Interchange Fee

The interchange fee is only applicable to four-party schemes, in which issuance and acquiring services are provided for different entities. So, the interchange fee analysis will be applied to Visa and MasterCard schemes concerning both credit and debit cards, as well as to *Cheque Eletrônico* scheme regarding debit cards.

Concerning credit function, Visa and MasterCard interchange fees vary according to the sort of product, capture form, and number of installments. MasterCard credit card interchange fee also varies according to the merchant's segment. In fact, for this scheme, some segments, due to their relative importance, are subject to an interchange fee that is lower than the basic one.

Basic interchange fee is applicable to electronically-captured transactions carried out in the presence of the cardholder and through basic cards ("classic", "standard" or "golden", according to the scheme), and in which cardholder payment is made through just one installment. "Premium" products have higher interchange fee than the basic ones.

Concerning the form of capture, non-electronically-captured transactions are subject to a higher interchange fee as compared to the basic interchange fee. For the same form of capture and sort of product, the interchange fee increases according to the number of installments, due to higher credit risk incurred for the relevant issuer.

The Visa and MasterCard schemes' interchange fees are defined as a fixed percentage of the merchant fee.

In the case of *Cheque Eletrônico* scheme, since there is just one product and the form of capture is always electronically-based, the interchange fee varies with both the number of installments and market segment.

### 4.6.1. Evolution of average interchange fee along the time

The average interchange fee<sup>50</sup> paid to credit card issuers has increased in all schemes due to the increasing number of transactions involving payment in installments, and also the increasing usage of "premium" products.

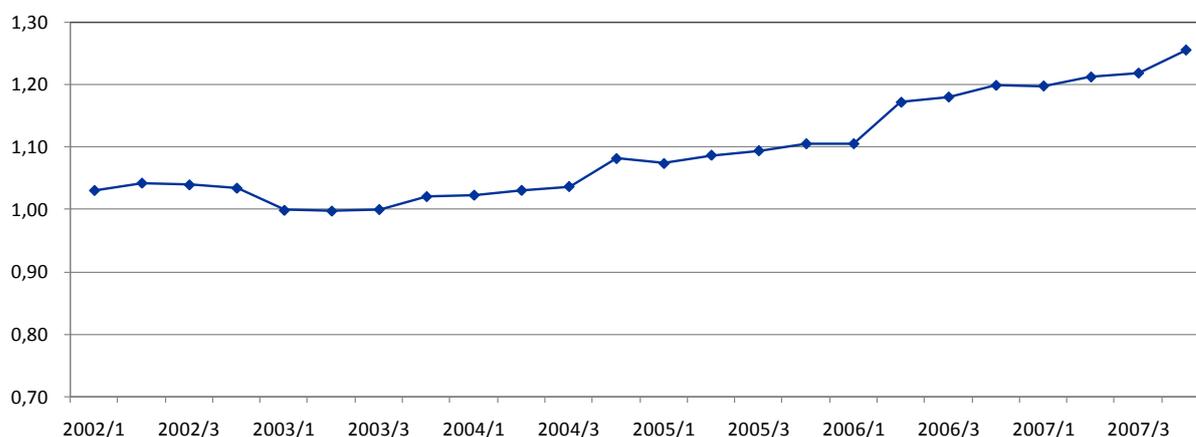
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<sup>50</sup> It is weighted by value. Where the cardholder payment is made in installments, which are subjected to different rates, it is considered the average fee applied to each installment.

In credit card schemes, the percentage of transactions involving more than 4 installments grew from 1.4% in 2001 to 3.8% in 2007. In the same period and also concerning number of transactions, the use of “platinum”, “business” and “corporate” products rose from 3.2% to 9.0%. The increasing replacement of magnetic stripe-based cards for chip-based cards and also the crescent number of transactions carried out without the cardholder presence do not have had effects over the average interchange fee.

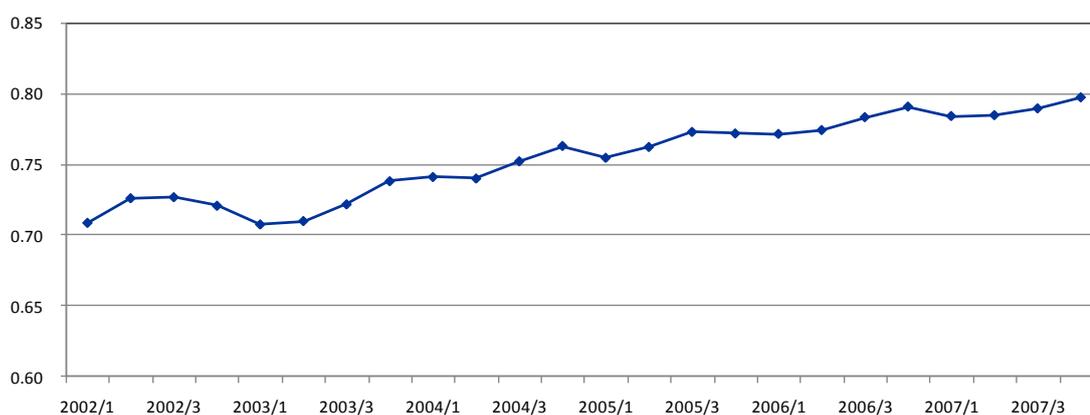
Two non-explained changes in the level of the interchange fee took place in the analyzed period. In the last quarter of 2007, the interchange ranged from 1.26% to 2.3% between the scheme presenting the lower fee and the one presenting the higher fee.

**Graph 43 – Average interchange fee – Credit function**



In the case of debit card schemes, the average interchange fee showed a slight trend of increment in the analyzed period. In the last quarter of 2007, the lower interchange fee was 0.2% and the higher, 1.56%.

**Graph 44 – Evolution of the average interchange fee – Debit function**



## 4.7. Merchant Discount Fee

The merchant discount fee applicable to credit card transactions varies according to the market segment in which the merchant is included, and, inside the same segment, it is inversely proportional to the merchant's size (the larger the sale volume, the lower the merchant discount fee). Exception made to Diners scheme, in case of sale involving cardholder's payment in installments, and where the operation is financed by the merchant itself, the higher the number of installments, the higher the merchant discount fee.

Also concerning Diners scheme, the merchant discount fee varies according to the capture form in the following sequence (from cheaper to more expensive): electronic capture concerning chip-based card; electronic capture without presence of the cardholder; electronic capture concerning magnetic stripe-based card; and non-electronic capture.

American Express also differentiates the merchant discount fee taking into account the form of capture: where it is made with the presence of the cardholder, the fee is higher for merchants not using electronic capture.

Merchant discount fee relating to debit cards follows basically the same rules applied to credit card transactions, except in that concerns number of installments (typically, debit card transactions do not allow cardholders' payment in installments). This exception, however, does not apply to *Cheque Eletrônico* debit card transactions, where payment in installment is allowed and, hence, merchant discount fee increases proportionally to the number of installments.

Regarding credit card transactions, the following table shows the largest variation among average merchant discount fees applied to distinct segments<sup>51</sup> ( $\Delta m_{Smax}$ ), as well as, inside the same segment, the largest variation among fees applied to small merchants and those applied to large merchants<sup>52</sup> ( $\Delta m_{Pmax}$ ).

<sup>51</sup> Calculated by the formula  $\left(\frac{m_i}{m_j} - 1\right) * 100$ , where  $m_i$  is the largest average merchant discount fee, and  $m_j$  is the smallest average merchant discount fee.

<sup>52</sup> It is used the same formula shown in the previous footnote, but in this case  $m_i$  is the average merchant discount fee related to smaller merchants, and  $m_j$  is the average merchant discount fee related to larger merchants, all of the same market's segment, always considering the same market segment.

**Table 3 – Relative variation among merchant discount fees regarding credit card transactions -2007, fourth quarter**

| <b>Brand</b>     | $\Delta m_{Smax}$ | $\Delta m_{Pmax}$ |
|------------------|-------------------|-------------------|
| Visa             | 70%               | 163%              |
| MasterCard       | 59%               | 128%              |
| American Express | 74%               | 110%              |
| Diners Club      | 65%               | 110%              |
| Hipercard        | 1353%             | 4085%             |

It is important to highlight that Hipercard scheme is a joint property of Unibanco and Wal-Mart, and this fact is in a certain extent reflected in the relevant variation shown in the above table.

The following table shows the same statistics for debit card schemes:

**Table 4 – Relative variation among merchant discount fees regarding debit card transactions – 2007, fourth quarter**

| <b>Brand</b>      | $\Delta m_{Smax}$ | $\Delta m_{Pmax}$ |
|-------------------|-------------------|-------------------|
| Visa              | 165%              | 1480%             |
| MasterCard        | 91%               | 454%              |
| Cheque Eletrônico | 336%              | 832%              |

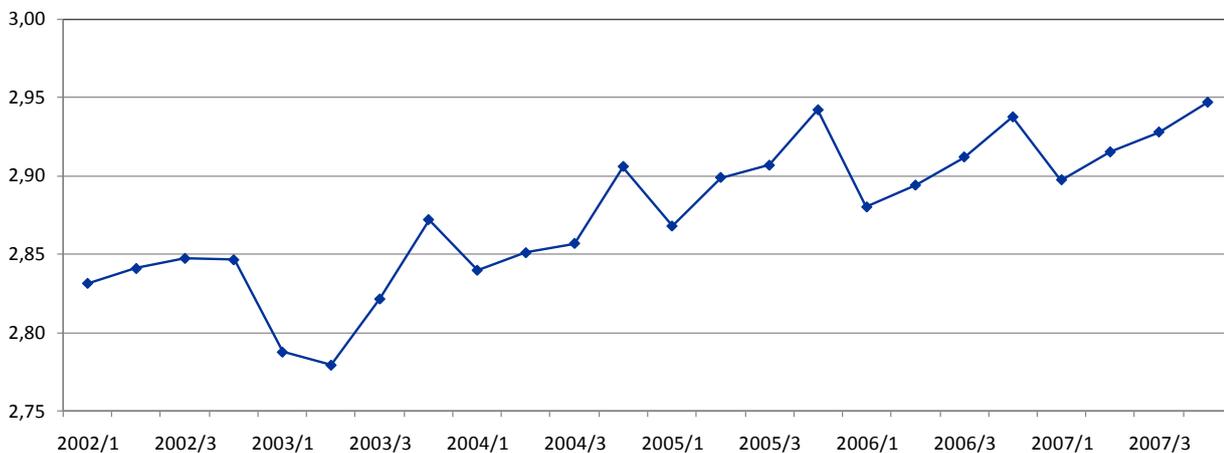
It is worth noting that, as compared to credit card transactions, merchant discount fee variation relating to merchant size, in case of debit card transactions, is significantly larger.

## 4.7.1. Evolution of average merchant discount fee along the time

### 4.7.1.1 Credit Card

During all the analyzed period, the weighted average merchant discount fee<sup>53</sup> showed little variation. In the fourth quarter of 2007, the average merchant discount fee reached 2.9%, while the maximum average merchant discount fee reached 3.0% and the minimum, 1.8%. Individually, the maximum merchant discount fee reached 5.14%. From the first quarter of 2002 to the last quarter of 2007, the positive maximum variation reached 7%, while de negative maximum variation, some 20%.

**Graph 45 – Average merchant discount fee – Credit function**



The following graph shows the weighted average merchant discount fee disregarding transactions whose payment was done in installments, that is, some *Cheque Eletrônico* transactions. It is worth remembering that effective payment to the merchant is on average made with a 30-day lag, so that the related opportunity cost should be added to the merchant discount fee. By the end of 2007, this cost corresponded to 0.8% per month.<sup>54</sup>

In the fourth quarter of 2007, the weighted average merchant discount fee reached 2.6%, for a maximum of 2.7%, and a minimum of 1.3%.

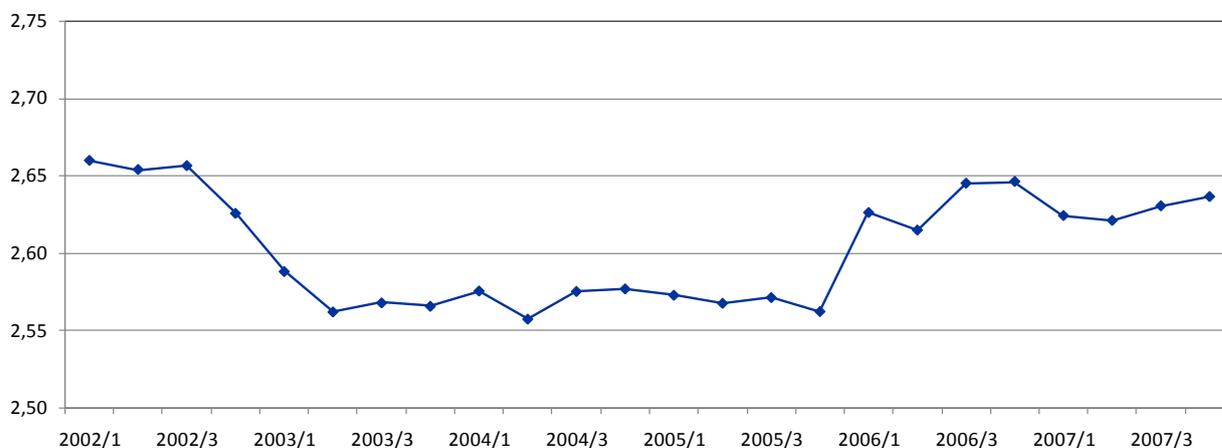
Along the analyzed period, the positive maximum variation reached 4.9% and the negative maximum variation, 12.6%.

<sup>53</sup> Average fee weighted by value of the relevant transactions.

<sup>54</sup> It has been considered the nominal central bank short-term interest rate (Selic - source: Banco Central do Brasil) for the opportunity cost.

In the last analyzed period, the maximum difference among average merchant discount fees charged by different schemes reached some 110%.

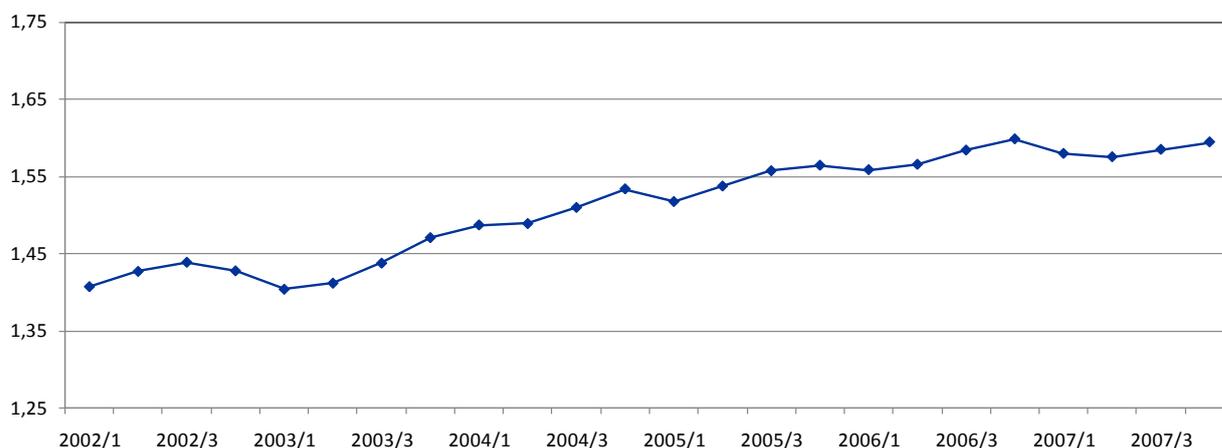
**Graph 46 – Average merchant discount fee – Credit function (cardholder's payment in a single installment)**



#### 4.7.1.2 Debit Card

In the fourth quarter of 2007, the average merchant discount fee was 1.59%. The scheme with the highest average fee charged 1.62%, and the scheme with the smallest one, 0.94%. In absolute terms, the maximum merchant discount fee reached 5% and the minimum, 0.5%.

**Graph 47 – Average merchant discount fee – Debit function**



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### **4.7.2. Study on the merchant discount fee**

With a view to corroborating information obtained from the analysis of the above data, it has been carried out a study on the behavior of the credit card-related merchant discount fee<sup>55</sup> in the period 2006 to 2007.

According to this study, some 73% of merchant discount fee variations are explained by differences among market segments, which indicates the exercise of price discrimination power.

Another significant economic factor that influences the merchant discount fee was found to be the merchant's market and negotiation power. The concentration inside a given segment influences inversely the level of the merchant discount fee, pointing to the conclusion that segments presenting higher level of concentration, and as consequence higher bargain power, in general are subject to lower merchant discount fees as compared to other segments.

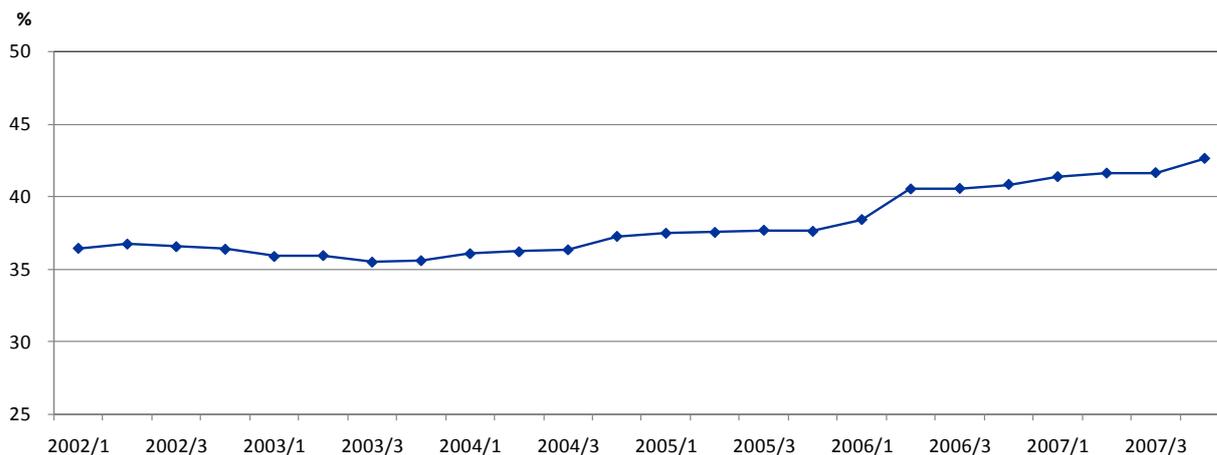
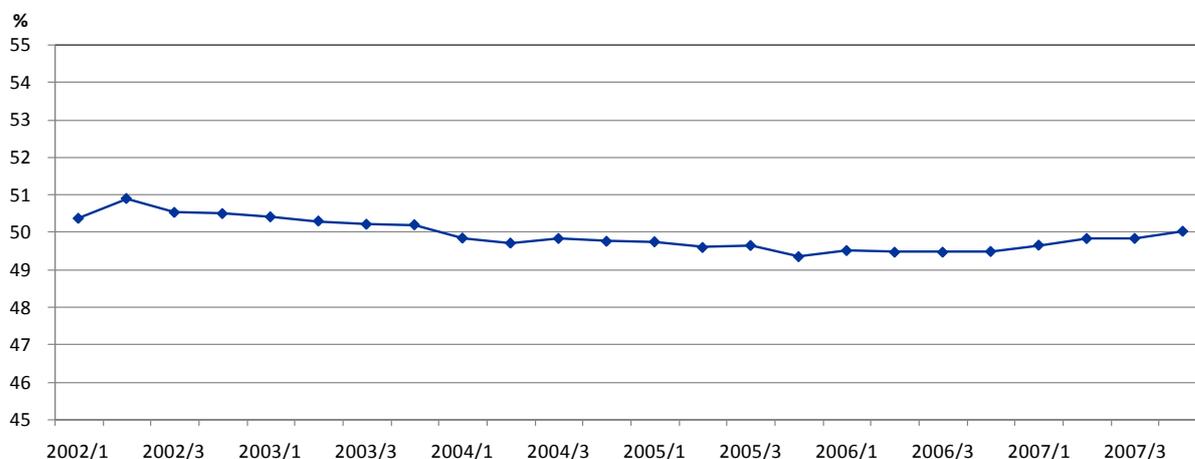
For most segments, it was observed that the higher the interchange fee, the higher the merchant discount fee. This finding confirms the theory on the setting of merchant discount fee. The average pass-through from the interchange fee to the merchant discount fee is larger than one and significant. This result is related to an average behavior, since each segment has different price-elasticity and realizes different net benefits in the acceptance of credit card, so that the pass-through changes depending on the segment market.

### **4.7.3. Relation between interchange fee and merchant discount fee**

The ratio between the interchange fee and the merchant discount fee has been increasing in the main credit card schemes. Concerning debit card schemes, this relation was around 50% by the last quarter of 2007.

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<sup>55</sup> See Annex H (Payment cards in Brazil: merchant discount fee).

**Graph 48 – Ratio between interchange fee and merchant discount fee – Credit function****Graph 49 – Ratio between interchange fee and merchant discount fee – Debit function**

## 4.8. Cardholder fees

Concerning credit cards, issuers can charge cardholders an annual fee, and also transaction-based fees, issuance fees, card reposition fees and service fees. Among them, only the first two fees are directly related to the cardholder participation on the scheme, and transaction-based fees are not usual in the Brazilian market. Hence, the reported has focused the analysis on annual fees charged by credit card issuers.

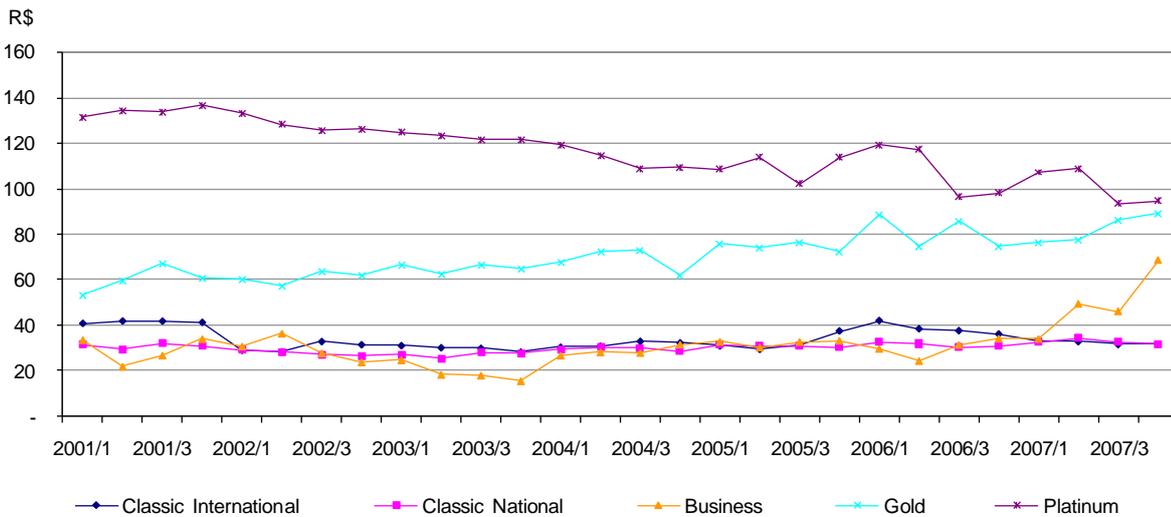
It is important to highlight that, from an economic point of view, the existence of reward programs can imply a reduction in the value of the annual fee, or even a negative transaction fee. However, these aspects are not considered in this study.

Debit card issuers do not charge annual, even tough, in some schemes, credit card transactions are eligible in reward programs.

### 4.8.1. Visa scheme

Once the issuers get larger interchange fees in transactions carried out through "Platinum" cards, they have spurred cardholders to use this sort of card by decreasing the related annual fees, while increasing the fees related to gold cards. As a result, there has been replacement of the latter by the former.

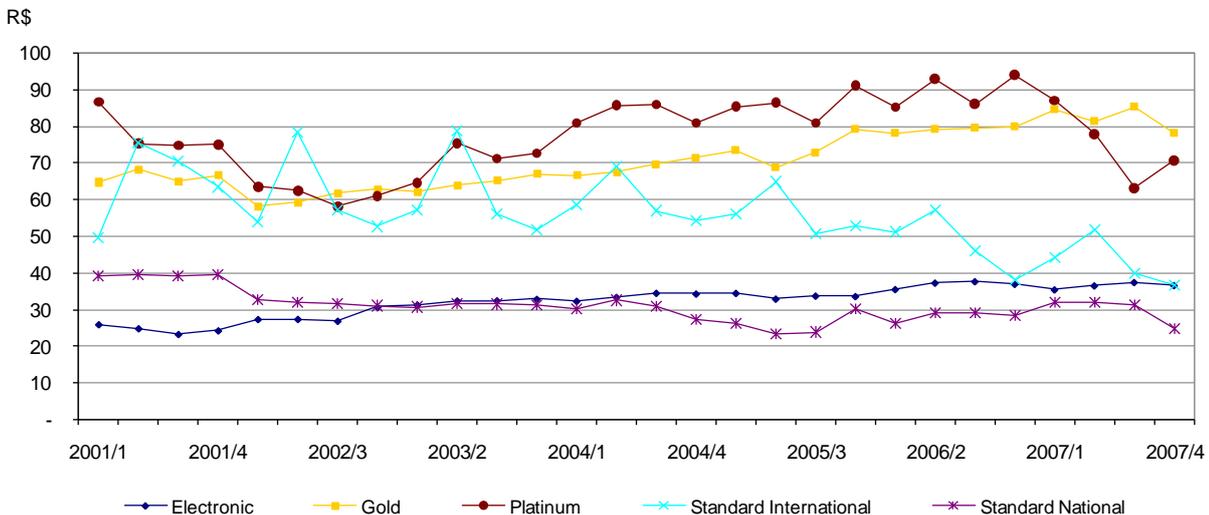
**Graph 50 – Average value of cardholder fee – Visa scheme (main products)**



### 4.8.2. MasterCard scheme

Platinum card has showed annual fee similar or even smaller than gold cards, so as to spur the replacement of the latter by the former, as in the case of Visa scheme.

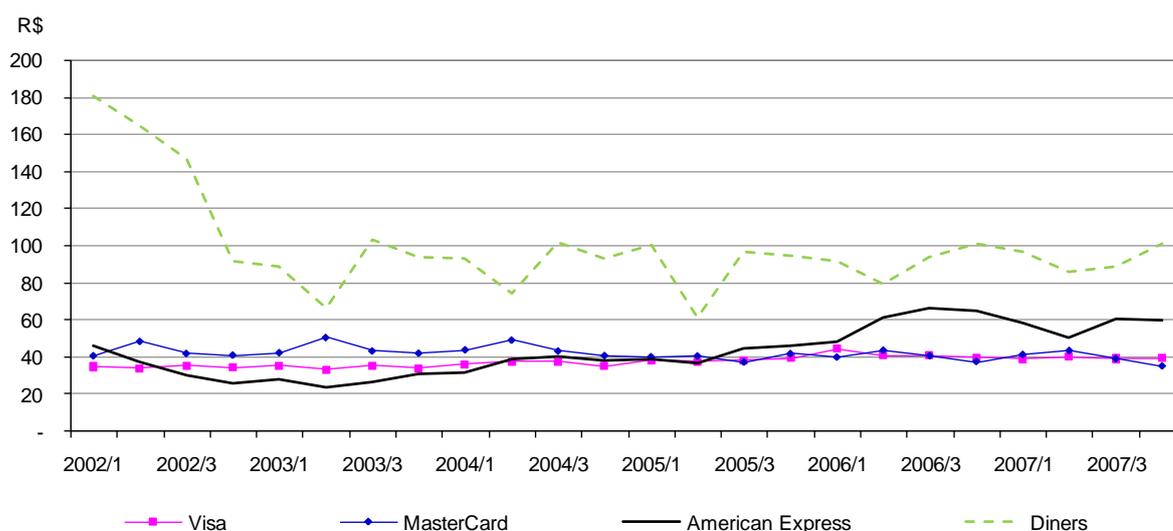
**Graph 51 – Average value of cardholder fee – MasterCard scheme (main products)**



### 4.8.3. Cardholder annual fee

For the main schemes (Visa and MasterCard), the average annual fee showed little variation in the analyzed period. Different behavior was observed in the case of Diners Club scheme, which presented a large variation, and also in the case of American Express scheme, whose average fee varied from R\$20 to R\$60. Hipercard has not charged annual fees, and does not offer reward programs.

**Graph 52 – Cardholder annual fee - Average value**



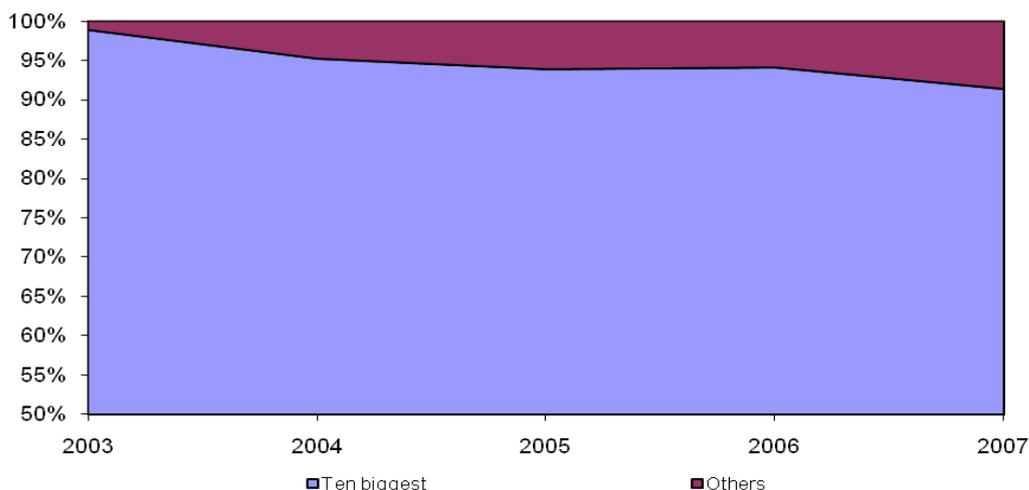
## 4.9. Profit analysis

In this topic will be carried out a profit analysis considering the issuance market, the acquiring market, and the payment card market as a whole. Both credit function and debit function will be considered.

### 4.9.1. Issuance market

#### 4.9.1.1. Evolution of profits in the issuance market

The issuance market's profit grew in average 14% per year, reaching a total variation of 70% from 2003 to 2007. The ten largest issuers' share in the relevant total profit has been decreasing: it was 98.9% in 2003, and 91.4% in 2007.

**Graph 53 – Issuance market – Profits – 10 largest issuers share**

#### 4.9.1.2. Composition of revenues and costs

The issuers' main revenues stem from revolving credit granted to cardholders<sup>56</sup>, which accounted for some 60% of the 2007 total revenues, and has grown on average 19.5% per year.

Interchange fee and cardholder fee accounted, each one, for 15% of the 2007 total revenues. On average, the former item has increased 23.7% per year and the latter, 9.1% per year. Among the most significant sources of revenue, only the one relating to cardholder fee has increased by a lower rate than the profit growth rate. The revenues relating to "incentive to issuance" (payments made by an acquirer in order to spur the issuance of a certain brand) increased 288% in the period 2003 to 2007, but still represent only 0.4% of the total revenue.

**Table 5 – Issuers – Revenues**

| Revenues           | 2003  | 2004  | 2005  | 2006  | 2007  | Ref. 2003               |
|--------------------|-------|-------|-------|-------|-------|-------------------------|
|                    |       |       |       |       |       | Annual average rate (%) |
| Total:             | 100.0 | 113.4 | 138.2 | 167.7 | 190.0 | 17.4%                   |
| Financials         | 56.2  | 62.1  | 81.4  | 104.0 | 114.5 | 19.5%                   |
| Interchange Fees   | 12.2  | 15.5  | 18.3  | 22.3  | 28.6  | 23.7%                   |
| Cardholder's fee   | 20.0  | 22.6  | 24.4  | 25.6  | 28.4  | 9.1%                    |
| Others revenues    | 10.9  | 12.3  | 13.2  | 15.2  | 17.4  | 12.4%                   |
| Incentive to issue | 0.2   | 0.3   | 0.7   | 0.6   | 0.9   | 40.3%                   |
| Marketing          | 0.5   | 0.6   | 0.2   | 0.1   | 0.2   | -14.8%                  |

The item "other expenditures"<sup>57</sup>, which represented 40.9% of the 2007 total expenditures, is mainly composed of administrative costs, tax costs, and costs

<sup>56</sup> Revenues from revolving credit and from financial defaults (fines, interest, etc).

<sup>57</sup> Also includes, among others: insurance costs; costs relating to client help desk; post office costs; collection costs; and payments made to payment card manufacturers.

related to reward programs (these items were not discriminate due to issuers' difficulties to do so).

Expenditures stemming from defaults rose from 27.5% of the total costs in 2003 to 33% in 2007. It was the expenditure that presented the largest growth in the period, increasing 24.2% per year on average.

Due to both gains of scale and reduction of technological costs, processing expenditures had the smallest annual rate of growth, in average 10.8% a year. Table 6 shows the evolution of the issuers' processing costs for debit and credit transactions, considering the 2003 costs as a reference.

**Table 6 – Issuers – Processing costs by transaction**

| Processing       | Ref. 2003 |      |      |      |      |
|------------------|-----------|------|------|------|------|
|                  | 2003      | 2004 | 2005 | 2006 | 2007 |
| Cost/Transaction | 100.0     | 81.0 | 82.7 | 68.4 | 63.1 |

Fees paid to scheme owners and expenditures relating to risk management, which together accounted for little more than 6% of the total expenditures, had a 21% average annual increment in the period.

**Table 7 – Issuers – Expenditures**

| Expense                | Ref. 2003 |       |       |       |       |                         |
|------------------------|-----------|-------|-------|-------|-------|-------------------------|
|                        | 2003      | 2004  | 2005  | 2006  | 2007  | Annual average rate (%) |
| Total:                 | 100.0     | 114.2 | 137.5 | 171.1 | 198.2 | 18.7%                   |
| Othes expenses         | 43.3      | 53.6  | 61.9  | 72.2  | 81.2  | 17.0%                   |
| Default                | 27.6      | 28.0  | 36.9  | 56.4  | 65.5  | 24.2%                   |
| Processing             | 15.6      | 16.8  | 21.7  | 21.5  | 23.6  | 10.8%                   |
| Marketing and sellings | 7.3       | 8.5   | 8.7   | 11.6  | 14.8  | 19.3%                   |
| Use of brands          | 3.5       | 4.1   | 4.7   | 5.7   | 7.5   | 21.0%                   |
| Management of risk     | 2.6       | 3.3   | 3.7   | 3.9   | 5.6   | 21.0%                   |

With a view to analyzing the profit evolution considering a payment card just as a payment instrument<sup>58</sup>, financial revenues and financial costs were not considered. The exclusion comprises revenues stemming from interest rates applied to revolving credit, penalties charged to clients in case of default, and, on the other hand, management and default costs. In this exercise, the issuers as a whole had a deficient result in all years of the analyzed period, showing that financial revenues account for a relevant part of the issuers' total revenues.

<sup>58</sup> This exercise is just an approximation, once all expenditure relating to risk management was attributed to revolving credit, and in view that administrative expenditures were not separated.

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Going deeper into this analysis, revenues and costs were separated by function, that is, those related to credit cards were separated from those related to debit cards.<sup>59</sup> It was found that credit card issuance activity is profitable even when financial revenues are not considered, meaning that the activity related to credit cards are profitable even when they are considered just as payment instruments, while debit card issuance activity is not.

Two more scenarios were considered in the analysis of issuers' profit: in the first one, the aim was to assess the importance of interchange fee in the issuers' revenues; in the second one, the issuers' results were analyzed considering a possible reduction in the term they observe to make payments to merchants in credit card-related transactions.

Concerning the interchange fee, it was possible to realize that, even though this item accounts for a significant part of the issuers' revenues, the results would continue positive even in case of its elimination. Finally, even with the reduction of the payment lag in credit card transactions from 30 to 2 days, the issuance activity would continue profitable, that is, the present situation would not change significantly even if the issuers had to incur in the relevant opportunity costs.<sup>60</sup>

It is worth mentioning that the provision of payment instruments is sometimes a non-profitable activity for financial institutions, as it is the case of checks and other paper-based instruments. Moreover, it is known that non-electronic payment instruments are, in general, more costly than electronic ones. Thus, even if activities relating to payment cards – mainly to debit cards – were not profitable for a bank, the provision of electronic payment instruments to its clients would be interesting due to the reduction of costs stemming from the replacement of paper-based instruments.

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<sup>59</sup> In spite of data of revenues and of expenditures were available in aggregated form, without distinction among the functions of cards, it is possible, using some hypothesis, to analyze separately the profit of each segment, that is, credit cards and debit cards.

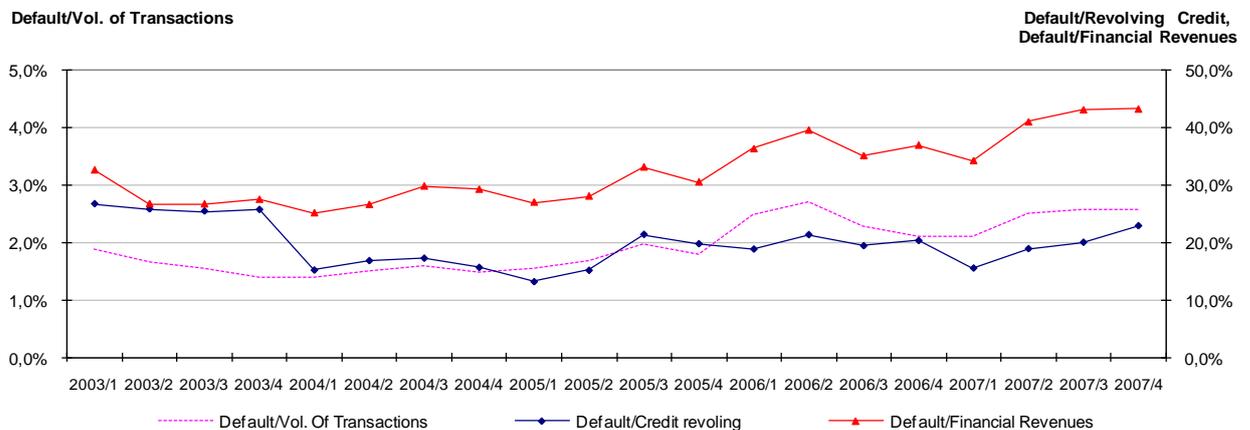
<sup>60</sup> In Brazil, in credit card transactions merchants are paid, on average, 30 days after the selling date, differently from other countries where this period is in average 2 days. Hence, and taking into account that on average the clients pay their bills -- without interest rates -- 28 days after the purchasing date, nowadays the issuers do not incur in opportunity costs. In the exercise, to assess opportunity costs stemming from the reduction from 30 days to 2 days, the Selic rate was adopted as the market interest rate.

**4.9.1.3. Risk analysis – Evolution of client default**

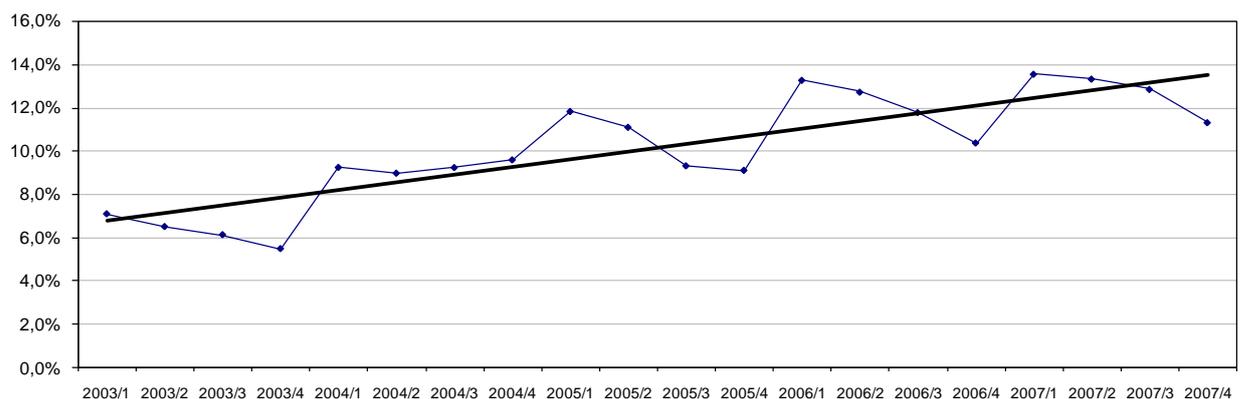
Three indices were calculated in order to measure the level of client default: default in relation to volume of transactions; default in relation to volume of revolving credit; and default in relation to financial revenues.

Until 2005, default in relation to volume of transactions was no higher than 2%, but this indicator shows a trend of augment in the last years. As compared to volume of revolving credit<sup>61</sup>, that is, to the volume of recourses effectively financed by the issuers, default has been relatively stable (it is worth mentioning that the volume of revolving credit has also increased – see Graph 54).

**Graph 54 – Default level**



**Graph 55 – Ratio: Volume of revolving credit / volume of transactions**

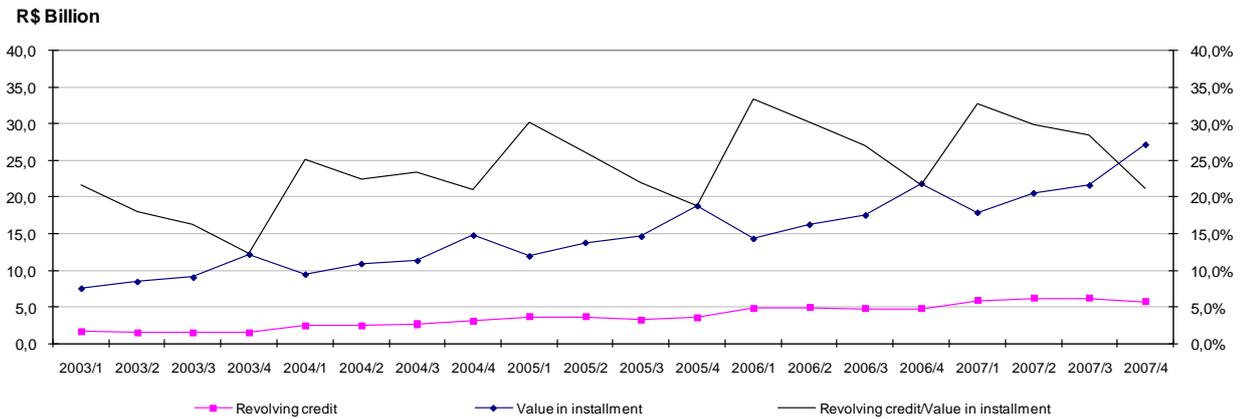


Finally, default in comparison to financial revenues presented an increasing trend, remaining however lower than 50%. Apparently there has been a trend

<sup>61</sup> This index attempts to measure default volume in comparison to the volume effectively financed by issuers. It is worth to having in mind that default can refer to non-financed value, as in cases where the cardholder does not pay even the minimum value of monthly installment.

of augment in the default level due mainly to the higher level of revolving credit, which has been increasing in relation to both volume of transactions and volume of financial revenues. The following graph shows the relationship (with a correlation index of 0.89) between the growth of revolving credit and the growth of transactions whose payment is made in installments.

**Graph 56 – Revolving credit versus volume of transactions paid in installments**

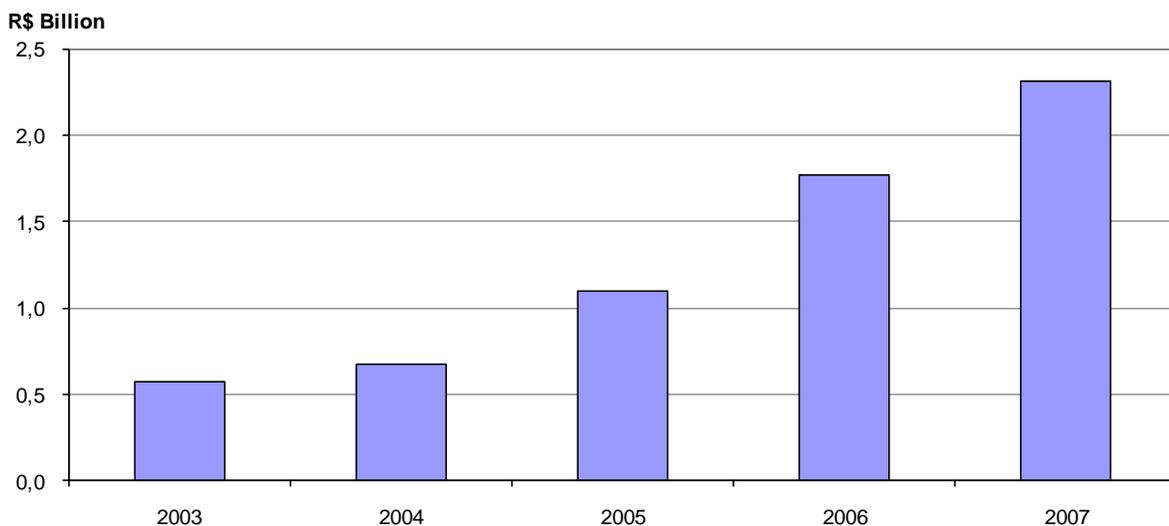


## 4.9.2. Acquiring market

### 4.9.2.1. Evolution of profits in the acquiring market

On average, acquirers' profits increased annually 41.7%, from 2003 to 2007.

**Graph 57 – Acquirers – Annual Profits**



**Table 8 – Acquirers – Annual Profits**

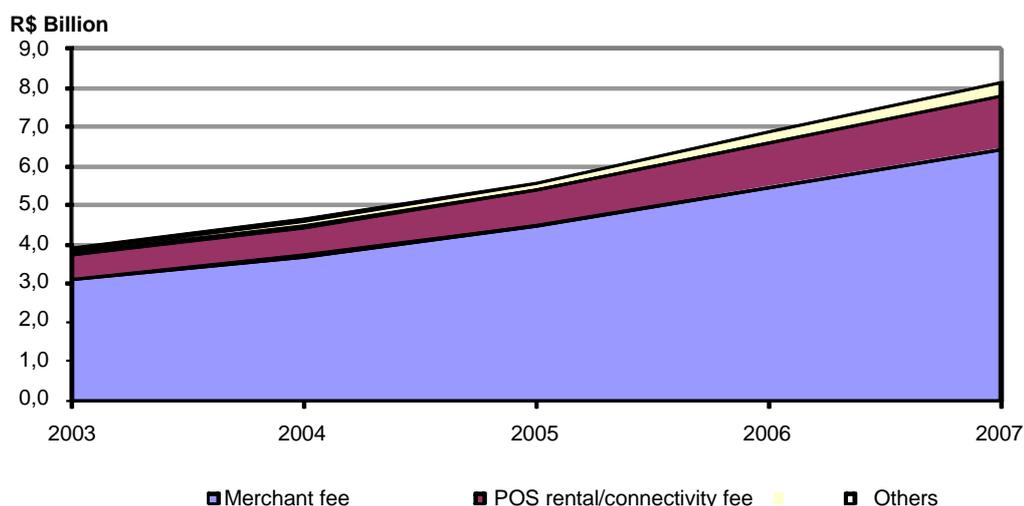
| Profit        | R\$ million |       |         |         |         | 2003-2007<br>(%) |
|---------------|-------------|-------|---------|---------|---------|------------------|
|               | 2003        | 2004  | 2005    | 2006    | 2007    |                  |
| Volume        | 575.2       | 675.2 | 1,097.0 | 1,768.8 | 2,316.9 | 302.8%           |
| Variation (%) |             | 17.4% | 62.5%   | 61.2%   | 31.0%   |                  |

In the analyzed period, the acquirers' profit presented a growth velocity that is higher than the one presented by any other market index. It is enough to say that the number of active cards grew 94% (annual average of 18%), the number of transactions increased 136% (annual average of 24%), and the volume of transactions increased 164% (annual average of 27.5%)<sup>62</sup>.

Analyzing profit per acquirer, it is possible to say that the results are concentrated mainly in three firms.

#### 4.9.2.2. Composition of revenues and costs

From 2003 to 2007, the two largest sources of revenue were merchant fee and POS rental/connectivity fee, which represented 80% and 16% of total revenues, respectively. Such revenues increased respectively 108% and 112%, maintaining their relative shares during the period.

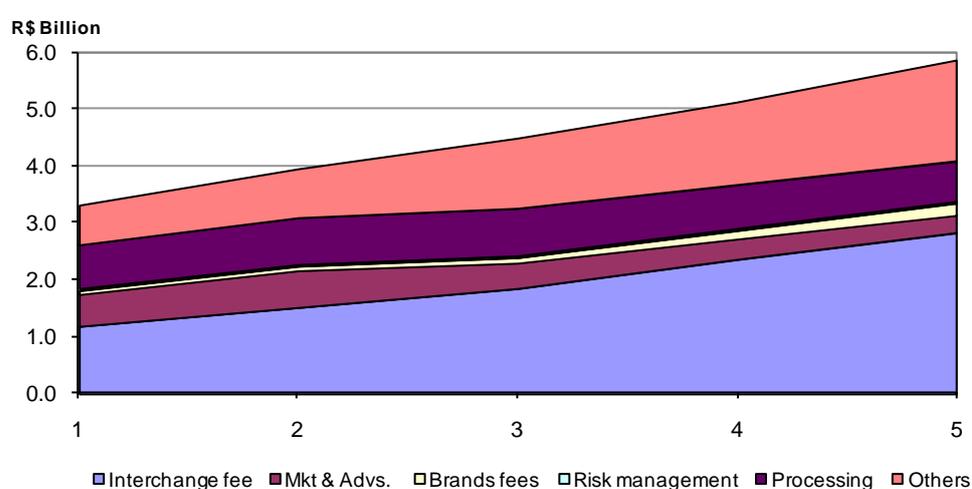
**Graph 58 – Acquirers – Composition of revenues**

<sup>62</sup> The growth index of financial volume was not deflated. All numbers refer to credit and debit cards.

**Table 9 – Acquirers – Revenues**

| Revenues                    | 2003    | 2004    | 2005    | 2006    | 2007    | R\$ million   |                           |                     |
|-----------------------------|---------|---------|---------|---------|---------|---------------|---------------------------|---------------------|
|                             |         |         |         |         |         | 2003-2007 (%) | 2003-2007 Growth rate (%) | 2003-2007 Share (%) |
| Merchant Fee                | 3.111,8 | 3.717,2 | 4.505,0 | 5.477,2 | 6.459,2 | 107,6%        | 20,0%                     | 79,8%               |
| POS rental/connectivity fee | 640,4   | 748,2   | 913,0   | 1.139,7 | 1.359,5 | 112,3%        | 20,7%                     | 16,5%               |
| Others                      | 130,7   | 159,0   | 168,1   | 276,4   | 363,0   | 177,8%        | 29,1%                     | 3,8%                |

In 2007, the interchange fee accounted for 48% of total expenditures (in 2003, it was 36%)<sup>63</sup>, while administrative expenditures and payment of tax, included in “other expenditures”, represented 30% (in 2003, it was 21%). Marketing and advertising expenditures decreased in the period.

**Graph 59 – Acquirers – Composition of expenditures****Table 10 – Acquirers - Expenditures**

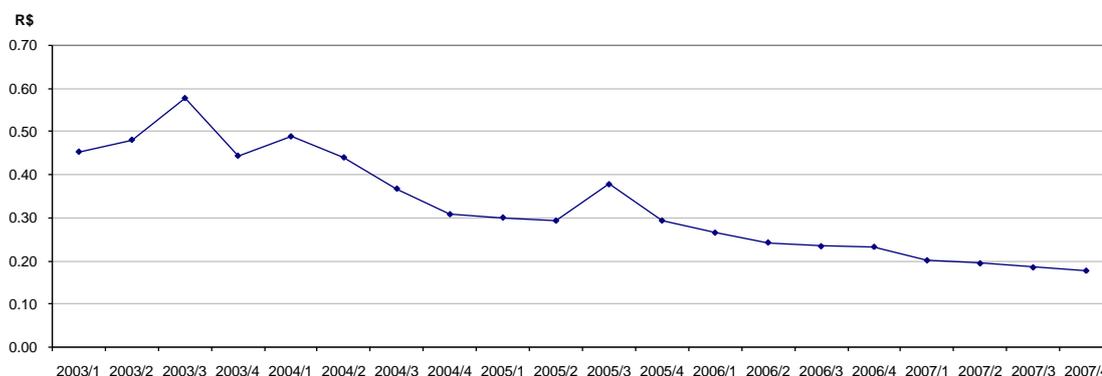
| Expenses          | 2003    | 2004    | 2005    | 2006    | 2007    | R\$ million   |                           |                     |
|-------------------|---------|---------|---------|---------|---------|---------------|---------------------------|---------------------|
|                   |         |         |         |         |         | 2003-2007 (%) | 2003-2007 Growth rate (%) | 2003-2007 Share (%) |
| Interchange Fee   | 1,184.7 | 1,515.3 | 1,846.9 | 2,356.1 | 2,823.0 | 138.3%        | 24.2%                     | 42.8%               |
| Marketing & Advs. | 570.3   | 653.0   | 453.1   | 361.7   | 306.1   | -46.3%        | -14.4%                    | 10.3%               |
| Use of brand      | 66.7    | 79.2    | 96.0    | 148.5   | 214.4   | 221.5%        | 33.9%                     | 2.7%                |
| Risk management   | 8.3     | 9.2     | 16.9    | 32.4    | 35.2    | 326.0%        | 43.7%                     | 0.4%                |
| Processing        | 777.9   | 830.2   | 840.3   | 771.9   | 710.4   | -8.7%         | -2.2%                     | 17.3%               |
| Others            | 699.9   | 862.3   | 1,235.9 | 1,454.0 | 1,775.8 | 153.7%        | 26.2%                     | 26.5%               |

It is worth mentioning that, despite the increasing usage of payment cards, the processing expenditures were relatively stable in the analyzed period, which demonstrates the benefits stemming from gains of scale and scope. The observed reduction in the processing cost per transaction (see Graph 60) corroborates this statement. As a result of the Brazilian payment card industry's structure, where there is

<sup>63</sup> Interchange fee applies to four-party system only -- Visa and MasterCard. American Express, although observes this approach in a small part of its operations, adopts remuneration scheme which is different from those based on interchange fee.

a certain monopoly in the acquiring activity in each one of the main payment card schemes, acquirers are the main beneficiaries of these economic gains.

**Graph 60 – Acquirers – Processing cost per transaction**

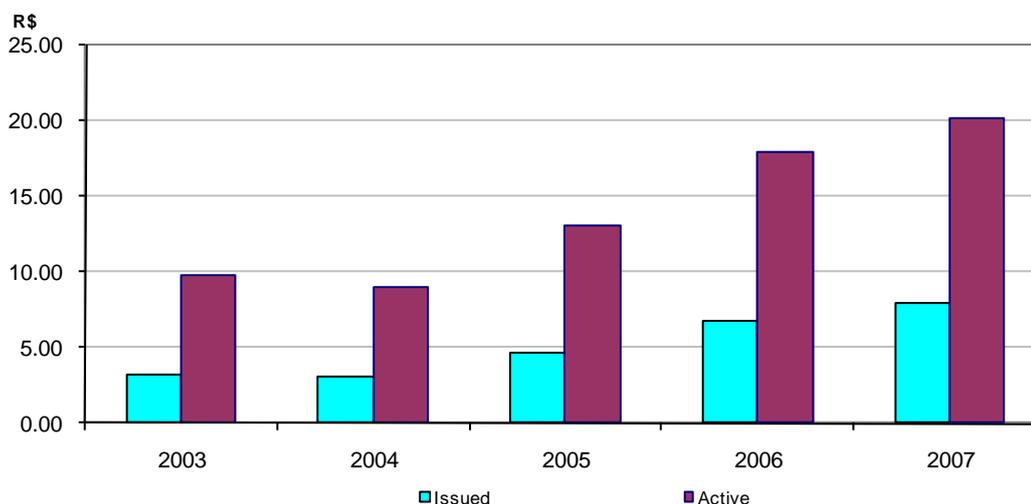


The marketing expenditures were significantly larger in the case of Visanet, while the payment of fees to the scheme owner was the main cost in the case of Redecard. For both of them, “other expenditures” were relevant and increasing.

#### 4.9.2.3. Profit per card

Profit in the acquiring side of the market has increased more strongly than in the issuance side, but the average profit per card is larger in the issuance activity

**Graph 61 – Acquirers – Profit per card**

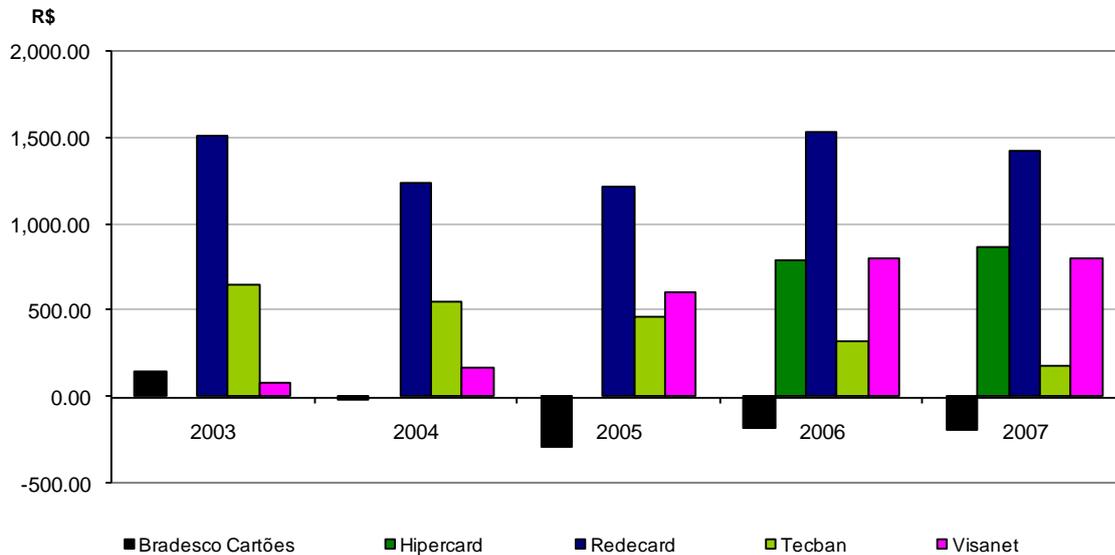


#### 4.9.2.4. Profit per POS

Redecard had the largest profit by POS, which in the end of 2007 was 79% larger than the one presented by Visanet. Hipercard acquirer showed increasing profit per POS, which reflects its policy towards the enlargement of the relevant base of

cards. TecBan's profit per POS has declined along the analyzed period due to reduction in both number of issued cards and acquired merchants.

**Graph 62 – Acquirers – Profit per POS**



#### **4.9.2.5. Essays on profit**

##### ***Profit – processing versus acquiring***

Given the high entrance costs that result from acquirers' vertical integration and absence of network interoperability, it was assessed the economic and financial feasibility of splitting the acquirer's present activities, that is, typical acquiring activities would be carried out by the acquirers themselves, while network services, including information capture, would be carried out by another service provider.

Having this purpose in view, the acquirers' revenues were divided into:

- Acquiring activity: revenues relating to merchant discount fee and a percentage of "other revenues";
- Network service provision activity: revenues stemming from POS rental and connectivity fee, and also a residual part of "other revenues".

Similarly, expenditures were segregated as follows:

- Acquiring activity: revenues concerning interchange fee, marketing and advertising expenditures, scheme owner fee, risk management and a percentage of "other costs";
- Network service provision activity: processing costs and a residual part of "other costs".

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Besides this segregation of revenues and costs, it is reasonable consider that the network service provider would charge the acquirers a fee for the service provided to them. Scenarios were built in order to assess the fee per transaction that could be charged by the network service provider, considering as the maximum value the one that would zero the acquirer's profit, and as the minimum value the one that would zero the network service provider's profit.

It was found that, taking into account this division of activities, the network service provision would be profitable since 2005, even if the relevant providers did not charge a fee to the acquirers for their services.

It is worth mentioning that the study has considered only the simple division of the activities nowadays carried out by the main acquirers. Hence, it was not considered other possible new configurations that could be adopted in terms of market structure. However, there is a clear potential for economies of scale and scope in the Brazilian payment card industry as a result of a possible network interoperability and segregation of acquirers' activities.

#### **4.9.2.6. Decomposition of costs**

Acquirer's costs were decomposed so as to have a better understanding on them. A full data description, including stationary tests and the results of the related regression, can be found in Annex I.

It was observed a cost reduction trend of 2% per quarter, which could be expected in view of new technological developments. It was not possible to reject a hypothesis of increasing costs of scale, at least in the present level of technology<sup>64</sup>. The study indicates that credit cards are close to their limit concerning economies of scale, since it is not possible to reject that their coefficient is different from 1.

Taking advantage of the present technology, there is more room for growth in the segment of debit cards, whose coefficient indicates that an increment of 1% in the number of transactions would cause an increment of some 0.18% in costs.

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<sup>64</sup> According to the Wald's test, the sum of coefficients regarding quantity of POS terminals, number of credit card transactions and number of debit card transactions is larger than 1.

### 4.9.2.7 Network interoperability

This study seeks to assess the potential cost reduction for acquirers<sup>65</sup> if there were interoperability in the provision of network services, and the following hypotheses were considered: the estimated coefficients (see Annex I) are constant along the time, along the scale and without changes in the technology; and some POS terminals will be discarded<sup>66</sup> in some proportion, and they will not be used in an attempt to increase revenues.

In the assessment, scenarios were built in which the acquirer having the fewer number of POS terminals discards from 25% to 100% of them, as in the following table.

**Table 11 - Estimated annual cost reduction**

| Scenery | Number of POS Reduction (%) | Costs Reduction (%) | Savings (R\$ Million) |       |
|---------|-----------------------------|---------------------|-----------------------|-------|
|         | 100%                        | 43.1%               | 16.1%                 | 847.0 |
|         | 75%                         | 32.3%               | 12.1%                 | 635.2 |
|         | 50%                         | 21.6%               | 8.0%                  | 423.5 |
|         | 25%                         | 10.8%               | 4.0%                  | 211.7 |

For each scenario, Table 11 shows the percentage of POS terminals that would be discarded, as well as the percentage of cost reduction, and the value of savings taking into account the 2007 costs.

As can be seen, even in a simplified hypothesis, there would be significant costs reduction as a result of network interoperability. Besides that, the consequent savings would be enough to support the necessary investments for implementing network interoperability.

### 4.9.2.8. Analysis of fair profit

To carry out this analysis, it has been used only data relating to Visanet and Redecard, which were publically available in their correspondent balance sheets. This is due to the following reasons: issuers are typically banks, and the analysis based on their balance sheets would be harmed by the fact that they contemplate their activities as a whole; the inclusion of other acquirers in the study would be harmed by the fact that they participate in three-party schemes, so that there is no public data

<sup>65</sup> It has been considered only costs concerning the two main acquirers, that is, Redecard and Visanet.

<sup>66</sup> One implicit hypothesis, in this case, is that there is no cost to get rid of POS terminals.

relating exclusively to their acquiring activities (they have used own criteria to prorate their costs and revenues, which could also harm the analysis).

To calculate the relevant financial indices, balance sheet data have been standardized and submitted to some adjustments<sup>67</sup>. Tables 12 and 13 show the financial indices relating to Redecard and Visanet, respectively.

**Table 12 – Redecard – Financial indices**

| <b>Index</b>              | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> |
|---------------------------|-------------|-------------|-------------|-------------|-------------|
| Current liquidity         | 0.94        | 0.89        | 0.99        | 1.02        | 1.44        |
| General liquidity         | 0.87        | 0.79        | 0.86        | 1.09        | 1.35        |
| Fixed assets/Total assets | 0.16        | 0.26        | 0.19        | 0.16        | 0.14        |
| ROE                       | 740.6%      | 826.2%      | 914.6%      | 1268.4%     | 174.4%      |
| ROI                       | 30.3%       | 48.7%       | 54.6%       | 89.8%       | 63.3%       |
| Markup                    | 46.4%       | 49.5%       | 48.2%       | 57.0%       | 53.9%       |
| Active turnover           | 0.65        | 0.98        | 1.13        | 1.58        | 1.17        |
| Profit/Fixed assets       | 1.87        | 1.88        | 2.81        | 4.65        | 4.60        |
| POS rent/Fixed Assets     | 1.08        | 1.05        | 1.54        | 2.32        | 2.49        |
| Financial leverage degree | 24.45       | 16.98       | 16.75       | 14.12       | 2.75        |
| Third assets share        | 2345.1%     | 1598.2%     | 1575.3%     | 1312.2%     | 175.4%      |

**Table 13 – Visanet – Financial indices**

| <b>Index</b>              | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> |
|---------------------------|-------------|-------------|-------------|-------------|-------------|
| Current liquidity         | 0.53        | 0.63        | 1.47        | 1.24        | 1.20        |
| General liquidity         | 0.50        | 0.67        | 1.21        | 1.18        | 1.26        |
| Fixed assets/Total assets | 0.52        | 0.44        | 0.22        | 0.20        | 0.16        |
| ROE                       | 29.4%       | 44.4%       | 98.9%       | 156.6%      | 147.0%      |
| ROI                       | 5.7%        | 10.9%       | 36.2%       | 56.1%       | 58.8%       |
| Markup                    | 2.6%        | 7.1%        | 21.0%       | 32.6%       | 36.8%       |
| Active turnover           | 2.19        | 1.54        | 1.72        | 1.72        | 1.60        |
| Profit/Fixed assets       | 0.11        | 0.25        | 1.63        | 2.83        | 3.63        |
| POS rent/Fixed Assets     | 0.76        | 0.80        | 2.16        | 2.59        | 3.06        |
| Financial leverage degree | 5.13        | 4.07        | 2.73        | 2.79        | 2.50        |
| Third assets share        | 412.8%      | 307.5%      | 173.0%      | 179.0%      | 150.2%      |

Except regarding Visanet's current liquidity, the indices shown above demonstrate that both acquirers have a satisfactory payment capacity concerning both short and long term debt. In the case of Redecard, due to funds received in the context of the recently carried out initial public offer, there was a significant increment in its current and general liquidity indices.

<sup>67</sup> The most significant adjustment was done in payments to make to merchants and in payments to receive from issuing banks. To make the balance more readable, these counts were adjusted by net value.

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Both in the case of Visanet and Redecard, the 2007 immobilization index is low due mainly to infrastructure outsourcing, fast depreciation of POS terminals, and increment in the number of POS terminals presenting shared usage.

Other immobilized assets-related indices are equally important to comprehend the business and also to verify the existence of possible economic entrance barriers. POS terminal rental is a profitable business, as the "POS rental/immobilized assets" index demonstrates: in 2007, revenues stemming from this activity would be enough to buy 3.06 the immobilized assets in the case of Visanet, and 2.49 in the case of Redecard. The acquiring activity's profitability is also indicated by the "Income/immobilized assets" index, since the income obtained in just a year is enough to replace all immobilized assets in both cases. It is also possible to observe that, in 2007, the profit margin<sup>68</sup> reached 36.8% in the case of Visanet, and 53.9% in the case of Redecard, which are higher than the one presented by acquirers operating in the European Community (median equal to 8.3%)<sup>69</sup>.

Redecard's Return on Investment (ROI) used to be higher than Visanet's one, but in 2007 they got closer. An explanation for this can be the Redecard's financial leverage and also the participation of third parts in the Redecard's capital. As compared to 2006, the index relating to Redecard experienced a strong variation in 2007 due mainly to the aforementioned Redecard's initial public offer.

To verify if there is abusive profit, it is important to analyze the Return on Equity (ROE). In the case of Redecard, the relevant index showed profitability higher than 1,000% in 2006, which was reduced to less than 200% in 2007 due to the IPO carried out. This analysis assesses the abusiveness of profits.

To assess the fair profit, Capital Asset Pricing Model (CAPM) methodology was used, since it enables to consider the relevant business risk. Even though CAPM is a relatively simple methodology, its use in the focused cases was impaired by the fact that, in the analyzed period, there was no comparable enterprise in Brazil listed in the stock exchange<sup>70</sup>, so that an alternative approach was needed.

In order to solve this problem, enterprises which have some relation with acquiring activity were selected, namely those operating with retail sales, provision of

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<sup>68</sup> Calculated as net profit divided by net revenue.

<sup>69</sup> *European Commission, Interim Report I – Payment Cards*, April 2006.

<sup>70</sup> Despite the acquirer Redecard's IPO in 2007, there are only partially available data about it for that year.

technology services, and provision of financial services. Retail enterprises were selected since they are the acquirers' main clients, and therefore it seems to be reasonable to expect that, in a certain extent, their profitability has some relation with acquirers' profitability. In the same way, taking into account that, in the present structure, Brazilian acquirers also provide both financial and technological services, it seems also reasonable to compare them with other financial and technological providers.

After selecting assets and calculating risks related to the aforementioned activities, the acquiring activity was assessed as a portfolio of enterprises, with a proportional division of revenues. Data which were used and details relating to the used model can be found in Annex I.

Based on the model, a reasonable ROE was measured and compared to acquirers' profits, as shown in Table 14.

**Table 14 – Estimated fair profit according to CAPM methodology**

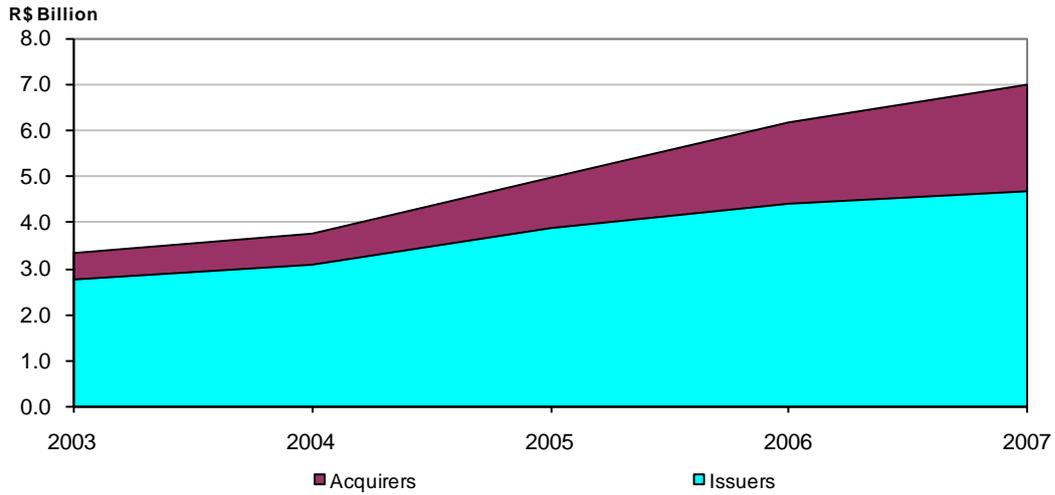
|                   | 2003   | 2004   | 2005   | 2006    | 2007   |
|-------------------|--------|--------|--------|---------|--------|
| Upper bound       | 258.0% | 48.3%  | 70.0%  | 85.2%   | 104.4% |
| Reasonable Profit | 170.2% | 40.5%  | 54.5%  | 63.4%   | 71.0%  |
| Lower bound       | 82.5%  | 32.8%  | 39.0%  | 41.6%   | 37.6%  |
| Redecard          | 740.6% | 826.2% | 914.6% | 1268.4% | 174.4% |
| Visanet           | 29.4%  | 44.4%  | 98.9%  | 156.6%  | 147.0% |

As shown, Visanet's and Redecard's return on equity (ROE) was far higher than profitability of similar activities, that is, except for Visanet in 2003 and 2004, acquirers' profitability was higher than fair profit in all analyzed period.

### **4.9.3. Analysis of the payment card market profitability**

Considering the market as a whole, that is, all three-party and four-party schemes, it is possible to realize that profitability has increased along the analyzed period<sup>71</sup>. This is something that could be expected due to the increasing usage of payment cards, specially credit cards which are more profitable for the relevant services providers than debit cards.

<sup>71</sup> The value deflationed brought to fourth quarter of 2007.

**Graph 63 – Issuers and acquirers - Profitability**

Acquirers' share on industry's profit has been increasing. However, it is worth highlighting that the two main acquirers are property of, or controlled by, large issuing banks, and that significant part of these profits are distributed among them.

# 5

## **Concluding Remarks**

### **5.1. Payment card industry organization**

Backed by an analysis carried out in this report on the features of payment instruments available in Brazil, it has been adopted understanding according to which payment cards do not integrate a relevant market comprising all other payment instruments. After that, it was eliminated the possibility of intensive substitution between credit cards and debit cards, whether in the issuance side or the acquiring side, taking into account both the peculiarities of these two payment instruments and the features of a two-sided market.

The assessment of market power was carried out taking into account two alternative scenarios for the relevant market: a) each side of the market (issuance market and acquiring market) of each payment card scheme is a distinct relevant market; and b) each side of the market as a whole is a distinct relevant market. Regardless which scenario is considered, the conclusion is the same concerning the existence of market power.

#### **5.1.1. Structure**

In Brazil, besides acquiring activities, acquirers provide network services and also clearing and settlement services, which can be considered atypical as compared to the functioning of payment card industry in other countries and if it is admitted that this difference could not be justified by peculiarities of the Brazilian

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economy. It is important to point out that there is not interoperability in network services relating to capture and processing of transactions.

Although this vertical integration can be considered as an important step towards the payment card market' consolidation, from a certain moment on it brings about inefficiency for not allowing maximization of possible gains of scale and for introducing barriers to new entrants.

In a three-party systems, by construction, there is just one entity acting as acquirer. In case of American Express, Hipercard and Diners, the acquirers are, respectively, Banco Bankpar (which is part of the Bradesco conglomerate), Unibanco and Citibank. Hence, it is not appropriate to carry out an analysis on concentration in the acquiring side of these cases.

Concerning a four-party system, however, it is possible to have multiple acquirers, but in the Brazilian market each payment card arrangement counts on just one acquirer. In case of Visa, the acquirer has contractual exclusivity, so that no new firm wanting to act as acquirer is accepted in the relevant arrangement.

In the MasterCard arrangement, Redecard is the single acquirer even though in this case there is not exclusivity clause. As a matter of fact, other entities have been authorized to act as acquirer, but they have opted for not starting their activities up to now.

Therefore, concerning the major schemes (Visa and MasterCard), Visanet and Redecard have monopoly over the typical activity of acquiring.

In a scenario where both network service providers and clearing and service providers were independent, and in which there were interoperability, financial institutions which nowadays are partners in a certain arrangement could potentially compete among them for the related acquiring services.

To increase competition in acquiring services, it is necessary to consider three aspects:

- first, it is important that clearing and settlement service providers are neutral regarding entities offering acquiring services. Nowadays, the related clearing and settlement services are provided by Visanet and Redecard themselves, which implies that potential new acquirers

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would depend on clearing and settlement services provided by the existing acquirers;

- second, it is crucial to have interoperability among network service providers, which does not occur nowadays due to the action of the present main acquirers in this segment of the market, so as to facilitate the entrance of new acquirers in the market. It is important to have in view that network services, due to economy of scale, which is typical in this kind of services and is not in acquiring services, tend to be provided by very few participants of the market;
- third, in a four-party system, there should not be exclusivity clause between the relevant credit card company and a certain acquirer, so as to potentially create value for new entrants and, thus, increase contestability in the acquiring activity.

It is also important to point out the national banks' strategy in favor of the replacement of local debit arrangement (Cheque Eletrônico) by Visa and MasterCard debit arrangements. Taken into account that the local arrangement offers lower fees to the users and, therefore, is socially better, it is possible to conclude that the replacement has occurred due to both governance issues and absence of interoperability, as well as to the fact that the issuing banks have larger gains in the Visa and MasterCard arrangements, since their interchange fees are higher than the one observed in the national debit card arrangement. However, it should be highlighted that the existence of a robust local debit arrangement is positive in terms of both market contestability and operational cost reduction.

In the issuance market, it is possible to realize an increment in competition along the time in four-party systems, as it is shown in item 4.5.1. However, concentration in the issuance market is correlated with the participation of financial institutions as partners of the single acquirer existing in each one of the main payment card arrangements, as well as with the possibility of mergers and incorporations between banking system participants. An increment in competition in the acquiring activity could increase competition in the issuance market, taking into account the interdependence between the two sides of the payment card market.

Where a more comprehensive scenario concerning relevant market is considered (scenario "b"), there is a small reduction in the concentration level of the

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issuance market, but the level of concentration in the acquiring market shows the existence of a structure that is close to a duopoly and, as compared to the other scenario, there is no change in the conclusion that Visanet and Redecard have market power.

## **5.1.2. Market participants' practices**

### **No-surcharge rule**

There are many concerns relating to potential anti-competition effects stemming from practices observed in the payment card market, and the no-surcharge rule is one of them. Besides concerns relating to the improvement of market efficiency, the no-surcharge rule has relevant implications in terms of public policies, mainly those relating to the promotion of payment card usage, popularization of access to credit, and reduction of compliance costs.

The main restrictions to price differentiation based on the payment instrument used by the customer stems from the Department for Protection and Defense of Consumers' understanding according to which this practice is not in line with the Consumer Defense Code. Concerning payment card industry participants, Visa, MasterCard and Hipercard prohibit surcharge when payment is made through their respective cards, but according to their rules a discount can be applied if another payment instrument is used. Nevertheless, only 35% percent of the interviewed merchants offer this kind of discount.

The no-surcharge rule implies both distortion to the market and prejudice to costumers, since price differentiation would result in some benefits such as:

- it would allow merchants to signalize through their prices the cost of each payment instrument, which would promote larger economic efficiency. Impossibility of price differentiation distorts the nature of the contestability among payment instruments, and thus the consumers can be stimulated to use a certain payment instrument which maybe is not necessarily the least expensive to the society;
- it would reduce cross-subsidies from consumers that do not use payment cards (in its majority low income people) to consumes that do (in its majority high income people); and

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- it would modify the equilibrium of forces among the market participants, since price differentiation would implicitly augment their bargaining power. Furthermore, freely established prices would reduce the adverse effects stemming from the acquirers' market power and, on the other hand, would increase bargaining power of the merchants. All in all, this could bring about positive effects to the payment card industry's price structure.

The main concern of the payment card industry's participants regarding price differentiation is that, if allowed, this could imply a lower level of usage of this payment instrument. As consumers using another payment instrument would have the possibility of paying a lower price in this situation, this could lead to a reduction in the number of transactions involving payment cards, which, as a consequence, would have a negative effect over the payment card industry and also would have negative effects in terms of social welfare.

However, a research carried out by the Central Bank of Brazil with merchants indicates that most of them not offering nowadays any kind of rebate if other payment instrument is used, which represent some 65% of the interviewed population, would not use price differentiation even if this practice were contractually and legally allowed. They allege that would have difficulties to apply price differentiation due mainly to operational issues, larger costs related to the need of maintaining multiple price lists, and low margin of profit. Therefore, even in other scenario, the majority of merchants would not use price differentiation, meaning that if allowed this would not impair significantly the payment card industry.

The removal of the no-surcharge rule, implying that providers of goods and services would have the possibility of charging different prices according to the payment instrument used by costumers, could be a practical regulatory solution to be adopted by public authorities concerned with the level of the interchange fee. As interchange fee would be neutral in the absence of the no-surcharge rule in the context of some hypotheses addressed in item 2.4, its removal would make the payment card industry to reach a efficient level regarding the interchange fee without need for a direct intervention.

Hence, without prejudice to the payment card industry's growth, the best policy would be to allow price differentiation according to the payment instrument used. It is expected that effective price differentiation takes into account not only the costs

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incurred, but also the benefits aggregated by each payment instrument, so as to generate incentives to their use based on relevant costs and benefits.

### **Honor all cards rule**

Another payment card industry's practice is the so-called "honor all cards rule", according to which merchants participating in a certain payment card arrangement are obligated to accept all relevant payment cards regardless the issuing bank, nature (hybrid, co-brand or pure) and type (golden, platinum etc) of the card<sup>72</sup>. This rule stimulates competition in the issuance side insofar as it extends to all issuers, regardless their size, network externalities existing in the arrangement. Moreover, this rule is necessary to preserve the credibility of the payment card arrangement.

### **Interchange fee**

In the four-party systems analyzed in this report, the interchange fees, which are in line with those observed in other countries, is unilaterally set by the relevant payment card company, and should be observed by all participants. This approach seems to be preferable to bilateral agreements between issuers and acquirers, since it prevents the largest participants from creating barriers to the entry and permanence of small-size participants, and thus avoids market concentration. In addition, this approach contributes to the existence of a larger number of participants in the market, which would be lesser in case of bilateral negotiation due to the high and exponentially increasing transaction costs. However, if the interchange fee were set multilaterally by the local participants this would result in a more efficient approach, since in this case the local particularities could be considered instead of only reproducing international interchange fees. It is important to highlight, for example, that Brazilian payment card issuers do not have costs financing cardholders' purchases and, thus, this could bring about a lesser interchange fee as compared to international ones.

Concerning Visa and MasterCard debit card arrangements, the interchange fee is set as a percentage of the merchant discount fee. Hence, the relevant monopolist acquirer indirectly defines the correspondent interchange fee. In a debit card transaction, the financial risks (credit risk and liquidity risk) are minimum or inexistent, and there is not a direct relation between the costs of the card issuer and the

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<sup>72</sup> Note that this approach is the "weak version" of the rule.

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value of the transaction. To confirm that, the value of the interchange fee is not directly set by the card issuer.

### **Access rules**

A common requirement to all arrangements is that, to be an issuer or acquirer, an entity wishing to participate should be under supervision of the Central Bank of Brazil, or should be under control of such an entity. Regarding this issue, it is important to consider the balance between risks and competition, since, despite restricting participation, this rule is a form of risk management. Furthermore, given the number of existing financial institutions, prejudice to the competition can be considered small as compared to gains in terms of security.

In Brazil, it is not applied the rule according to which the acquirer has to be a net issuer, but MasterCard has informed that an institution wishing to be an acquirer should issue a sufficiently large number of payment cards. This restriction has not had important effects over the Brazilian payment card industry's structure, but it should be monitored along the time so as to assess possible future adverse effects.

In spite of being potentially restrictive, technical requirements can be seen as necessary to safety and standardization since payment card industry is highly dependent on technology.

### **5.1.3. Prices and profits**

In credit card transactions, the average interchange fee has been increasing in both Visa and MasterCard arrangements due to the increasing number of payments being fractioned and the crescent use of "platinum" and "corporate" cards. Concerning debit cards, the interchange fee has followed the evolution of the merchant discount fee, since there is a direct relation between them according to existing rules. These fees have been fairly stable along the time, and those used by the local debit card arrangement have in average been well lesser than the ones observed in the arrangements owned by international companies.

Differently from which is observed in other countries, the Brazilian credit card issuers make payment to acquirers observing an average term of 28 days after the purchasing date, which is in average larger than the period given to the cardholders to pay their purchases. Therefore, in Brazil the issuer has no opportunity cost financing

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cardholders who pay their bills in the due date, and this fact should be taken into account where a comparison with international interchange fee is made.

For all debit and credit card arrangements, the average merchant discount fee varies according to the segment of the market, size of the merchant and, in case of debit transactions, number of months in which the payment is divided. The fee charged to merchants presenting larger value of transactions in a certain segment of the market is lower than the one charged to merchants presenting lower value of transactions, and the relation between these different fees varies according to the segment of the market.

In each payment card arrangement, the weighted average of the merchant discount fee showed low variation along the period considered in this report, except in case of Hipercard that has presented a downward trend. Such a fact is due mainly to partial transfer of augments in the interchange fee to the merchant discount fee.

Regarding Visa and MasterCard credit card arrangements, in most market segments the larger the interchange fees, the larger the merchant discount fees, and this confirms the hypothesis on the way merchant fee is set (see Annex B). In average, the intensity in which an augment in the interchange fee is transferred to the merchant fee is higher than 1 and is significant. However, the level of the transfer varies depending on the market segment, since each one of them has different elasticity of price and also has different perception on benefits in accepting credit card. In light of the upward trend observed in the average interchange fee, as shown in item 4.6, as well as of the observed relation between the interchange fee and the merchant discount fee, it is necessary to maintain these fees monitored by public authorities.

Concentration in a given market segment influences inversely the merchant discount fee. This indicates that segments where there is more concentration and also lower dispersion regarding the size of merchants, with a consequent larger bargaining power, typically have to pay lower merchant discount fees as compared to other merchants.

Concerning debit card transactions, the merchant discount fee presented low variation in the analyzed period.

Price discrimination is as common practice where there is market power, whether in case of monopoly or oligopoly. The possibility of price discrimination brings about improvement of efficiency, but also implies transfers of resources from consumers to producers. Such a practice exists, for instance, in utilities markets (in Brazil, however,

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these sectors are government regulated). In commercial activities, price discrimination is also used where a merchant charges different prices according to the quantity of products purchased by a client.

In case of payment card industry, price discrimination is mainly related to two economic rationales behind the aforementioned cases. First, it occurs due to positive externalities since the value aggregated to the network by a large commercial merchant acting in an important market segment is larger than the one aggregated by a small merchant. Hence, a payment card that is accepted by a large supermarket chain is more valuable to the cardholder and, as a consequence, to the payment card arrangement. Second, price discrimination is backed by the larger volume of revenues per unit of cost, which is reflected in a larger number of transactions being carried out in a large merchant.

However, it is important to highlight that it is necessary to have the payment card industry regulator monitoring the prices practiced by the relevant service providers, so as to assess the effects of potential changes in the price structure and also in the behavior of market participants.

As for the fee charged to the cardholder, issuing banks have been using it as a mean to increase the credit card usage. Due to both the larger elasticity of price and higher level of competition in this side of the market, in some arrangements this kind of fee is not charged or, if charged, some benefit is offered to the cardholder. Debit card arrangements are not allowed to charge this kind of fee, according to a CMN resolution enacted in 2008 (even before this resolution, issuing banks typically did not charge debit card holders for this fee).

As a consequence of the aforementioned practices, the issuance market participants' profits has been dependent on financial revenues stemming from credit extended to cardholders. In effect, according to the analysis carried out in this report, without this revenue in many cases the issuance activity would result in deficit. Such a fact confirms the understanding of market participants according to which, for issuing banks, credit cards should be seen as two distinct products, that is, as a payment instrument and also as a channel to facilitate the extension of credit to the consumers holding them.

If financial revenues were not considered, interchange fee would be the main revenue for banks issuing credit cards, and although insufficient to render the

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issuance activity profitable it has gained importance along the time. As for the financial revenues, a trend of higher level of failure has been observed, raising from 2% of transactions in 2005 to 2.6% in the end of 2007. This higher level of failure was motivated by an increment in the volume of revolving credit.

It has also been realized that, keeping fix the interchange fees and interest rates, the issuance activity continues to be profitable even in a scenario in which merchants are paid two days after the purchasing date, with the opportunity cost being borne by the card issuer. This fact shows that, in credit card transactions, there is room for reduction of the period after which payment is made to the relevant merchant, which could be obtained with larger competition in both sides of the market, without need of increasing interchange fees or interest rates applied to revolving credit.

Concerning debit cards, taking into account that there is not financial revenues and also that the interchange fee is lower, the analysis carried out in this report has evidenced that the issuance activity entails negative results to the issuers. However, it is important to have in mind that this payment instrument means lower costs for the issuing banks as compared to paper-based ones.

Also on issuing banks' profits, it should be noted that, despite the fact that the five-top issuing banks have a relatively high participation, lower-size banks have been gaining room in the market.

Regarding the acquiring side of the market, in which a high concentration level is observed, profits have presented a growth that is larger than the one observed in other market indicators, differently from which is observed in the issuance side. The main acquirers, Visanet and Redecard, have shown the largest profits in this segment. In case of American Express and Hipercard, where the three-party system is observed, the profit analysis has considered acquiring activity and issuance activity all together.

Acquirers get revenues mainly from application of merchant discount fee and rent of POS terminals, items that, together, in average account for 96% of their total revenue. In 2007, in the four-party systems, interchange fee, administrative costs, and tax costs accounted for some 78% of the total expenditures.

Also, it is important to note that, in spite of a great increment in the number of payment card transactions, expenditures concerning processing activities have been relatively stable along the period considered in this report, as a result of benefits stemming from gains of scale and scope. Taking into account the way payment card

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industry is organized in Brazil, in which the acquiring side presents characteristics of monopoly, it is a fact that acquirers are the main beneficiaries of these economies, in spite of the non-existence of interoperability in network services.

Specific analysis relating to Visanet and Redecard (see Annex C) showed that their profitability has been, for a long time, well above the one observed in other activities presenting similar characteristics of risk. Furthermore, it is possible to affirm that the activity of renting POS terminals has gotten significant profits along the period analyzed in this report, and also that cost reduction stemming from gains of scale in technology are not being shared with merchants accepting payment cards.

In light of this, and taking into account that in Brazil payment card industry presents a vertical structure, the aforementioned analysis demonstrated the possibility of separating network services, including transaction capture, from the acquiring activities. Such a separation is based on the understanding that payment card market is characterized by the coexistence of cooperation in network service provision, and competition in acquiring activities. It has been evidenced that, in general, profits are large enough to make possible the effective separation of these activities.

It should be pointed out that, concerning Visanet and Redecard, the relevant analysis has considered the simple separation of network services and acquiring activities, without taking into account other possible changes in the payment card infrastructure, such as, for example, adoption of interoperability in network services, where the Brazilian market presents a great potential for gains of scale and scope.

Hence, this report developed another analysis that considers possible economies stemming from interoperability in network services, which showed that in this case there would be significant cost reduction even in the most conservative scenario. This fact evidences the importance of stimulating interoperability in the Brazilian payment card industry, and it should be pointed out that the relevant necessary investment could be paid just with saved money resulting from cost reduction.

These conclusions point to important market failures and among them should be highlighted absence of contestability in the acquiring activity and significant market power by Visanet and Redecard. This situation is also backed by existing barriers to new entrants, whether contractual or economic, due mainly to the high

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vertical integration existing in the acquiring activity, and also to absence of network interoperability.

Existing network externalities along with potential gains of scale have not generated enough incentives to spur cooperation among market participants and, as a consequence, interoperability among network service providers.

There are evidences that the existence of a local debit card arrangement is somewhat important so as to have contestability in relation to international brand arrangements.

Lastly, information asymmetry among economic agents concerning prices, which is due to absence of transparency in the definition of interchange fee, merchant discount fee and fees charged to cardholders, impairs market's self-discipline. In the same way, there is strong evidence that the no-surcharge rule implies distortions in the market and, as a consequence, damages to consumers.

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## References

ALVARENGA, Bruno R. (2006). **A regulação do mercado de cartões de crédito no Brasil: uma análise à luz da teoria dos jogos**. Available at:

<[http://www.seae.fazenda.gov.br/conheca\\_seae/premio-seae/monografias\\_profissionais](http://www.seae.fazenda.gov.br/conheca_seae/premio-seae/monografias_profissionais)>.

ARELLANO, M.; BOND, S. (1991). **Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations**. *Review of Economic Studies*, 58, p. 277-297.

ASSOCIATION OF PAYMENT AND CLEARING SERVICES (APACS). Available at: <[http://www.apacs.org.uk/resources\\_publications/card\\_facts\\_and\\_figures.html](http://www.apacs.org.uk/resources_publications/card_facts_and_figures.html)>; <[http://www.apacs.org.uk/resources\\_publications/documents/Paymenttrendstable2.doc](http://www.apacs.org.uk/resources_publications/documents/Paymenttrendstable2.doc)>

BANCO CENTRAL DO BRASIL (2005). **Diagnóstico do Sistema de Pagamentos de Varejo do Brasil**. Available at: <[www.bcb.gov.br](http://www.bcb.gov.br)>.

BANCO CENTRAL DO BRASIL (2006). **Diretiva 1/2006**, de 11 de abril de 2006. Divulga opinião do Banco Central a respeito da indústria de cartões de pagamento. Available at: <[www.bcb.gov.br](http://www.bcb.gov.br)>.

BANCO CENTRAL DO BRASIL (2007). **Custo e eficiência na utilização de instrumentos de pagamento de varejo**. Available at: <<http://www.bcb.gov.br/htms/novaPaginaSPB/Nota%20TEcnica%20-%20Custo%20Eficiencia.pdf>>

B&T. **Bankcard victim of credit card war**. Available at: <[www.bandt.com.au/news/b8/0c03cab8.asp](http://www.bandt.com.au/news/b8/0c03cab8.asp)>

BAXTER, W. F. (1983). **Bank interchange of transactional paper: legal perspectives**. *Journal of Law and Economics*, 26, p. 541-588, 1983.

BIS/CPSS. **Statistics on payment and settlement systems in selected countries**. Bank for International Settlement. March, 2007. Available at: <<http://www.bis.org/publ/cpss78.pdf>>.

BISHOP, S.; WALKER, M. (1998). **Economics of E.C. Competition Law: Concepts, Application and Measurement**. London, Sweet and Maxwell

BOSHOFF, W. H.; DU PLESSIS, S. A.; THERON, N. M. (2007). **Two-sided market theory and its implication for market definition: an application to the SAA/Nationwide and Primedia cases**. Paper for The First Annual Competition Commission, Competition Tribunal and Mandela Institute Conference on Competition Law, Economics and Policy in South Africa, University of the Witwatersrand, Johannesburg.

BRASIL (1994). **Portaria Federal n. 118**, de 14 de março de 1994. Dispõe sobre a emissão de carnês, duplicatas e faturas, inclusive as emitidas por administradora de cartão de crédito, em URV.

BRASIL (2001). **Portaria conjunta Seae/SDE nº50**, de 1º de agosto de 2001. Expedição do Guia para Análise Econômica de Atos de Concentração Horizontal. **Diário Oficial da União**, n. 158-E, section 1, p. 12-15, August, 17th, 2001.

BRITS, H; WINDER, C. (2005). **Payments are no free lunch**. Occasional Studies. Vol. 3/Nr. 2. August, 2005.

CARLTON, D. W.; FRANKEL, A. S. (1995). **The Antitrust Economics of Credit Card Networks**. Antitrust Law Journal, v. 63, n. 2, p. 643-668, 1995.

CHAKRAVORTI, S. (2003). **Theory of credit card networks: a survey of the literature**. Review of Network Economics, v. 2. n. 2, p. 50-68, 2003.

CHAKRAVORTI, S.; EMMONS, W. (2003). **Who pays for credit cards?** Journal of Consumer Affairs, v. 37, n. 2, p. 208-230, 2003.

CHAKRAVORTI, S.; ROSON, R. (2004). **Platform Competition in Two-Sided Markets: The Case of Payment Networks**. Federal Reserve Bank of Chicago, 2004

COATE, Malcolm B.; FISCHER, Jeffrey H. (2007), **A Practical Guide To The Hypothetical Monopolist Test For Market Definition**, Potomac Papers in Law and Economics, 06-01, U.S. Federal Trade Commission.

COMPETITION APPEAL TRIBUNAL. Cases no. 1054/1/1/05, 1055/1/1/05, 1056/1/1/05. Available at: <<http://www.catribunal.org.uk/archive/casedet.asp?id=106>>

COMPETITION COMMISSION. Available at:<<http://www.competition-commission.org.uk> >

COMPETITION COMMISSION. **Credit Card Services: A report on the supply of credit card services in the United Kingdom**. August, 1989. Available at: <[http://www.competition-commission.org.uk/rep\\_pub/reports/1989/255creditcard.htm#full](http://www.competition-commission.org.uk/rep_pub/reports/1989/255creditcard.htm#full)>

COMPETITION COMMISSION. **Credit Card Franchise Services: A Report on the Supply of Credit Card Franchise Services in the United Kingdom**. September, 1980. Available at: <[http://www.competition-commission.org.uk/rep\\_pub/reports/1989/255creditcard.htm#full](http://www.competition-commission.org.uk/rep_pub/reports/1989/255creditcard.htm#full)>

CONSELHO ADMINISTRATIVO DE DEFESA ECONÔMICA (1998). Resolução nº 15, de 19 de agosto de 1998.

CRUICKSHANK REPORT (2000). **Review of Banking Services in the UK**. Available at: <[http://www.hm-treasury.gov.uk/Documents/Financial\\_Services/Banking/BankReview/fin\\_bank\\_review.cfm](http://www.hm-treasury.gov.uk/Documents/Financial_Services/Banking/BankReview/fin_bank_review.cfm)>

EMCH, Eric; TOMPSON, T. Scott (2006), **Market Definition and Market Power in Payment Card Networks**, Review of Network Economics, v. 5, Issue 1 – March 2006.

EVANS, David S. (2006), **Two-Sided Platforms and Analysis of Single-Firm Conduct**, Statement attached to comment 522292-00012, Federal Trade Commission.

EVANS, David S.; NOEL, Michael D. (2007), **Defining Markets That Involve Multi-Sided Platform Businesses: An Empirical Framework With An Application To Google's Purchase Of Doubleclick**.

EVANS, David; SCHMALENSEE, Richard (2005a). **Paying with Plastic: The Digital Revolution in Buying and Borrowing**. Second Edition, The MIT Press, London, 2005.

EVANS, David; SCHMALENSEE, Richard (2005b). **The industrial organization of markets with two-sided platforms**, National Bureau of Economic Research, Cambridge, MA, No. 11603, September, 2005.

EVANS, David; SCHMALENSEE, Richard (2005c). **The economics of interchange fees and their regulation: an overview**, MIT Sloan Working Paper, 4548-05, 2005.

GANGULY, B. E MILNE, A. (2002), **UK retail payments: competition, regulation, and returns to innovation**. Version 1.1, May 2002.

GANS, J.; KING, S. (2002). **A theoretical analysis of credit card regulation**. Melbourne Business School Working Paper, n. 2002-11, 2002.

GANS, J.; KING, S. (2003). **The neutrality of interchange fees in payment systems**. Topics in Economic Analysis & Policy, v. 3, n. 1, 2003.

GUTHRIE, G.; WRIGHT, J. (2003). **Competing Payment Schemes**. University of Auckland, Department of Economics, Working Paper, n. 245, 2003.

HARRIS, Barry C.; SIMONS, Joseph J. (1989). **Focusing Market Definition: How much Substitution is Necessary?**, *Research in Law and Economics*, 12, p. 207-225

HAYASHI, F. (2005). **Network Competition and Merchant Discount Fees**. FED Kansas City, November 2005.

HAYASHI, F. (2006). **A puzzle of card payment pricing: why are merchants still accepting card payments?** Review of Network Economics, v. 5. n. 1, p. 144-174.

HAYASHI, F.; WEINER, S. E. (2006). **Interchange Fees in Australia, the UK, and the United States: Matching Theory and Practice**. Economic Review, Federal Reserve Bank of Kansas City, Third Quarter, 2006.

HOROWITZ, I. **Market Definition in Antitrust Analysis: A Regression-based Approach**, *Southern Economics Journal*, v. 48, p. 1-16, 1981.

HOX, J. (2002). **Multilevel analysis: techniques and applications**. London: IEA.

HUMPHREY, D.; WILLESSON, M.; LINDBLOM, T.; BERGENDAHL, G. **What does it cost to make a payment?** Journal of Network Economics, v. 2, n. 2, p. 159-174, 2003.

HUNT, R. (2003). **An introduction to the economics of payment card networks**. Review of Network Economics, v. 2. n. 2, p. 80-96, 2003.

ITAUCARD (2007). **Indicadores do mercado de meios eletrônicos de pagamento**, October 2007. Available at:  
<<http://ww28.itau.com.br/imprensanet/img/EstudoBaixaRenda.pdf>>.

KATZ, M. (2001). **Reform of credit card schemes in Australia II: network effects, interchange fees, and no-surcharge rules in the Australian credit and charge card industry**. Reserve Bank of Australia, II Commissioned Report, 2001. Available at:  
<<http://www.rba.gov.au/PaymentsSystem/Reforms/CCSchemes/IICommissionedReport/index.html>>

---

KATZ, M. (2005). What do we know about interchange fees and what does it mean for public policy? Commentary on Evans and Schmalensee. In: **Conference on interchange fees in credit and debit card industries: what role for public authorities?** Santa Fe, New Mexico: Federal Reserve Bank of Kansas City, 2005.

KREFT, I. & DE LEEUW, J. (1998). **Introducing Multilevel Modeling**. London, USA: Sage Publications.

LITAN, Robert E. e POLLOCK, Alex J. (2006) **The future of Charge Card Networks**, AEI-Brookings Joint Center for Regulation Studies, February, 2006.

MANENTI, F.; SOMMA, E. (2002). **Plastic clashes: competition among closed and open systems in the credit card industry**, mimeo, 2002.

McANDREWS, J. ; WANG, Z. **Microfoundations of Two-Sided Markets: The Payment Card Example**, 2006. Available at:  
<[www.kc.frb.org/publicat/psr/rwp/PaymentDynamics.pdf](http://www.kc.frb.org/publicat/psr/rwp/PaymentDynamics.pdf)>

MELLO, E. (2008). **Possibilidade de equilíbrio com multihoming: uma abordagem de jogos evolucionários**, mimeo, 2008.

MONNET, C.; ROBERDS, W. (2006). **Credit and the no-surcharge rule**. Federal Reserve Bank of Atlanta Working Paper, 2006-25, 2006.

NATIONAL STATISTICS, Available at:  
<<http://www.statistics.gov.uk/STATBASE/tsdataset.asp?vlnk=208&More=Y> >;  
<<http://www.statistics.gov.uk/cci/nugget.asp?id=6> >;  
<<http://www.statistics.gov.uk/StatBase/Expodata/Spreadsheets/D6318.xls>>.

OFFICE OF FAIR TRADING (OFT). Available at: <<http://www.oft.gov.uk/>>

OFFICE OF FAIR TRADING (OFT). **MasterCard interchange fees, Preliminary conclusions**. February, 2003. Available at:  
< [http://www.oft.gov.uk/shared\\_oftr/reports/financial\\_products/oft634.pdf](http://www.oft.gov.uk/shared_oftr/reports/financial_products/oft634.pdf)>

OFFICE OF FAIR TRADING (OFT). **OFT considers MasterCard/Europay rules may involve excessive fees**. February, 25 September 2001. Available at:  
<<http://www.oft.gov.uk/news/press/archive/mastercardeuropay-rules#>>

OFFICE OF FAIR TRADING (OFT). **OFT issues statement of objections on MasterCard agreement**. Press Release 184/04. 10 November 2004. Available at:  
<<http://www.oft.gov.uk/news/press/2004/184-04>>

OFFICE OF FAIR TRADING (OFT). **OFT issues statement of objections on Visa agreement**. Press Release 195/05. 19 October 2005. Available at:  
<<http://www.oft.gov.uk/news/press/2005/195-05>>

OFFICE OF FAIR TRADING (OFT). **OFT launches new MasterCard investigation**. Press Release 20/06. 2 February 2006. Available at:  
<<http://www.oft.gov.uk/news/press/2006/20-06> >

OFFICE OF FAIR TRADING (OFT). **OFT to refocus credit card interchange fees work**. Press Release 97/06. 20 June 2006. Available at:  
<<http://www.oft.gov.uk/news/press/2006/97-06> >

---

OFFICE OF FAIR TRADING (OFT). **Investigation of multilateral interchange fees provided for in the UK domestic rules of MasterCard UK Members Forum Limited** (formerly known as MasterCard/Europay UK Limited). OFT 811. 6 September, 2005. Available at:

<[http://www.offt.gov.uk/shared\\_offt/ca98\\_public\\_register/decisions/oft811.pdf](http://www.offt.gov.uk/shared_offt/ca98_public_register/decisions/oft811.pdf)>

OFFICE OF PUBLIC SECTOR INFORMATION. **The Credit Cards (Price Discrimination) Order 1990**. Statutory Instrument 1990 No. 2159. Available at: <[http://www.opsi.gov.uk/si/si1990/Uksi\\_19902159\\_en\\_1.htm](http://www.opsi.gov.uk/si/si1990/Uksi_19902159_en_1.htm)>

OFFICE OF PUBLIC SECTOR INFORMATION. **The Credit Cards (Merchant Acquisition) Order 1990**. Statutory Instrument 1990 No. 2158. Available at: <[http://www.opsi.gov.uk/SI/si1990/Uksi\\_19902158\\_en\\_1.htm](http://www.opsi.gov.uk/SI/si1990/Uksi_19902158_en_1.htm)>

OFFICE OF PUBLIC SECTOR INFORMATION. **Competition Act 1998**, Acts of Parliament, 1998. Available at: <<http://www.opsi.gov.uk/ACTS/acts1998/19980041.htm>>

RESERVE BANK OF AUSTRALIA (2007). **Reform of Australia's payments system: Issues for the 2007/08 review**. May, 2007.

RYSMAN, Marc (2007). **The Empirics of Antitrust in Two-Sided Markets**, Competition Policy International, volume 3, number 1, spring 2007.

ROBINSON, Joan, (1934). **The Economics of Imperfect Competition**, London: McMillan.

ROCHET, J. (2003). **The theory of interchange fees: a synthesis of recent contributions**. Review of Network Economics, v. 2, n. 2, p. 97-124, 2003.

ROCHET, J.; TIROLE, J. (2002). **Cooperation among Competitors: The Economics of Payment Card Associations**. RAND Journal of Economics, 33, p. 549-570, 2002.

ROCHET, Jean-Charles; TIROLE, Jean (2003a). **Platform Competition in Two-Sided Markets**. Journal of the European Economics Association, v. 1, n. 4, p. 990-1209, 2003.

ROCHET, Jean-Charles; TIROLE, Jean (2003b). **An Economic Analysis of the Determination of Interchange Fees in Payment Card Systems**. Review of Network Economics, v. 2, n. 2, p. 69-79, 2003.

ROCHET, J.; TIROLE, J. (2005). **Two-Sided Markets: A Progress Report**. Mimeo, IDEI, University of Toulouse, 2005.

ROCHET, J.; TIROLE, J (2006). **Tying in Two-Sided Markets and the Honor All Cards Rule**. Mimeo, IDEI, University of Toulouse, 2006.

ROSON, R. (2005). **Two-Sided Markets: A Tentative Survey**. Review of Network Economics, v. 4, n. 2, p. 142-160, 2005.

RYSMAN, Marc. **The Empirics of Antitrust in Two-Sided Markets**. Competition Policy International, v. 3, n. 1, 2007.

SCHEFFMAN, D.T.; SPILLER, P.T. **Geographic Market Definition Under the US Department of Justice Merger Guidelines**, Journal of Law and Economics, v. 30, 1987.

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SCHMALENSEE, R. (2002). **Payment systems and interchange fees**. Journal of Industrial Economics, 50, p. 103-122, 2002.

SCHMALENSEE, R. (2003). **Interchange Fees: A Review of the Literature**. Payment Card Economics Review, v. 1, n. 1, p. 25-44, 2003.

SCHWARTZ, M.; VINCENT, D. (2006). **The no surcharge rule and card user rebates: vertical control by a payment network**. Review of Network Economics, v. 5, n. 1, p. 72-102, 2006.

VALVERDE, S.; HUMPHREY, D.; DEL PASO, R. (2002). **Effects of ATMs and electronic payments on banking costs**. Available at: <<http://www.ivie.es/downloads/ws/sbpa/ponencia08.pdf>>.

WANG, Zhu (2006). **Market Structure and Credit Card Pricing: What drives the Interchange?** Payment System Research, Federal Reserve Bank of Kansas City, Working paper 06-04, 2006.

WRIGHT, J. (2003). **Optimal Card Payment Systems**, European Economic Review, v. 47, p. 587-612, 2003.

WRIGHT, J. (2004a). **The Determinants of Optimal Interchange Fees in Payment Systems**. Journal of Industrial Economics, v. 52, p. 1-26, 2004.

WRIGHT, J. (2004b). **One-sided logic in two-sided markets**. Review of Network Economics, v. 3, n. 1, p. 44-64, 2004.

# **Annex A**

## **Directive 2006/1**



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**DIRECTIVE #1/2006**

Publishes Banco Central do Brasil's opinion on payment card industry.

The Banco Central do Brasil, as part of its mission to pursue both the stability of the national currency and a sound financial system, is in charge of promoting an efficient and safe national payment system, which is understood as a set of rules, institutions, markets, instruments and contracts that allow funds transfers among the economic agents.

2. Retail payments comprise mainly low value funds transfers related to good and service purchases.

3. Retail payment systems and related instruments have an important role regarding efficiency and economic welfare in a society, particularly with respect to aspects relating to the people's reliance on the currency, and the normal functioning of business and commercial relationships.

4. Cost reduction together with improvements in information technology have made possible and economically viable new electronic payment instruments as alternatives to paper-based instruments. The rapid development of these new payment instruments and the importance of the retail payment system have motivated the Banco Central do Brasil to act in this area.

5. In this context, the Banco Central do Brasil has published the "Report on the Brazilian retail payment system"<sup>73</sup> aiming to get determinants of the retail payment system modernization and to found the related policies and guidance. For the purposes of the aforementioned report, modernization means increment in the relative use of electronic payment instruments vis-à-vis paper-based instruments, which is justified in terms of social cost reduction in an amount that, according to studies carried out in some countries, has a potential to reach some 3% of the respective GDP.

6. Retail payment system modernization, as explained before, is aimed at maximizing economic efficiency so as to allow an enlargement of the social welfare.

7. As to retail payment service market, there are two distinct segments. The first directly provides services and payment instruments to customers, and the second offers infrastructures to capture, process, clear and settle retail payments.

8. In the first segment, competition has the potential to produce better results towards promoting economic efficiency, with its participants demanding access to networks in order to meet the users' needs through new products.

9. In the second segment, the use of shared arrangements to process, clear and settle payments has the potential to produce better results, since these arrangements take advantage of economies of scale and simultaneously favor the better exploitation of network externalities.

10. Payment cards have had an important role in the replacement of paper-based instruments. In Brazil, the use of payment cards increased some 29% a year in average from 1999 to 2005, and accounted for more than 45% of interbank non-cash payments. The corresponding value of transactions increased from some R\$ 41 billion to R\$ 190 billion over the same period.

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<sup>73</sup> The "Report on the Brazilian Retail Payment System" (May, 2005), which is available at [www.bcb.gov.br](http://www.bcb.gov.br), explains the rationale for this Directive.

11. The Banco Central do Brasil recognizes the payment card market's development as a positive factor, and considers that, as stated in the "Report on the Brazilian retail payment system", there is still room to augment their use with gains of efficiency and increased social welfare benefiting the final users, that is, both cardholders and merchant. Thus:

The Banco Central do Brasil recommends that the payment card industry use all the potential stemming from cooperation regarding use of infrastructures so as to allow improvement in terms of efficiency and social welfare, without prejudice to innovation, development of new products and services, and competition.

12. There are a number of payment cards such as credit cards<sup>74</sup>, debit cards<sup>75</sup>, e-money<sup>76</sup>, merchant cards<sup>77</sup> and charged cards<sup>78</sup>. However, in the context of this Directive, only general-purpose payment cards, also called "universal cards", namely credit cards, debit cards and e-money, are being considered.

13. Payment card industry comprises the entities in charge of issuing the payment cards, acquiring merchants to participate in the network, and providing network infrastructures that process transactions carried out by the cardholders.

14. Payment cards are network goods and so they are subject to the effects of network externalities, critical mass and economies of scale. The analysis of these aspects is important so as to understand the motivation of this Directive.

15. Network externalities are characterized by the fact that the value of a good or service increases whenever a new user enters into the system. In payment card systems, networks externalities have an important role regarding efficiency and innovation.

16. The existence of a large number of consumers wishing to make their payments through cards stimulates merchants to accept them, and at the same time the existence of a large number of merchants accepting payment cards stimulates the users' demand related to them. The value of a payment card for its user increases insofar as more merchants accept it and new users enter into the system. As to merchants, the increment in the number of potential buyers increases their interest in participating in the system.

17. The coexistence of multiple network infrastructures in the same market or industry functioning without cooperation among them reduces the positive effects of network externalities, which will in this case be restricted, at a lower level, to each individual network infrastructure. Where there is a cooperative arrangement, the benefits stemming from network externalities are potentially maximized for all market participants – cardholders, firms, issuers and acquires.

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<sup>74</sup> Credit cards allow payments for goods and services and withdraws by ATM, through a (limited) credit to the cardholder.

<sup>75</sup> Debit cards allow payments for goods and services, through debit, at the purchase time, on the cardholder's bank account.

<sup>76</sup> E-money consists of cards (or similar devices) with a stored value, electronically recorded, which is discounted as the cardholder uses it for payments for goods and services.

<sup>77</sup> Merchant cards operate as credit cards, but having their use limited to one only merchant.

<sup>78</sup> Charged cards aim payments for specific goods and services (such as telephony), storing a predefined credit value.

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18. Critical mass of users and base already installed of merchants are crucial for developing a payment card network. In an initial stage, many potential users will not be interested in adhering to a service network because the installed base is too small and, at the same time, the installed base is too small because few users have already adhered to the network. Therefore, the inexistence of critical mass is a barrier to its development. The present size of the network depends on the expectation of the potential users regarding its future size. Furthermore, taking into account that payment card market is a two-sided market, it is important to have coordination of decisions and expectations regarding all relevant stakeholders.

19. In the infrastructure segment, there are activities that are subject to economies of scale because of the significant investment that is necessary to initiate operation, the high relative fixed costs and low marginal costs, that is fixed costs account for the largest share of the costs.

20. In this sense, cooperation is important to optimize investments in infrastructure. This means that the same result in terms of goods and services can be reached with a lower volume of productive resources, or still that with the same volume of productive resources it is possible to get a better result and gains of efficiency.

21. Infrastructure cooperative arrangements presenting clear and objective access criteria allow reduction of barriers to new entrants into the payment card service provider segment, insofar as sunk costs<sup>79</sup> to initiate operation are reduced.

22. In sum, cooperation facilitates participants' coordination of decisions and expectations aimed at maximizing benefits stemming from network externalities and reducing infrastructure fixed costs, exploiting all the potential of economies of scale, and, on the other hand, competition among payment service providers is stimulated.

23. Gains of efficiency and enlargement of social welfare can be gotten with the simultaneous existence of cooperative and competitive arrangements. Cooperation among infrastructure market participants does not have the aim of eliminating competition. In fact, in this arrangement competition is focused on activities where it produces better results.

24. Apart from stimulating gains of economic efficiency by means of arrangements based on cooperation without prejudice to competition, the Banco Central do Brasil's expectation is that these gains be distributed among all participants in the payment chain, which would be benefited by both value aggregation and increased social welfare.

25. Innovation is essential for developing, creating and distributing new products and services in the payment card industry. Heterogeneity is part of the aim of increasing the social welfare, and diversity in terms of products and services benefits consumers since in this case they have more opportunities of choice. Cooperation regarding infrastructure should not represent impediment to innovation and to diversity of products and services.

26. Central banks and international organizations have been in favor of cooperation regarding infrastructure in the payment card industry. The Bank for International Settlements (BIS)<sup>80</sup> recommends the use of interoperability among networks processing transactions at the point of

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<sup>79</sup> Sunk costs are fixed costs not converted into productive assets.

<sup>80</sup> See "General Guidance for Payment System Development" (2005), page 42.

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sale, especially in POS<sup>81</sup> networks, so as to both expand the supply of available services and improve the infrastructure.

27. Another important issue is the criterion to access infrastructure arrangements, since open access helps to promote efficiency. However, in the context of cooperation highlighted in this Directive, the establishment of different criteria for future participants or to share networks may be acceptable so as to balance the differences among the participants, but these criteria should not be impeditive to acceptance of new participants, and they should be objective, clear and transparent.

28. The Banco Central do Brasil will oversee the payment card industry by means of qualitative and quantitative analyses so as to monitor aspects relating to efficiency, cooperation in infrastructure, competition in supply of services, and development of new products.

29. Should the Banco Central do Brasil identify market failures that result in reduction of welfare for cardholders and merchants in the present arrangement, it may propose some structural changes aimed at correcting them.

30. The exercise of either market power or practices hindering competition may lead the Banco Central do Brasil to carry out a joint initiative with competition authorities so as to establish a competitive environment in the market.

Brasilia, April 11, 2006.

Henrique de Campos Meirelles  
Governor

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<sup>81</sup> Despite being an acronym for “point of sale”, POS, here, refers to the electronic equipment used by merchants to request authorization for payment and to record operations done through payment cards.

## **Annex B**

# **Antitrust International Analysis**



| Item                           | United Kingdom                                                                                                                                                                                                                                                                                         | Australia                                                                                                                                                                                                                                                                          | Chile                                                                                                                                                                                                      | Netherlands                                                                                                                                                                                                                               | Mexico                                                                                                                                                                                                                                                                                    | United States                                                                                                                                                                           |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>a) Motivation</b>           | Credit Card Franchise Services (1980) and Credit Card Services (1989); <i>Cruikshank Report (HM Treasury)</i> ; BRC( <i>British Retail C.</i> ) Complaint; Network access restriction; High interchange fee and its effects over merchant service charge; Multilateral agreement as a cartel practice. | Parliament Study (" <i>Wallis Committee</i> ") "Excessive" use of credit cards, although they were more "expensive" than EFTPOS debit cards; Subsidy from cash to cards; Network access restriction; High interchange fee and its effects over merchant service charge and retail. | High prices for merchants; Debit merchant service charge equal to the one for Credit; Complaints from merchants; Cartel through Transbank; Transbank's Monopoly; Transbank's statutory foundation.         | DNB study requested by the Ministry of Finance - " <i>Wellink Report</i> "; Prices not reflecting costs, Presence of cross-subsidies; High prices for merchants; Complaint from retailer (Royal KMB); Cartel action by means of Interpay. | Law for Transparency and Organization of Financial Services approved in 2004, giving power to de Central Bank of Mexico to regulate bank fees; Legal mandate enabling Banxico to act over retail banking; Low usage level of payment cards and short range of acquired merchants network. | Several lawsuits resulting from rules imposed by brands were initiated by affected parties. The Department of Justice (DOJ) also initiated and investigation about exclusivity/duality. |
| <b>b) Involved authorities</b> | Office fair Trading - OFT, Competition Commission - CC and Competition Appeal Tribunal - CAT.                                                                                                                                                                                                          | Australian Competition and Consumer Commission (ACCC) and Reserve Bank of Australia (RBA).                                                                                                                                                                                         | <i>Fiscalía Nacional Económica (FNE)</i> , <i>Banco Central de Chile</i> , <i>Superintendencia de Bancos e Instituciones Financieras (SBIF)</i> , and <i>Tribunal de Defensa de la Libre Competencia</i> . | <i>De Netherlands Bank - DNB</i> ; <i>Nederlandse Mededingingsautoriteit - NMA</i> .                                                                                                                                                      | <i>Banco de México (Banxico)</i> ; <i>Comisión Federal de la Competencia - CFC</i> and <i>Treasury</i> .                                                                                                                                                                                  | DOJ and courts of appeals.                                                                                                                                                              |
| <b>c) Process conducted by</b> | OFT.                                                                                                                                                                                                                                                                                                   | RBA.                                                                                                                                                                                                                                                                               | FNE and <i>Tribunal de Defensa de la Libre Competencia</i> (Chilean Central Bank - regulation).                                                                                                            | NMA (DNB as consultant).                                                                                                                                                                                                                  | <i>Banco de México (Banxico)</i> .                                                                                                                                                                                                                                                        | Judiciary.                                                                                                                                                                              |

| Item                                | United Kingdom                                                                                                                                                                                                                     | Australia                                                                                         | Chile                                                                                                                                            | Netherlands                                                                                                                | Mexico                                                                                                                                                                                                                       | United States |
|-------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>d) Antitrust Analysis</b>        |                                                                                                                                                                                                                                    |                                                                                                   |                                                                                                                                                  |                                                                                                                            |                                                                                                                                                                                                                              |               |
| <b>d1) Relevant Market</b>          | Credit card market;<br>Three sub-markets:<br>a) Acquiring Market;<br>b) Issuing Market;<br>c) Wholesale (between issuers and acquirers).                                                                                           | Credit cards market;<br>Debit cards (EFTPOS and Visa).                                            | Credit and debit cards market - Network services and acquiring.                                                                                  | Debit card (PIN) acquiring market.                                                                                         | Credit and debit cards market;<br>Network services and bank fees in general.                                                                                                                                                 |               |
| <b>d2) Analysis Focus</b>           | Interchange Fee (level and multilateral agreement);<br>Network access (Acquiring);<br>Transparency in rules.                                                                                                                       | Interchange fee;<br>Surcharge in retail;<br>Network access (Acquiring);<br>Transparency in rules. | Acquiring and network services;<br>Banks acting as a cartel through Transbank;<br>Transbank's monopoly;<br>Regulation of Transbank's activities. | Acquiring and network services;<br>Banks acting as a cartel through Interpay (founded by 8 banks);<br>Interpay's monopoly. | Fees practiced by payment card market (interchange fee and merchant service charge).                                                                                                                                         |               |
| <b>d3) Organizational Structure</b> | Entry barriers in acquiring.                                                                                                                                                                                                       | Entry barriers in acquiring;<br>Bilateral contracts in EFTPOS system.                             | Monopoly in acquiring - Transbank (vertical integration).                                                                                        | Monopoly in acquiring - Interpay (vertical integration).                                                                   | Two interoperable networks (e-Global and Prosa), but with small national coverage.                                                                                                                                           |               |
| <b>d4) Conduct</b>                  | Networks access rules (with some regulation over acquiring since 1990);<br>Multilateral interchange fee agreement limiting competition;<br>Surcharge prohibition removed in 1990, but with the possibility of establishing limits. | Networks access rules;<br>Surcharge prohibition.                                                  | Transbank "irregular" profit distribution;<br>Unilateral price determination by Transbank;<br>Market domination.                                 | Unilateral price determination by Interpay;<br>Market domination.                                                          | Absence of price competition between brands - equal fees for MasterCard and Visa;<br>Privileged fees for ANTAD (Large Retailer Association) merchant members;<br>Acceptance of credit and debit cards compulsorily together. |               |
| <b>d5) Price Structure</b>          | Interchange fees included "extraneous cost";<br>Merchants and cardholders did not pay "real" prices for the services.                                                                                                              | Prices did not reflect costs.                                                                     | High fees for merchants;<br>Transbank's excessive profit.                                                                                        | High fees for merchants (one of the lowest in Europe);<br>Interpay's excessive profit.                                     | High fees for merchants;<br>Excessive profit for issuers.                                                                                                                                                                    |               |

| Item                     | United Kingdom                                                                                                                                                                                                                                                                | Australia                                                                                                                                             | Chile                                                                                                                                                                     | Netherlands                                                                                                                                                                      | Mexico                                                                                                                                                                                                                                                                                                                                                         | United States |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>e) Conclusions</b>    | Prices charges from merchants/cardholders did not reflect costs;<br>Multilateral agreements limited competition (preference for bilateral agreements in interchange).                                                                                                         | Obligation of issuing to be able to acquire limits competition;<br>High interchange fee;<br>Surcharge prohibition distorts payment instrument choice. | Transbank's excessive profit;<br>Monopoly power;<br>Lack of acquirer option for merchants;<br>Imposition of one POS terminal network on merchants.                        | Interpay's excessive profit;<br>Monopoly power;<br>Lack of acquirer option for merchants.                                                                                        | Excessive profit for issuer banks;<br>Fees were not transparent to merchants and cardholders;<br>Lack of new entrants to the market.                                                                                                                                                                                                                           |               |
| <b>f) Measures taken</b> | Public manifestation by OFT of its understanding of the agreement for the interchange fee determination as a competition violation in MasterCard scheme;<br>No use of fines or penalties, but continued observation;<br>Decision overruled by CAT, making OFT pay reparation. | Creation of independent acquirer;<br>Surcharge permission;<br>Regulation of EFTPOS system access;<br>Interchange fee regulation (cost-based rule).    | Elimination of vertical integration in merchant acquiring;<br>Freedom to buy POS terminals;<br>Fine imposed on Transbank and shareholder as a response to cartel pricing. | Elimination of vertical integration in merchant acquiring;<br>Fine imposed on Interpay and shareholder as a response to cartel pricing (fines reevaluated about one year later). | Bank association voluntarily reduced interchange fees, impacting merchant service charges;<br>Central bank determined more transparency in fees, the possibility of independently accepting credit and debit cards, and presentation of fees to the central bank (with subsequent publication);<br>Treasury established a program of POS expansion incentives. |               |

| Item                     | United Kingdom                                                                                                                                          | Australia                                                                                                                                                                    | Chile                                                                                                                                                             | Netherlands                                                                                                                                                           | Mexico                                                                                                                     | United States |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|---------------|
| <b>g) Consequences</b>   |                                                                                                                                                         |                                                                                                                                                                              |                                                                                                                                                                   |                                                                                                                                                                       |                                                                                                                            |               |
| <b>g1) Structure</b>     | Adoption of duality and direct participation of bank that were formerly only involved in acquiring as shareholders of the MasterCard acquiring company. | Entrance of 4 issuer institutions in acquiring; Bank migration to (more expensive) Amex and Diners issuing.                                                                  | Prohibition of equal fees for credit and debit; Banks started acquiring merchants directly; Alteration of the general market regulation by Central Bank and SBIF. | Banks started acquiring merchants directly; Establishment of an investment fund (reduction of fines); Interpay's governance alteration (outside member in its board). | There were no organizational structure alterations.                                                                        |               |
| <b>g2) Prices</b>        | Surcharges are permitted, but scarcely employed.                                                                                                        | Reduction of interchange fees; Smaller reduction of merchant service charges; Small effect over general prices; Increase in prices or reduction in benefits for cardholders. | Presentation of price schedule to <i>Tribunal de Defensa de la Libre Competencia</i> , for approval; Freedom of POS choice by retailers.                          | 12% of the merchants renegotiated their fees, achieving average reduction of 7.4%.                                                                                    | Reduction of credit and debit cards fees; Reduction of the difference between fees charged from small and large merchants. |               |
| <b>g3) Market growth</b> | Market grows without alteration.                                                                                                                        | Increase in unregulated schemes market share (Amex and Diners); Increase in costs for cardholders.                                                                           | Unaltered growth (following trend).                                                                                                                               | Unaltered growth (following trend).                                                                                                                                   | Growth acceleration.                                                                                                       |               |

## **Annex C**

### **Payment Cards in Brazil: Merchant Discount Fee**



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## Abstract

This paper analyses the behavior of the merchant discount fee in credit card transactions in the years 2006 and 2007. The analysis, which is based on data supplied by Visa and MasterCard, shows that most of the average merchant discount fee variation is explained by the fact that it is applied differently for each segment of commerce, which implies use of price discrimination. Regarding the relation between merchant discount fee and interchange fee, the interchange fee increases when merchant discount fee goes up. Exception to this behavior was only observed in three segments of commerce in a total of twenty-seven.

## 1. Introduction

This paper was elaborated in the context of the so-called *Projeto de Modernização dos Instrumentos de Pagamentos de Varejo* (Retail Payment Instrument Modernization Project). As part of the project, papers on payment cards support activities carried out in the scope of the technical cooperation agreement involving the Central Bank of Brazil, the Secretariat of Economic Law of the Ministry of Justice (SDE), and the Secretariat for Economic Monitoring of the Ministry of Finance (SEAE). This agreement aims to promote a coordinated action of government authorities so as to improve the payment card industry efficiency. It also aims to spur product innovations and gains for cardholders, merchants and other participants.

Concerning prices and costs, literature on payment cards usually contemplate the merchant discount fee (paid by merchants), fees applicable to cardholders, and the interchange fee. The interchange fee, which balances both sides of the market, is considered basic for the establishment of the merchant discount fee, because it is the variable cost that the acquirer pays to the payment card issuer for each operation. Therefore, the interchange fee is a floor for the merchant discount fee.

In models in which there is effective competition in the acquiring activity, the merchant discount fee tends to be established in a level close to the interchange fee. In Brazil, there is evidence that the main acquirers have effective market power, which has implications on the behavior of the merchant fee. In light of this, this paper contributes for the discussion about the Brazilian payment card industry in showing a model for analyzing the merchant discount fee behavior.

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This paper is organized in the following way: section 2 presents the utilized data and their descriptive statistic, and shows the main characteristics of the utilized variables. In section 3, it is shown the model chosen for carrying out the analysis. Section 4, in its turn, shows the results and the main consistence tests. In the last section, a conclusion is presented.

## 2. Data

The used data were collected through a survey with the acquirers. They were informed in quarterly basis, beginning in the first quarter of 2006 and finishing in fourth quarter of 2007<sup>82</sup>, totaling 7,403 observations.

Information about the merchant discount fee and the interchange fee does not have the same segregation level. Because of this, they are available in distinct databases. To make them compatible, it was used weighted averages by value in dimensions existing only for the interchange fee (not for the merchant discount fee): products and types<sup>83</sup>. Therefore, the used database has five dimensions: brand; merchant's segment of commerce; way of capture; number of installments; and time (quarter). Thus, regarding dimensions, there are 2 brands, 27 segments of commerce, 3 ways of capture<sup>84</sup>, 36 possibilities of payment in installments, and 8 time periods.

Concerning the dimension "segment of commerce", it is worth noting that the characterization made by the acquirers is not homogeneous. In light of this, it was considered each segment of commerce as distinct of the other ones. Therefore, 19 segments informed by Visa and 8 segments informed by MasterCard compose the 27 segments of commerce that are being considered in this study.

It is shown below a brief description of each variable used in this paper:

*m*: average merchant discount fee

*a*: average interchange fee

*Partic \_ valor* : participation of the top 15 merchants in relation to the total value of credit card transactions in the segment in which they participate

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<sup>82</sup> This period was determined by the availability of the variable "number of installments".

<sup>83</sup> Product: *gold*, *platinum*, etc. Type: pure, hybrid and *co-branded*.

<sup>84</sup> Not-electronic capture is not considered in this paper, because of its specificities and small participation in the value of transactions.

Segment Dummies,  $d_{seg_i}$ : variable that shows if the operation belongs to the segment  $i$ .

Dummies for interaction between the interchange fee and segments,  $da_i$ : binary variable that has the value of the interchange fee if the transaction belongs to the segment  $i$ .

Before reporting the estimated model, it is shown some descriptive statistics for the variables *average merchant discount fee* ( $m$ ), *average interchange fee* ( $a$ ), *log of the value* ( $lv$ ) and *participation of the top 15 merchants in relation to the total value of credit card transactions* ( $Partic\_valor$ ):

**Table 1 – Descriptive statistics**

| Variable        | Average | Standard Deviation | Median | Minimum | Maximum | Coefficient of Variation |
|-----------------|---------|--------------------|--------|---------|---------|--------------------------|
| $M$             | 2.81    | 0.51               | 2.82   | 1.24    | 5.31    | 0.18                     |
| $a$             | 1.22    | 0.20               | 1.14   | 0.67    | 2.14    | 0.17                     |
| $lv$            | 20.40   | 1.29               | 20.67  | 3.72    | 21.91   | 0.06                     |
| $Partic\_valor$ | 0.27    | 0.17               | 0.27   | 0.05    | 0.93    | 0.63                     |

The weighted average merchant discount fee is 2.81%, while the weighted average interchange fee is 1.22%, and it has lower relative dispersion<sup>85</sup> than the average merchant discount fee. It is worth saying that the variable that has the largest relative dispersion is participation, in terms of value, of the top 15 merchants of the segment.

The same variables are shown in the table below, now considering segregation by brand. It should be noted that there are no significant statistical differences among them, since they have almost the same value for the considered statistics.

<sup>85</sup> Measured by the coefficient of variation (0.17).

**Table 2 – Descriptive statistics by brand**

| Variable            | Brand | Average | Standard Deviation | Median | Minimum | Maximum | Coefficient of Variation |
|---------------------|-------|---------|--------------------|--------|---------|---------|--------------------------|
| <i>m</i>            | A     | 2.80    | 0.52               | 2.82   | 1.54    | 5.31    | 0.19                     |
| <i>m</i>            | B     | 2.83    | 0.51               | 2.94   | 1.24    | 5.00    | 0.18                     |
| <i>a</i>            | A     | 1.18    | 0.14               | 1.13   | 0.67    | 2.01    | 0.12                     |
| <i>a</i>            | B     | 1.28    | 0.25               | 1.33   | 0.84    | 2.14    | 0.20                     |
| <i>lv</i>           | A     | 20.28   | 1.35               | 20.61  | 3.71    | 21.87   | 0.07                     |
| <i>lv</i>           | B     | 20.54   | 1.20               | 20.71  | 3.95    | 21.91   | 0.06                     |
| <i>ltickmedio</i>   | A     | 4.29    | 0.58               | 4.11   | 3.57    | 9.65    | 0.14                     |
| <i>ltickmedio</i>   | B     | 4.25    | 0.56               | 4.04   | 3.59    | 9.62    | 0.13                     |
| <i>Partic_valor</i> | A     | 0.26    | 0.20               | 0.18   | 0.05    | 0.93    | 0.77                     |
| <i>Partic_valor</i> | B     | 0.29    | 0.12               | 0.29   | 0.10    | 0.44    | 0.41                     |

Annex II presents further details on the distribution of credit card transactions by both number of installments and way of capture.

### 3. Model for Analyzing the Merchant Discount Fee

For all segments of commerce, merchants do not receive directly the transaction value from the costumers. Typically, for each transaction, customer pays the transaction value ( $p$ ) to the credit card issuer, plus fees for the use of the system. The issuer pays to the acquirer the value  $p$ , less the interchange fee ( $a$ ). Then the acquirer pays to the merchant  $p$  less the merchant discount fee ( $m$ ).

The interchange fee ( $a$ ) is a floor for the merchant fee ( $m$ ), otherwise  $a$  would be larger than  $m$ , and the acquirer would have losses.

On the other hand, in a transaction paid through credit card the merchant receives less ( $p-m$ ) than where other payment instruments are used, such as checks or cash. However, merchants can have several reasons for accepting payment through credit cards despite receiving a lower value: there is no default in transactions paid through credit cards; there is also higher liquidity, since there is no risk of delay; operational costs can be lower; consumer holding a credit card is more likely to make a purchase that, otherwise, he or she would not do. Another reason is the easy access to credit (customers do not need to have credit lines to buy through a credit card financing). It is worth also remembering that these benefits bring about different impacts for different segments of commerce, which implies potentially different merchant discount fees.

The suggested model uses the following variables: interchange fee ( $a$ ); participation of the top 15 merchants in relation to the total value of credit card transactions in the segment of commerce in which they participate ( $Partic\_valor$ ); dummies of interaction between the interchange fee and segments ( $da_i$ ); and dummies for segments ( $d_{segi}$ ):

$$m = \beta_0 + \beta_1 a + \beta_2 \times Partic\_valor + \overline{dseg}^T \times \beta_3 + \overline{da}^T \times \beta_4 + e$$

Choosing this model, it is considered that the interchange fee affects the merchant discount fee, but not the opposite. Therefore, the interchange fee is assumed to be an exogenous variable. Another simplification is that some independent variables that could affect the merchant discount fee, but also could affect the interchange fee, are not used under the simplified hypothesis that their effects on the merchant discount fee are due to the increase of the interchange fee. One example of this type of variable is the number of installments.

Because *Anova* shows that the largest influence on the merchant discount fee variation is due to variation of it among segments of commerce, it was decided to use dummies to the segments, both for the intercept and for the interchange fee coefficient.

It was not utilized a panel structure for this regression, because there were more than one datum by time x cross-section. For each intersection time x segment of commerce, there was one datum per each number of installment per each way of capture. In order to avoid need for aggregating data, it was utilized the above criteria.

Regression was made with the OLS method.

## Analysis of Variance

Given the descriptive statistics, it was analyzed the proposed model for the average merchant discount fee. As a first result, it is reported the variance analysis with the purpose of helping to choose the methodology and characterize the best variable for study.

The table below shows the variance analysis (*Anova*) of the average merchant discount fee:

**Table 3 – Average merchant discount fee – analysis of variance**

| Independent<br>Variables     | m      |       |         |
|------------------------------|--------|-------|---------|
|                              | Effect | s.e.  | Ratio t |
| Fixed effect:                |        |       |         |
| Intercept                    | 2.99   | 0.07  | 40.92   |
| Random effect – industry:    |        |       |         |
| Variance – intercept         | 0.15   | 0.04  | 4.09    |
| Random effect – time:        |        |       |         |
| Variance – intercept         | 0.057  | 0.011 | 5.13    |
| Intraclass correlation – ICC |        | 0.73  |         |

Table 3 allows to say that around 73% of average merchant discount fee variation is explained by differences among merchant discount fees applied to different segments of commerce. .

## 4. Results

### Average Effect

Dropping the industry effects, the general results are the following:

**Table 4 – Regression without dummies**

| Independent variables  | M      |      |         |
|------------------------|--------|------|---------|
|                        | Effect | s.e. | Ratio t |
| Intercept              | 1.51   | 0.11 | 14.0    |
| Interchange fee        | 1.41   | 0.07 | 21.2    |
| Participation in value | -1.53  | 0.02 | -12.8   |

It is possible to note that the average effect of the interchange fee on the merchant fee is bigger than one and it is significant. Though this regression shows the average market behavior, it is necessary to segregate the effect by segment of commerce so as to capture the market idiosyncrasies.

### Final model

Appendix I details all obtained results. Table 5 below shows the interchange fee coefficients by segment of commerce. These coefficients come from Table 8 in Appendix I.

**Table 5 – Coefficients of the interchange fee by industry**

| Industry        | Effect   | Industry  | Effect  |
|-----------------|----------|-----------|---------|
| <b>Brand: A</b> |          |           |         |
| Segment 1       | -0.943   | Sector 11 | 1.029   |
| Segment 2       | -0.045*  | Sector 12 | -0.062* |
| Segment 3       | 0.341    | Sector 13 | 0.369*  |
| Segment 4       | 2.066    | Sector 14 | 0.450*  |
| Segment 5       | 0.907    | Sector 15 | 0.385   |
| Segment 6       | 1.745    | Sector 16 | 0.458   |
| Segment 7       | 0.138*   | Sector 17 | 1.014   |
| Segment 8       | 2.907    | Sector 18 | 1.348   |
| Segment 9       | -0.449   | Sector 19 | 1.003   |
| Segment 10      | 0.646    |           |         |
| <b>Brand: B</b> |          |           |         |
| Segment A       | 0.314    | Sector E  | 2.158   |
| Segment B       | 0.543    | Sector F  | -0.290  |
| Segment C       | 0.194*** | Sector G  | -0.088* |
| Segment D       | 0.554    | Sector H  | 0.406*  |

Equal to zero in: \* 10%; \*\* 5%; \*\*\* 1%.

Among the analyzed segments of commerce, six of them have negative impacts of the interchange fee. This result is the opposite of the expected one, because

the interchange fee is a floor for the merchant discount fee, and the bigger  $a$  is, the bigger  $m$  should be. Three values for these segments are statistically equal to zero.

Regarding the other three segments of commerce, it is worth asking why they show behavior different from the others. In 2006 and 2007, the merchant discount fee charged from these segments decreased, while the interchange fee related to them increased. These effects together created a negative relation between the merchant discount fee and the interchange fee. Probably, the merchant discount fee dropped because these segments present high level of concentration and therefore their participants have more bargain power.

The intercept values for each segment of commerce represent fixed costs that are charged from merchants, even if there is no interchange fee.

Another economic factor that affects the merchant discount fee is the merchants' bargain power. The variable *Partic\_valor* explains this effect, and the more concentrated a segment of commerce is, the lower its merchant fee is.

## Validity Tests for the Model

Table 6 shows that regression residues failed in the test, that is, they are not identically distributed and do not have constant variance. In this case, the estimated parameters are non-biased, but the  $r$  estimates of standard deviation are inconsistent. Therefore, it was used a robust variance-covariance matrix. Values showed in Table 5 are robust.

**Table 6 – Specification tests for the first and second moments**

| Freedom Degrees | Qui-Squared | p-value |
|-----------------|-------------|---------|
| 147             | 551.22      | <0.0001 |

## 5. Conclusions

The analysis of the average merchant discount fee shows that a large share of the variation of this variable (73%) is explained by differences among merchant discount fees applied to different segments of commerce. This result shows the existence of price discrimination power.

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For most of the segments of commerce, the higher the interchange fees, the higher the merchant fees. This result confirms the theory about the way merchant discount fee is priced. The influence of the interchange fee over the merchant discount fee varies among segments of commerce, since each segment has different price elasticity and different perception of net benefits stemming from credit card acceptance. Concentration in a given segment of commerce influences the merchant discount fee, i.e., the higher the level of concentration, the lower the merchant discount fee. This shows that segments presenting higher concentration level and, as a consequence, higher bargain power generally obtain lower merchant discount fees as compared to other segments.

# Appendix I

## Results of the Model

**Table 7 – Model for the average merchant discount fee (m)**

| Independent<br>variables                             | Effect    | m<br>s.e. | Ratio t |
|------------------------------------------------------|-----------|-----------|---------|
| Generals                                             |           |           |         |
| Intercept                                            | 2.055     | 0.047     | 44.1    |
| Interchange fee                                      | 0.385     | 0.026     | 15.1    |
| Participation in value                               | -0.769    | 0.017     | -45.6   |
| Dummies for industries:                              |           |           |         |
| Brand: A                                             |           |           |         |
| Segment 1                                            | 2.535     | 0.085     | 29.9    |
| Segment 2                                            | 1.238     | 0.025     | 48.8    |
| Segment 3                                            | 0.885     | 0.046     | 19.3    |
| Segment 4                                            | -0.935    | 0.056     | -16.8   |
| Segment 5                                            | 0.072     | 0.037     | 1.9     |
| Segment 6                                            | -0.621    | 0.023     | -27.4   |
| Segment 7                                            | 0.829     | 0.047     | 17.6    |
| Segment 8                                            | -2.305    | 0.038     | -61.2   |
| Segment 9                                            | 1.967     | 0.061     | 32.3    |
| Segment 10                                           | 0.048     | 0.032     | 1.5     |
| Segment 11                                           | -0.043    | 0.036     | -1.2    |
| Segment 12                                           | 0.601     | 0.124     | 4.8     |
| Segment 13                                           | 0.611     | 0.061     | 10.0    |
| Segment 14                                           | 0.698     | 0.037     | 18.6    |
| Segment 15                                           | Reference |           |         |
| Segment 16                                           | 0.831     | 0.048     | 1.5     |
| Segment 17                                           | 0.145     | 0.030     | 21.2    |
| Segment 18                                           | -0.176    | 0.035     | 27.3    |
| Segment 19                                           | 0.088     | 0.026     | 24.1    |
| Brand: B                                             |           |           |         |
| Segment A                                            | 0.147     | 0.053     | 2.8     |
| Segment B                                            | 0.781     | 0.044     | 17.7    |
| Segment C                                            | 1.006     | 0.056     | 18.0    |
| Segment D                                            | 0.499     | 0.033     | 15.0    |
| Segment E                                            | -1.628    | 0.064     | -25.4   |
| Segment F                                            | 1.517     | 0.030     | 50.3    |
| Segment G                                            | 1.755     | 0.050     | 35.4    |
| Segment H                                            | 0.811     | 0.002     | 448.3   |
| Dummies for Interaction Industries x Interchange Fee |           |           |         |
| Brand: A                                             |           |           |         |
| Segment 1                                            | -1.328    | 0.057     | -23.3   |
| Segment 2                                            | -0.430    | 0.022     | -19.5   |
| Segment 3                                            | -0.044    | 0.035     | -1.3    |
| Segment 4                                            | 1.681     | 0.035     | 48.5    |
| Segment 5                                            | 0.522     | 0.030     | 17.4    |

|                  |        |           |             |
|------------------|--------|-----------|-------------|
| Segment 6        | 1.360  | 0.018     | 75.5        |
| Segment 7        | -0.247 | 0.033     | -7.6        |
| Segment 8        | 2.522  | 0.027     | 94.5        |
| Segment 9        | -0.834 | 0.041     | -20.1       |
| Segment 10       | 0.261  | 0.034     | 7.7         |
| Segment 11       | 0.644  | 0.026     | 24.5        |
| Segment 12       | -0.447 | 0.089     | -5.0        |
| Segment 13       | -0.016 | 0.038     | -0.4        |
| Segment 14       | 0.065  | 0.027     | 2.4         |
| Segment 15       |        | Reference |             |
| Segment 16       | 0.073  | 0.048     | 1.5         |
| Segment 17       | 0.629  | 0.030     | 21.2        |
| Segment 18       | 0.963  | 0.035     | 27.3        |
| Segment 19       | 0.618  | 0.026     | 24.1        |
| <b>Brand: B</b>  |        |           |             |
| Segment A        | -0.071 | 0.047     | -1.5        |
| Segment B        | 0.158  | 0.026     | 6.0         |
| Segment C        | -0.191 | 0.035     | -5.5        |
| Segment D        | 0.168  | 0.024     | 7.0         |
| Segment E        | 1.773  | 0.042     | 42.6        |
| Segment F        | -0.675 | 0.024     | -28.0       |
| Segment G        | -0.473 | 0.031     | -15.2       |
| Segment H        | 0.021  | 0.111     | 0.2         |
| <b>R squared</b> |        |           | <b>0.93</b> |

After adding up intercept and dummies for segments, the merchant discount fee coefficient and dummies for segments x interchange fee, Table 8 was elaborated.

**Table 8 – Intercept and coefficient for the interchange fee by segment of commerce**

| Independent variables               | m Effect |
|-------------------------------------|----------|
| Intercept + Dummies for Industries: |          |
| <b>Brand: A</b>                     |          |
| Segment 1                           | 4.590    |
| Segment 2                           | 3.293    |
| Segment 3                           | 2.940    |
| Segment 4                           | 1.120    |
| Segment 5                           | 2.127    |
| Segment 6                           | 1.434    |
| Segment 7                           | 2.884    |
| Segment 8                           | -0.250   |
| Segment 9                           | 4.022    |
| Segment 10                          | 2.103    |
| Segment 11                          | 2.012    |
| Segment 12                          | 2.656    |
| Segment 13                          | 2.666    |

|                                                             |        |
|-------------------------------------------------------------|--------|
| Segment 14                                                  | 2.753  |
| Segment 15                                                  | 2.055  |
| Segment 16                                                  | 2.886  |
| Segment 17                                                  | 2.200  |
| Segment 18                                                  | 1.879  |
| Segment 19                                                  | 2.143  |
| <b>Brand: B</b>                                             |        |
| Segment A                                                   | 2.202  |
| Segment B                                                   | 2.836  |
| Segment C                                                   | 3.061  |
| Segment D                                                   | 2.554  |
| Segment E                                                   | 0.427  |
| Segment F                                                   | 3.572  |
| Segment G                                                   | 3.810  |
| Segment H                                                   | 2.866  |
| <b>Dummies for Interaction Industries x Interchange Fee</b> |        |
| <b>Brand: A</b>                                             |        |
| Segment 1                                                   | -0.943 |
| Segment 2                                                   | -0.045 |
| Segment 3                                                   | 0.341  |
| Segment 4                                                   | 2.066  |
| Segment 5                                                   | 0.907  |
| Segment 6                                                   | 1.745  |
| Segment 7                                                   | 0.138  |
| Segment 8                                                   | 2.907  |
| Segment 9                                                   | -0.449 |
| Segment 10                                                  | 0.646  |
| Segment 11                                                  | 1.029  |
| Segment 12                                                  | -0.062 |
| Segment 13                                                  | 0.369  |
| Segment 14                                                  | 0.450  |
| Segment 15                                                  | 0.385  |
| Segment 16                                                  | 0.458  |
| Segment 17                                                  | 1.014  |
| Segment 18                                                  | 1.348  |
| Segment 19                                                  | 1.003  |
| <b>Brand: B</b>                                             |        |
| Segment A                                                   | 0.314  |
| Segment B                                                   | 0.543  |
| Segment C                                                   | 0.194  |
| Segment D                                                   | 0.554  |
| Segment E                                                   | 2.158  |
| Segment F                                                   | -0.290 |
| Segment G                                                   | -0.088 |
| Segment H                                                   | 0.406  |

## Appendix II

### Distribution of credit card transactions

The tables below show the distribution of credit card transactions by number of installments, and by way of capture:

**Table 9 – Distribution of credit card transactions by number of installments**

| Brand | Segment | Installments |        |     |
|-------|---------|--------------|--------|-----|
|       |         | 1            | 2 to 6 | 7 + |
| A     | 1       | 37%          | 44%    | 19% |
|       | 2       | 71%          | 20%    | 9%  |
|       | 3       | 53%          | 36%    | 11% |
|       | 4       | 64%          | 36%    | 0%  |
|       | 5       | 86%          | 14%    | 0%  |
|       | 6       | 76%          | 24%    | 0%  |
|       | 7       | 98%          | 2%     | 0%  |
|       | 8       | 53%          | 46%    | 1%  |
|       | 9       | 40%          | 59%    | 1%  |
|       | 10      | 45%          | 38%    | 17% |
|       | 11      | 70%          | 29%    | 1%  |
|       | 12      | 100%         | 0%     | 0%  |
|       | 13      | 100%         | 0%     | 0%  |
|       | 14      | 88%          | 11%    | 1%  |
|       | 15      | 96%          | 4%     | 0%  |
|       | 16      | 84%          | 12%    | 3%  |
|       | 17      | 74%          | 25%    | 1%  |
|       | 18      | 47%          | 52%    | 0%  |
|       | 19      | 42%          | 48%    | 9%  |
| B     | A       | 93%          | 7%     | 1%  |
|       | B       | 48%          | 52%    | 1%  |
|       | C       | 54%          | 34%    | 12% |
|       | D       | 82%          | 17%    | 0%  |
|       | E       | 93%          | 7%     | 0%  |
|       | F       | 94%          | 5%     | 0%  |
|       | G       | 70%          | 29%    | 1%  |
|       | H       | 71%          | 28%    | 1%  |

The largest part of the transactions is typically concentrated in "one installment".

**Table 10 – Distribution of credit card transactions – Capture**

| Brand | Segment | Capture  |       |                |
|-------|---------|----------|-------|----------------|
|       |         | Magnetic | Chip  | Non-Presential |
| A     | 1       | 25.8%    | 5.5%  | 68.6%          |
|       | 2       | 51.2%    | 6.9%  | 41.8%          |
|       | 3       | 80.1%    | 9.9%  | 10.0%          |
|       | 4       | 91.2%    | 7.9%  | 0.9%           |
|       | 5       | 85.7%    | 10.2% | 4.1%           |
|       | 6       | 84.8%    | 9.9%  | 5.4%           |
|       | 7       | 86.7%    | 10.5% | 2.8%           |
|       | 8       | 88.8%    | 10.7% | 0.5%           |
|       | 9       | 8.9%     | 1.4%  | 89.8%          |
|       | 10      | 78.7%    | 9.1%  | 12.2%          |
|       | 11      | 90.0%    | 9.8%  | 0.3%           |
|       | 12      | 89.9%    | 9.9%  | 0.2%           |
|       | 13      | 85.1%    | 14.2% | 0.7%           |
|       | 14      | 50.8%    | 20.8% | 28.4%          |
|       | 15      | 90.9%    | 9.0%  | 0.2%           |
|       | 16      | 0.7%     | 0.1%  | 99.2%          |
|       | 17      | 86.3%    | 10.7% | 3.0%           |
|       | 18      | 89.3%    | 10.5% | 0.2%           |
|       | 19      | 87.7%    | 11.3% | 1.0%           |
| B     | A       | 98.4%    | 1.5%  | 0.1%           |
|       | B       | 97.6%    | 2.2%  | 0.2%           |
|       | C       | 97.4%    | 1.7%  | 1.0%           |
|       | D       | 94.4%    | 1.8%  | 3.8%           |
|       | E       | 96.9%    | 3.0%  | 0.1%           |
|       | F       | 85.9%    | 3.8%  | 10.3%          |
|       | G       | 95.4%    | 3.7%  | 0.9%           |
|       | H       | 89.0%    | 2.3%  | 8.7%           |

Regarding the capture, magnetic stripe cards are still the most used in credit card transactions.

## **Annex D**

# **Brazilian Payment Card Industry: Profit**



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## 1. Cost decomposition econometrical model

### Data Description

The data were obtained through questionnaires sent to the merchant acquirers. They were informed in quarterly basis, beginning in the first quarter of 1999 and finishing in the last quarter of 2007. All monetary variables were deflated by IPCA (Extended National Consumer Price Index). In that follows, it is made a brief description of each variable used in this study.

*Lcdef*: log of the merchant acquirer total costs;

*tend*: time trend;

*lqpos*: log of the number of the active acquired merchants. This number (active acquired merchants) is used as a proxy for the number of POS terminals, because quarterly data concerning POS were available for 2007 only. The annual correlation between the number of POS and the number of active acquired merchants is around 98%. This shows that the used proxy is applicable.

*lqcred*: log of the number of credit card transactions;

*lqdeb*: log of the number of debit card transactions;

*lpposdef*: log of the acquirers' processing cost per POS terminal. This unitary cost was calculated dividing the acquirers' total processing cost by the number of POS terminals;

*lpcreddef*: log of the average value of the interchange fee for credit card transactions;

*lpdebdef*: log of the average value of the interchange fee for debit card transactions.

Besides these main variables, several dummies variables were tested, but they were not significant.

### Stationarity Tests

Table 1 shows results of the ADF tests for all considered variables. Generally speaking, they are not stationary in the level, but they are in the first

difference. Furthermore, they were tested by cointegration and it was analyzed the residues of the possible regressions, checking if they are stationary.

**Table 1: Stationarity Test**

| Variable  | ADF - Level | P-Value | ADF 1st Dif | P-Value  |
|-----------|-------------|---------|-------------|----------|
| lcdef     | -2.3070     | 0.4240  | -9.3307     | 4,69E-11 |
| lqpos     | -2.0581     | 0.5585  | -8,0528     | 2,30E-09 |
| lqcred    | -2.1850     | 0.4893  | -8,7420     | 2,34E-10 |
| lqdeb     | -1.9824     | 0.5993  | -8,0402     | 1,93E-09 |
| lpposdef  | -4.0189     | 0.0129  | -11,0895    | 1,71E-12 |
| lpcreddef | -0.9812     | 0.9386  | -2,5803     | 1,07E-02 |
| lpdebdef  | -4.6123     | 0.0023  | -8,2328     | 1,30E-09 |

## Model and Results

Regression was done by ordinary least squares, with a robust covariances matrix according to White's Model. Equation 1 brings the estimated model and Table 2, the parameters' values. Variables *lqcreddef* and *lqdebdef* are not significant and thus they were removed from the model. The other variables were significant in a 5% level.

$$lcdef = \beta_0 + \beta_1 Tend + \beta_2 lqpos + \beta_3 lqcred + \beta_4 lqdeb + \beta_5 lpposdef + \beta_6 lpcreddef + \beta_7 lpdebdef + \varepsilon \quad (1)$$

**Table 2: Estimated coefficients**

| Variable               | Coefficient | Standard Deviation | P-Value |
|------------------------|-------------|--------------------|---------|
| Constant ( $\beta_0$ ) | -5.3099     | 1.2689             | 0.0001  |
| tend ( $\beta_1$ )     | -0.0204     | 0.0036             | 0       |
| lqpos ( $\beta_2$ )    | 0.3727      | 0.1759             | 0.0384  |
| lqcred ( $\beta_3$ )   | 0.8546      | 0.1631             | 0       |
| lqdeb ( $\beta_4$ )    | 0.1841      | 0.0717             | 0.0128  |
| lpposdef ( $\beta_5$ ) | 0.1453      | 0.0536             | 0.0088  |

The adjusted  $R^2$  coefficient was 0.9841, and the F-test of significance rejects the null hypothesis that all coefficients are jointly equal to zero.

As a test of model and parameters' robustness, parts of the sample were deleted, such as the first year, the last year, and for all cases the parameters were robust. The stationarity test made with regression residues rejected the null hypothesis that they have unit root, so that it was necessary differentiation.

## 2. CAPM Model for the Analysis of a Fair Profit

### Assets Selection

It was used shares of companies related to the merchant acquiring business for evaluation of the fair profit. Therefore, it was used shares of merchants, banks and technology companies, including telecommunication companies.

It was filtered the assets for each year in a way that it was used only the ones negotiated at least in 90% of the business days. The considered assets and their business areas are in **Erro! Fonte de referência não encontrada..**

Table 3: Calculated betas for selected assets

| Stock                             | Betas |      |      |      |      | Industry |
|-----------------------------------|-------|------|------|------|------|----------|
|                                   | 2003  | 2004 | 2005 | 2006 | 2007 |          |
| Banco do Brasil ON                | 4.32  | 2.47 | 2.79 | 4.01 | 1.95 | Finance  |
| Bradesco PN                       | 2.84  | 1.68 | 2.34 | 2.09 | 1.51 | Finance  |
| Itausa PN                         | 2.54  | 1.61 | 1.68 | 2.10 | 1.71 | Finance  |
| Unibanco PN                       | 4.28  | 1.41 | 2.74 | 1.85 | 1.26 | Finance  |
| Brasil Telecom PN                 | 3.54  | 2.79 | 4.79 | 2.82 | 2.31 | IT       |
| Csu Cardsyst ON                   |       |      |      |      | 2.32 | IT       |
| Datasul ON                        |       |      |      |      | 2.43 | IT       |
| Ideiasnet ON                      |       |      | 6.01 | 3.35 | 3.85 | IT       |
| Embratel Par PN 1000              | 11.86 | 4.99 | 5.39 | 2.26 | 1.89 | IT       |
| Net PN                            | 18.34 | 6.75 | 6.26 | 2.75 | 2.57 | IT       |
| Telemar PNA                       | 4.08  | 2.95 | 2.54 | 2.55 | 1.59 | IT       |
| Telesp PN                         | 2.59  | 1.91 | 2.47 | 1.71 | 1.65 | IT       |
| Uol PN                            |       |      |      | 5.66 | 2.89 | IT       |
| Totvs ON                          |       |      |      |      | 2.42 | IT       |
| Cia Brasileira de Distribuição PN | 3.25  | 2.04 | 2.06 | 2.35 | 1.65 | Retail   |
| Guararapes ON                     |       |      | 1.79 | 2.22 | 1.13 | Retail   |
| Lojas Americanas PN               | 3.57  | 2.17 | 2.60 | 2.85 | 2.29 | Retail   |
| Lojas Rennes ON                   |       |      |      | 3.61 | 2.85 | Retail   |
| Natura ON                         |       |      | 2.93 | 3.54 | 2.40 | Retail   |

### Acquirers' Beta Computation

After selecting the companies and computing their betas, it was calculated the average and standard deviation for each sector. Table 4 shows the results for each year.

**Table 4: Selected sector's beta – Average and standard deviation**

| Beta               | 2003 | 2004 | 2005 | 2006 | 2007 |
|--------------------|------|------|------|------|------|
| Average            |      |      |      |      |      |
| - Retail           | 3.41 | 2.10 | 2.34 | 2.91 | 2.07 |
| - IT               | 8.08 | 3.88 | 4.58 | 3.01 | 2.39 |
| - Finance          | 3.50 | 1.79 | 2.39 | 2.51 | 1.60 |
| Standard Deviation |      |      |      |      |      |
| - Retail           | 0.23 | 0.09 | 0.52 | 0.65 | 0.68 |
| - IT               | 6.83 | 1.96 | 1.68 | 1.27 | 0.66 |
| - Finance          | 0.94 | 0.46 | 0.51 | 1.01 | 0.29 |

A portfolio approach was used for calculating the acquirers' beta, dividing the acquiring activity into three parts: acquiring activity, which was compared to the retail sector; transaction processing activity, which was compared to the technology sector; and financial activity, related to receivable anticipation, was compared to the financial industry.

Table 5 shows the calculated betas as well as their upper and lower limits for each year. In the calculation, the weight of each activity in the acquirers' revenues was considered. Correlations among betas were also calculated in order to calculate the standard deviation.

**Table 5: Acquirers' beta**

|             | 2003 | 2004 | 2005 | 2006 | 2007 |
|-------------|------|------|------|------|------|
| Upper Bound | 6.69 | 3.14 | 3.91 | 4.23 | 3.28 |
| Beta        | 4.19 | 2.39 | 2.72 | 2.91 | 2.10 |
| Lower Bound | 1.69 | 1.63 | 1.53 | 1.60 | 0.91 |

The upper and lower limits are two standard deviations around average.

### 3. Allocation of the Item “Other Costs” between Credit and Debit Cards

In the questionnaires sent to the financial institutions issuing payment cards, information about their revenues and expenditures was required. One of the expenditures was indicated as “other costs”, which comprises issuers' costs with direct taxes, advantages offered to costumers, costumers retention, civil and labor provisions, commercial activities with costumers, cards manufacturing, postage and delivering services, bills charging, administrative costs, including personnel costs, and other costs.

Given the variety of the aggregated sub items, the allocation of these costs between credit and debit cards demanded an econometrical approach. It was considered that variation of the “other costs” could be related to the variation of the

value and amount of transactions carried out with each function proportionally to level relations. Thus, the impact of each function in the cost can be evaluated by a statistical modeling.

It was used the top four issuers' data in terms of number of the active issued cards, and data were related to the period beginning in the first quarter of 2002 and finishing in the last quarter of 2007. A differences model with four quarters lag treated the annual seasonality<sup>86</sup>.

Only the variables "value of domestic credit card transactions" and "value of domestic debit card transactions" (shown in Table 6) were statistically significant and compatible with the theoretical approach..

**Table 6: Linear regression with differences, considering a lag of 4 quarters**

| <b>Other costs</b>                      | <b>Coefficient</b> | <b>Standard Deviation</b> | <b>'t' statistics</b> | <b>P-Value</b> | <b>Confidence Interval (95%)</b> |       |
|-----------------------------------------|--------------------|---------------------------|-----------------------|----------------|----------------------------------|-------|
| National transactions<br>Credit - Value | 0.034              | 0.006                     | 6.20                  | 0.000          | 0.023                            | 0.045 |
| National transactions<br>Debit - Value  | 0.032              | 0.015                     | 2.16                  | 0.034          | 0.002                            | 0.061 |

Taking into account the coefficients calculated in the regression and also the average value of each transaction carried out with credit and debit function, It was obtained an estimative of the explained variable's proportion in the credit function, as shown in Table 7.

**Table 7: Participation of Credit Card Function in "Other Costs"**

| <b>Other costs</b>           | <b>Coefficient</b> | <b>Standard Deviation</b> | <b>'t' statistics</b> | <b>P-Value</b> | <b>Confidence Interval (95%)</b> |       |
|------------------------------|--------------------|---------------------------|-----------------------|----------------|----------------------------------|-------|
| Share in credit transactions | 0.693              | 0.115                     | 6.04                  | 0.000          | 0.464                            | 0.922 |

Therefore, the variable "other costs" can be allocated between credit and debit cards in a proportion of around 70% and 30%, respectively.

<sup>86</sup> One of the issuers supplied discrepant data in the last quarter of 2004. As it was used a four periods seasonality, it was dropped five periods data of this issuer with the introduction of dummies variables.



## **Annex E**

# **Research about Payment Cards: Participant Merchants**

According to the two-sided market model, merchants are qualified as consumers of the payment card industry. However, given the absence of previous data, it was collected primary data through a phone survey aiming to collect quantitative data. The purpose of the survey was to measure the merchants' perception and satisfaction regarding payment card acceptance.

The addressed questions were related to safety measures, price discrimination depending on the payment instrument used by the buyer, relationship with acquirers, bargain power, service quality, management information, motivation to accept more than one brand, brands accepted, instruments' costs and benefits perception (check, cash, credit and debit card), and perceived value in relation to other services provided by the network service provider (mobile phone credits, *correspondente bancário*<sup>87</sup>, checks verification, etc).

Broadly speaking, the results highlight the influence of network effects in merchants' choices. Another finding is the existence, even in a heterogeneous way, of merchants' evaluation concerning costs and benefits of each payment instrument in terms of availability and incentive to use. It can be noticed that the variables considered by merchants are not restricted to financial factors, but also include strategic factors such as number of users and possibility of sale increase.

## Sample Plan

The sample was composed of 500 companies stratified by Brazilian regions, according to the next table, based on the IBGE (Brazilian institute of geography and statistic) central register of companies, in a way to guarantee confidence interval of 95%, and 5% margin of error.

**Chart 1: Number of surveyed merchants by region**

|                      |     |
|----------------------|-----|
| North and Mid-I West | 54  |
| Northeast            | 78  |
| Southeast            | 252 |
| South                | 116 |
| Total (Brazil)       | 500 |

Additionally, merchants were classified into six sectors of activity: supermarkets; clothing trade; general retail commerce; restaurants; gas stations; and other services. The interviews were equally distributed among these segments ( 83

<sup>87</sup> Commercial firms acting as banks' agents.

interviews by segment, except in the case of clothing trade and other services, for which 84 interviews were carried out). The interviews were randomly defined.

Selection was made randomly based on both printed and on line phone lists located in towns with more than 100,000 people<sup>88</sup>.

Finally, a last stratification was done by merchants' size, using the Sebrae standard. The surveyed merchants were classified as micro, small, average and large, depending on the number of employees. They were distributed as it is shown in Chart 2.

**Chart 2: Surveyed merchants participation by size**

|                             |        |
|-----------------------------|--------|
| Micro (till 9 employees)    | 46.7%  |
| Small (till 49 employees)   | 40.4%  |
| Average (till 99 employees) | 6.8%   |
| Large (100 or + employees)  | 6.1%   |
| Total                       | 100.0% |

## Methodology

It was used the quantitative methodology for collecting data by phone, applying a pre-tested questionnaire in two different phases, in different country regions and in different merchant types, with the purpose of identifying possible differences due to either the region in which merchants are located or their size. The first consisted in 12 interviews aimed at identifying and correcting problems and inconsistencies relating for instance to; clarity of the questions and vocabulary precision; coherence in the order they were presented; questionnaire layout coherence; questions appearance, approach adequacy; and time necessary for applying the questionnaire. The second phase consisted of evaluation of the revised items in the first phase through additional interviews. Data were collected between September, 15<sup>th</sup> and October, 3<sup>rd</sup> of 2008.

## Survey Result

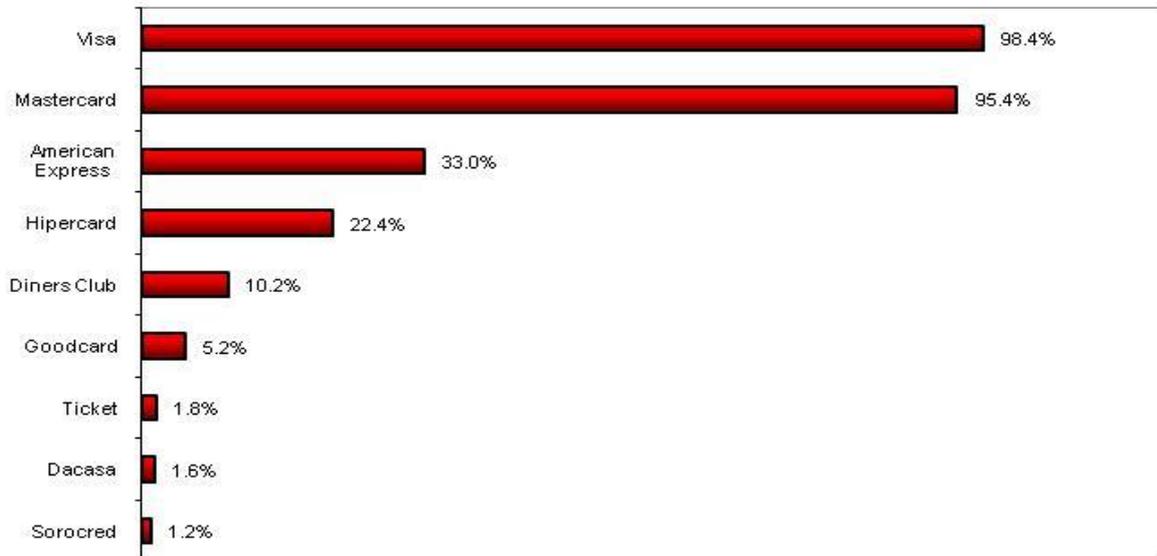
### 1. Brands

Brand Visa was mentioned as used by 492 (98.4%) of the surveyed merchants. Brand MasterCard was mentioned by 95.4% of the merchants. Among other brands, there are American Express (33.0%), Hipercard (22.4%), Diners Club (10.2%)

<sup>88</sup> 49.6% of these merchants were located in Brazilian Capitals and 50.4% in country towns.

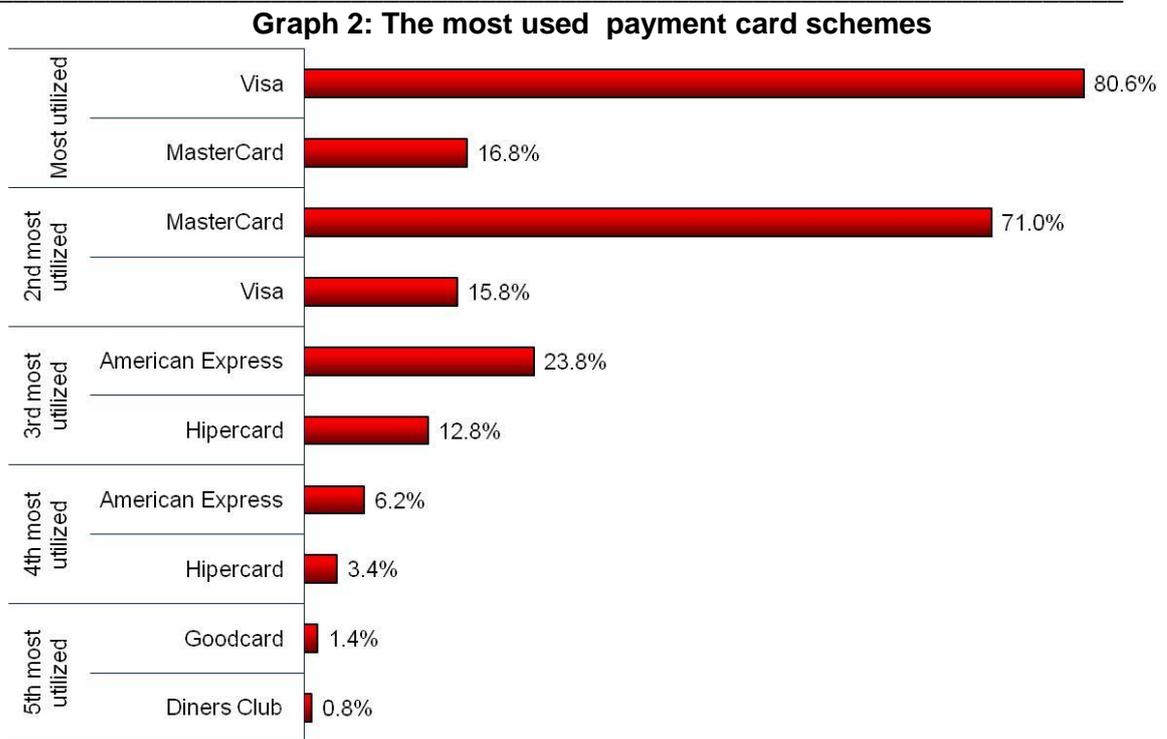
and Goodcard (5.2%)<sup>89</sup>. It is worth remembering that the answers had product and merchant acquirers names besides brands, what shows a mistake by the merchants in identifying each market agent function.

**Graph 1 – Main accepted brands**



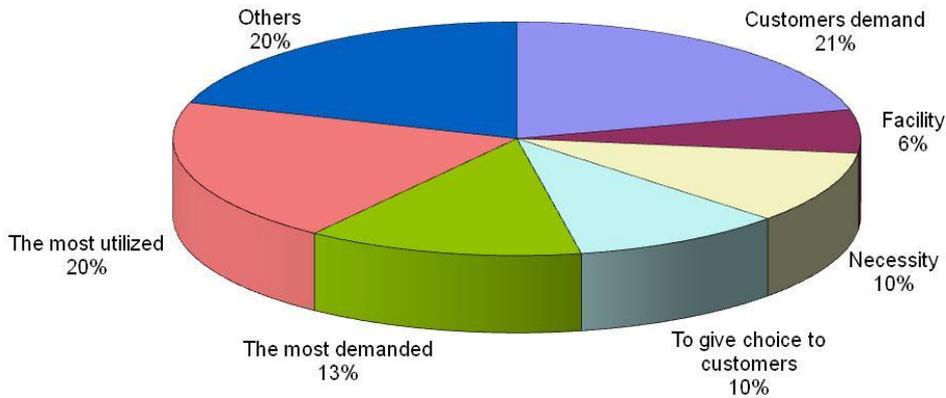
Visa was mentioned as the most used brand by 80.6% of the merchants; MasterCard was mentioned as the second most used by 71.0%; American Express was mentioned as the third by 23.8% and the fourth by 6.2%. Hipercard also is mentioned as the third and the fourth more used brand behind American Express, with 12.8% and 3.4%, respectively. As the fifth most used brand, Goodcard was mentioned by 1.4% and Diners by 0.8% of the merchants.

<sup>89</sup> In spite of being mentioned by 1.8% of the surveyed merchants, Ticket is a pre-paid card.



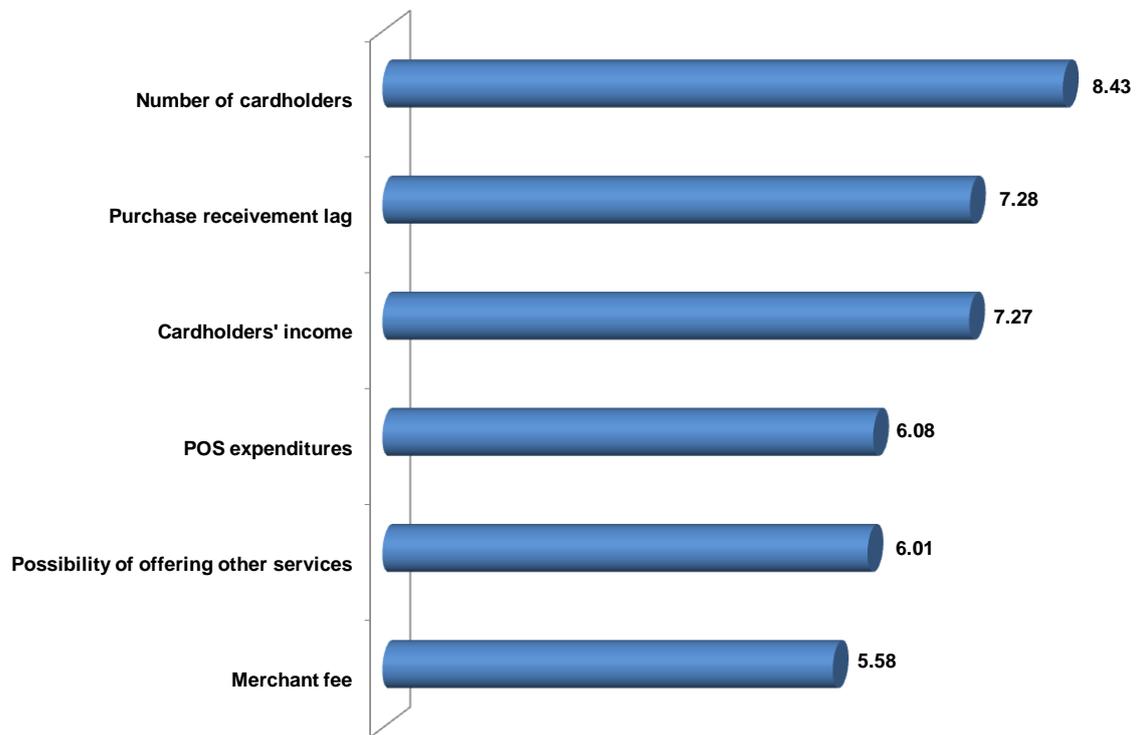
Regarding the number of accepted brands, 95% of the interviewed merchants mentioned that accept two or more brands, 60% of them said to accept three or more brands, and only 26% accept four or more brands.

Regarding the reason to accept brands, the merchants said they accept cards because of reasons related to network effects, i.e., related to the number of costumers, as showed in Graph 3.

**Graph 3: Merchants' reasons to accept payment cards**

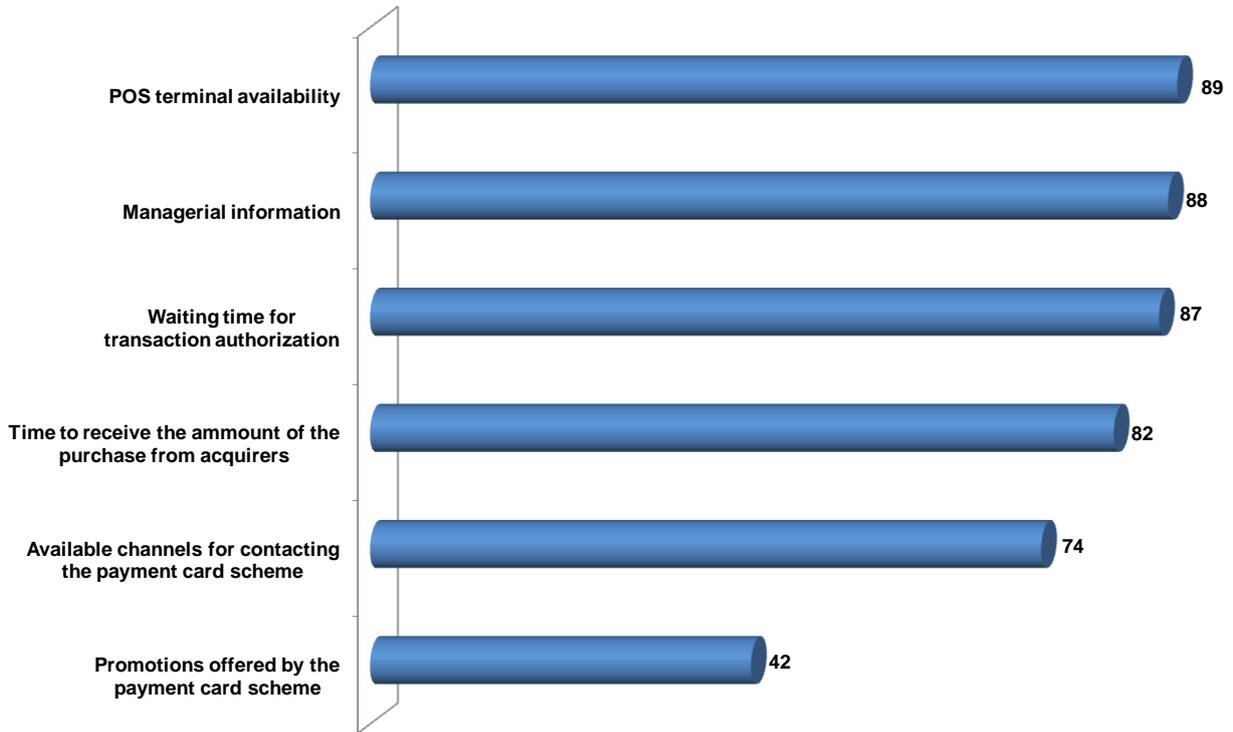
Merchants gave scores ranging from 1 to 10 to factors that they considered the most important to choose brands. They considered the number of customers holding payments cards of a certain brand as the most important factor, confirming the existence of network externality in the payment card market.

It is important to note that the time lag observed by the acquirer to make the payment to the merchant was more important than the merchant discount fee, what shows the larger effect of the cost of the first as compared to the cost of second regarding the different acquirers' practices. The importance of the payment lag is 13% higher for merchants discriminating prices depending on the used payment instrument, as compared to those not discriminating, while the importance of the merchant discount fee is 9% higher for merchants discriminating prices as compared to those not discriminating. The fact that the merchant discount fee was the least important factor for merchants choosing a brand can show the low price elasticity of demand in the merchants' side, or even the small difference among existing merchant discount fees.

**Graph 4: Most important factors in the choice of the payment card scheme**

Concerning level of satisfaction, merchants are typically satisfied with the payment card scheme in which they participate. The lower level of satisfaction is related to promotions offered by the payment card scheme, and to available channels for contacting the acquirer.

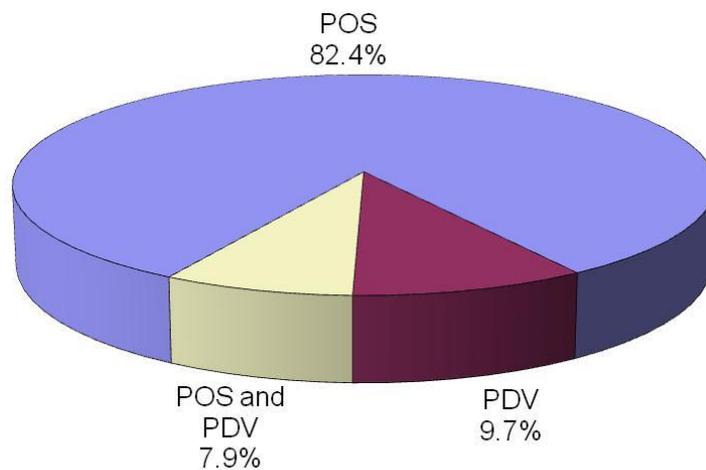
**Graph 5: Merchants' satisfaction level with the payment card scheme (%)**



## 2. POS and PDV Terminals

Among the interviewed merchants, 82.39% use POS terminals, 9.72% use only the PDV scheme, and 7.89% use both of them.

**Graph 6: Percentage of merchants using POS and PDV terminals**



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Among the used connection types, 66.67% of the surveyed merchants use dial-up lines, 25.25% use dedicated lines or broadband connection, and only 8.06% use wireless GPRS connection.

### **3. Price Discrimination**

Around 65% of the interviewed merchants do not offer a discount where another payment instrument is used. Among those who do, 88.6% offer a discount in case of cash payment, 58.9% in case of debit card payment, 20.69% in case of credit card payment, and 10.9% for payments through checks. The perception of the existence of additional costs relating to check acceptance is corroborated by the lowest discount applied to payments carried out through this payment instrument. Among merchants which typically offers discounts depending on the payment instrument used and also considers that receiving payment through check entails additional costs, only 5% give discount in case of payment through check. On the other hand, among merchants which apply the discount strategy and also consider that acceptance of payment card does not increase sales, 86% do not give discount in case of payment through check.

Concerning the merchants' size, 51.6% of micro-firms, 23% of small ones, 3.1% of average ones and 20.7% of large ones give discount depending on the payment instrument used by the consumer.

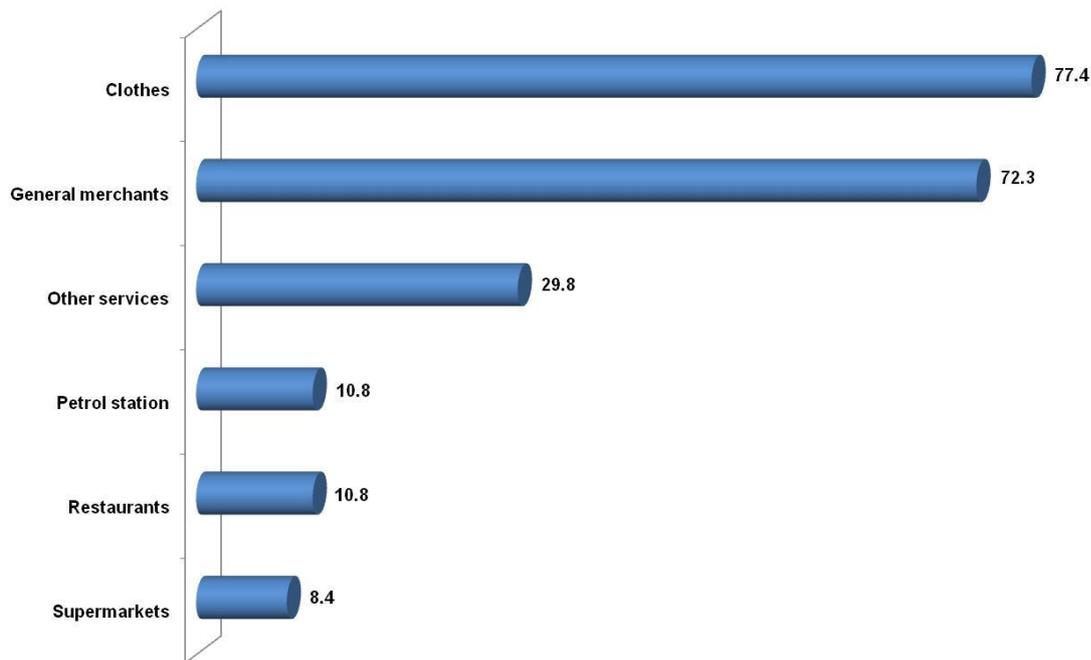
Regarding the business area, merchants that typically do not give discount depending on the used payment instrument argue in favor of their practice that they would have operational difficulties, additional costs to present different lists of prices, small profit margin: 21.43% do not consider feasible to offer discounts; 20.92% said they have small flexibility for set prices fixed prices; 13.78% claimed having high costs relating to payment of interest and fees; and 11.73% said that their type of activity does not allow price discrimination. The segments giving the smallest discounts (supermarket and gas station) usually have their prices more directly exposed to consumers, what makes price discrimination more difficult.

Segments in which discounts are more usual (clothes and general retail) are characterized by direct contact with costumers, customized services and high profit rates. Usual reasons to offer discounts according to the used payment instrument were: consumer loyalty (25%); encouragement to cash payment (14.8%); and increase in the

number of t of clients (10.9%). Less than 10% of the interviewed merchants justified their practice of giving discount depending on the used payment instrument due to preference by payments in cash or as a mean to avoid costs relating to merchant discount fee.

Furthermore, regarding the main economic factors for offering these discounts, the most statistically significant were, first, the time lag for receiving payment from acquirers, and second the discount fee which they have to pay.

**Graph 7: Percentage of merchants by segment offering discount depending on the payment instrument used by customers**



## 4. Merchant Bank

To participate in a payment card scheme, a merchant has to choose a bank (the so-called domicile bank or merchant bank) in a pre-determined list so as to receive payments from the relevant acquirer. As a rule, acquirer-guaranteed accounts receivable financing is also linked to this bank.

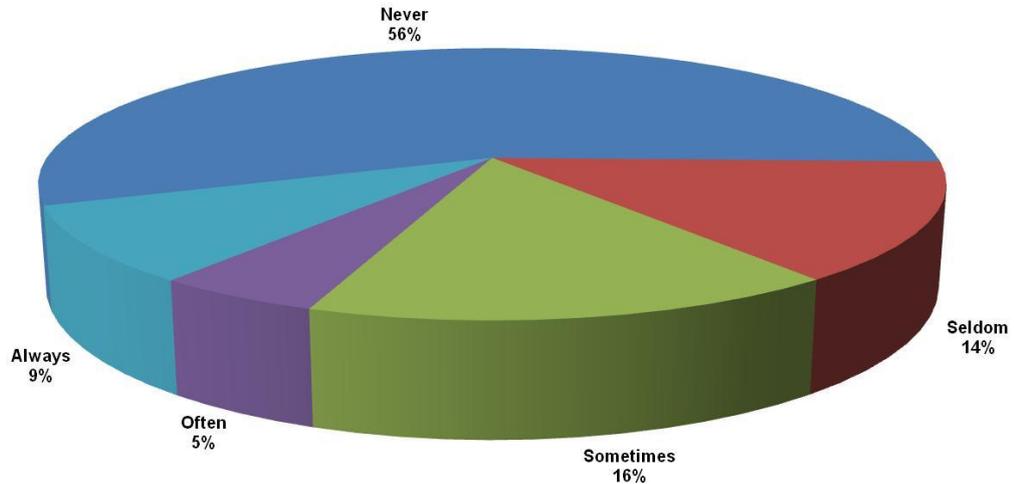
Among the interviewed merchants, 12% of them did not remember if they had to open additional bank accounts in order to participate in a payment card scheme.

Regarding the accounts receivable financing, 30% of the merchants utilize this service at least occasionally<sup>90</sup>, and 9% always utilize it. "Restaurants" is the

<sup>90</sup> "At least occasionally" comprises the options "sometimes", "often" and "always".

segment presenting the largest proportion of merchants that always utilize this service (15%).

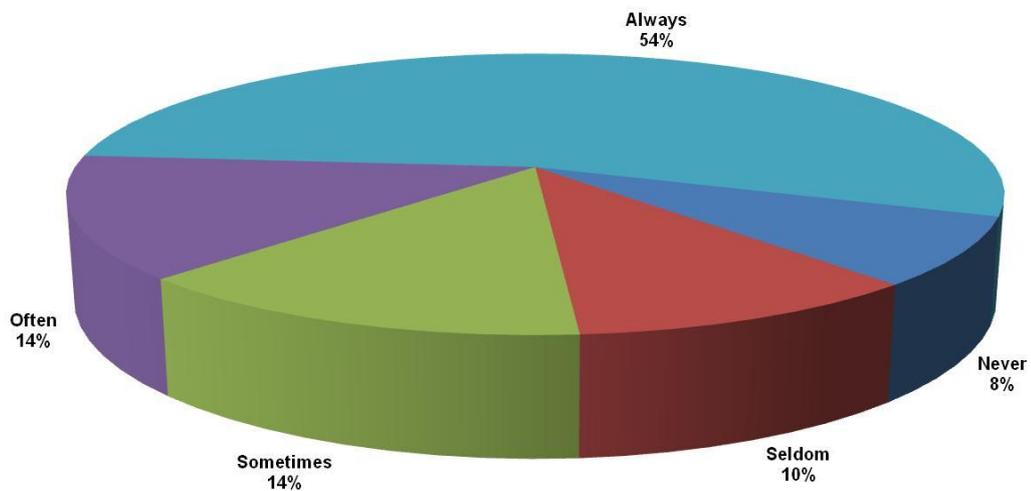
**Graph 8: Utilization frequency of accounts receivable financing service**



## 5. Cardholder identification and fraud

Regarding the practice of verifying the cardholder ID in payment card transactions, 54.2% of the interviewed merchants said they always observe this practice (88.8% in case of large-size merchants).

**Graph 9: Cardholder identification – Frequency observed by the seller**

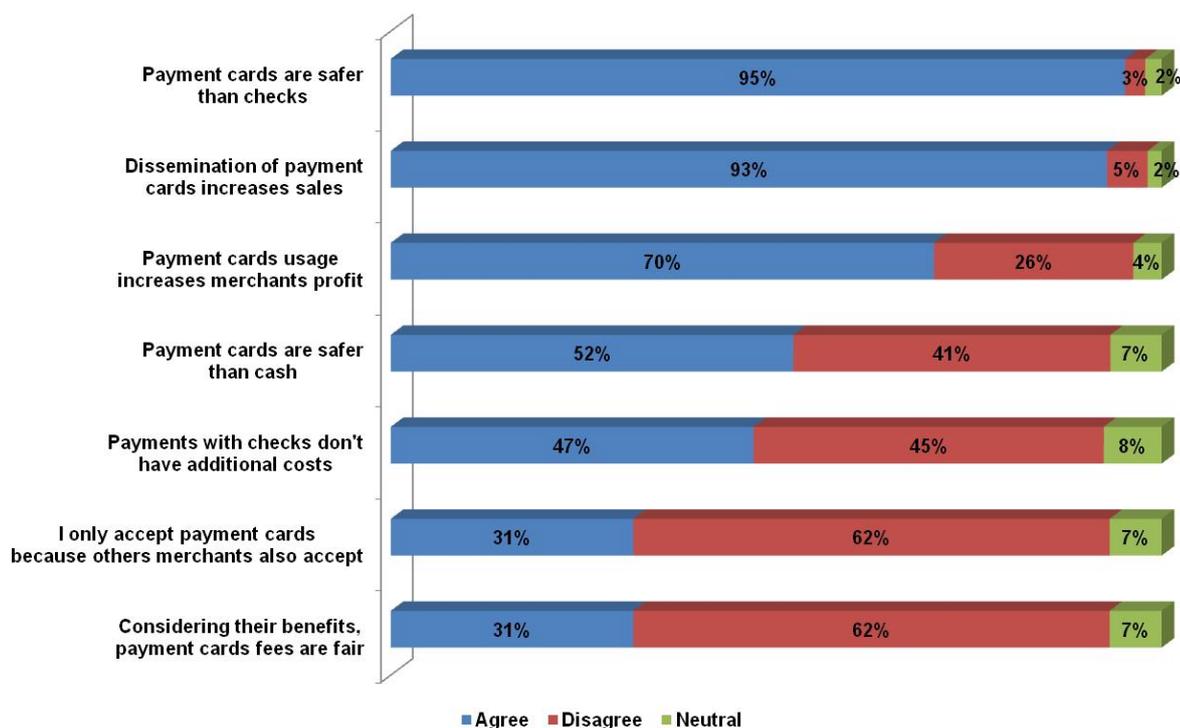


On the other hand, it was asked if the interviewed merchants had already lost some value related to frauds involving payment cards: 80% of the answers were negative. The northeast region presented the highest level of positive answers (31.6%), while, concerning segments, it should be pointed out the positive answers in case of gas stations (36.6%) and supermarkets (30.1%). Regarding the size of the merchant, large-size firms had the largest level of affirmative answers (48.3%).

## 6. Perception of costs and benefits

The graph below shows the interviewed merchants' opinion on costs and benefits stemming from their participation in payment card schemes. Each statement could be answered using one of the following options: agree; disagree; or neutral (only valid answers were considered<sup>91</sup>).

**Graph 10: Merchants' perception of costs and benefits**



Most of the interviewed merchants (95%) evaluates that payments through cards are safer than payments through checks, while 52% of them see a differential of security in payments through payment cards as compared to payments in cash.

Besides that, 93% of the interviewed merchants believe that popularization of payment cards increases sales. On the other hand, 70% of them believe that

<sup>91</sup> Percentages are calculated over the total of merchants answering the questions..

acceptance of these payment instruments increases, and those that disagree with this statement (26%) even so accept payment cards. Concerning strategic reasons for payment card acceptance, 31% of the interviewed merchants accept this payment instrument just because other merchants do.

The analysis of the interviewed merchants' answers regarding costs and benefits stemming from acceptance of payment cards, along with the answers concerning the factors determining the choice of a payment card scheme, indicates that merchants perceive network effects. Such a conclusion is based on the preference showed by the interviewed merchants in favor of the payment card schemes presenting large number of cardholders, especially in the case of those that accept payment cards for strategic reasons. This view reflects the perception that the acceptance of payment cards increases merchants' profits and sales.

## 7. Merchants' Suggestions

Besides the analyzed topics, it was given to the interviewed merchants the opportunity to freely express their opinions and suggestions about credit and debit cards. There were 197 manifestations, which were classified into groups as showed in Table 1. It is possible to verify that the majority of the suggestions are related to fees charged by acquirers, and also to the channels used to contact them. This indicates that fees charged by acquires, even though important, do not influence the merchant's decision regarding the choice of the payment card scheme, because possibly the main payment card schemes charge fees that are similar in value.

**Table 1: Merchants' suggestions**

| <b>Suggestions</b>                        | <b>frequency</b> | <b>%</b> |
|-------------------------------------------|------------------|----------|
| Small fees                                | 93               | 47.2     |
| Improve services provided by acquirers    | 40               | 20.3     |
| Cut out POS rent fee                      | 30               | 15.2     |
| Replace regular cards for pin-based cards | 14               | 7.1      |
| Interoperable POS                         | 7                | 3.5      |
| Others                                    | 13               | 6.7      |
| Total                                     | 197              | 100.0    |



## **Annex F**

### **Sindec data on Credit Cards**



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## **SINDEC DATA ON CREDIT CARDS**

### **I. METHODOLOGICAL NOTE**

**Surveyed Period:** December 2005 thru December 2008

**Procons participating in the survey:** Procon/AC, Procon/BA, Procon/Belo Horizonte, Procon/ES, Procon/GO, Procon/MT, Procon/RJ, Procon/PA, Procon/PB e Procon/TO

The Sindec, the Nationwide Data Base on Consumer Protection, integrates 24 state level and other 60 local Procon units. However, they did not get into the system simultaneously. Instead, Procon units have progressively entered the system along the last four years and a half. As a consequence, unexpected shifts in Sindec's time series may be explained not only by real underlying issues but also by the effect of the data provided by newly integrated Procon units. In order to isolate the former effect, the survey covered the period during which the most significant Procon units had already joined the system, extracting data only from Procon units which had provided data during the whole period surveyed.

### **Taxonomy for Segments, Subjects and Case Filings on the Sindec Database**

On the Sindec database, the classification relating to "Area" indicates the main market segments, that is: *Food; Financial Market; Housing; Health; Goods; Essential Services; and Private Services.*

The classification concerning "Subject" specifies, within each market segment, the good or service to which the consumer claim applies. *Credit Card*, for instance, is a subject within the segment *Financial Market*.

The classification for "Problem" indicates which supplier conduct is claimed. The Sindec's case filing table is linked to the segment table. Within the segment *Financial Market*, case filings are most likely related to improper/abusive charges, contractual issues and questions related to collection, etc.

For a closer look into conflicts related to credit cards, one should select records from the Sindec database whose subject is *Credit Card*, and the segment is *Financial Market*. Nevertheless, it is useful to confront those records with more general data. It is important to know the relative weight of the *Financial Market* segment in comparison to total case filings reported to Sindec, and within that segment, the relative weight of the subject *Credit Card*. Such information will be presented ahead.

## II. GENERAL AND SPECIFIC CASE FILINGS WITHIN THE SUBJECT "CREDIT CARD"

**Source:** Sindec

**Period:** December 2005 thru December 2008

**Procon units surveyed:** Procon/AC, Procon/BA, Procon/Belo Horizonte, Procon/ES, Procon/GO, Procon/MT, Procon/RJ, Procon/PA, Procon/PB e Procon/TO

### Total Case Filings by Segment

| Segment            | Case Filings within the Segment | Percentage of the TOTAL |
|--------------------|---------------------------------|-------------------------|
| Financial Market   | 289,105                         | 35.0 %                  |
| Goods              | 224,742                         | 27.2 %                  |
| Essential Services | 223,854                         | 27.1 %                  |
| Private Services   | 60,558                          | 7.3 %                   |
| Health             | 14,434                          | 1.7 %                   |
| Housing            | 9,674                           | 1.2 %                   |
| Food               | 4,029                           | 0.5 %                   |
| TOTAL              | 826,396                         | 100.0 %                 |

The table above shows that considering all case filings on the Sindec originated in Procon units during the period, the majority belongs to the segment *Financial Market*.

The next table depicts, within the segment *Financial Market*, the top five most demanded subjects throughout the period.

### Top five subjects within the financial market segment

| Subject                              | Volume  |
|--------------------------------------|---------|
| Credit Card                          | 102,885 |
| Commercial Banking                   | 56,962  |
| Consumer credit                      | 41,067  |
| Other contracts                      | 26,263  |
| Merchant / Store – Installment sales | 21,430  |

The table shows that within the segment *Financial Market*, which is the largest contributor to the total number of case filings, the main subject is precisely *Credit Card* (around 35.6% of all case filings within the segment *Financial Market*). *Credit Card* accounts for almost twice the number of case filings in the *Commercial Banking* subject, the second on that ranking.

As a matter of fact, *Credit Card* is the top all-segment subject, as the table below illustrates.

### Top 10 all-segment subjects

| Subject                              | Volume  | Percentage of the TOTAL |
|--------------------------------------|---------|-------------------------|
| Credit Card                          | 102,885 | 12.4%                   |
| Mobile Telecommunications            | 88,675  | 10.7%                   |
| Landline Telephone                   | 83,187  | 10.1%                   |
| Cell Phone devices                   | 82,230  | 10.0%                   |
| Commercial banking                   | 56,962  | 6.9%                    |
| Consumer credit                      | 41,067  | 5.0%                    |
| Utility billing – Electric energy    | 28,460  | 3.4%                    |
| Other contracts                      | 26,263  | 3.2%                    |
| Merchant / Store – Installment sales | 21,430  | 2.6%                    |
| Water / Sewage                       | 17,065  | 2.1%                    |

The table above shows that case filings against credit cards account for more than 12% of the total in Procon units during the period. They are more frequent than those under the subjects *Mobile Telecommunications*, *Landline Telephony* or *Cell Phone Devices*, which are highly demanded subjects in Procon units connected to Sindec.

The next table depicts case filings related to credit card grouped by filing procedure.

### Case filings against credit cards according to selected filing procedure

| Filing procedure                       | Volume  |
|----------------------------------------|---------|
| Preliminary Attendance                 | 46,158  |
| PIL (Preliminary Information Letter)   | 24,498  |
| Inquiry                                | 18,821  |
| Direct complaint filing                | 7,731   |
| Calculation                            | 5,579   |
| Initial JEC                            | 60      |
| Forward to Overseer                    | 25      |
| Consumer from outside the municipality | 10      |
| Ordinary complaint                     | 3       |
| TOTAL                                  | 102,885 |

*Preliminary Attendance* and *Preliminary Information Letter* – PIL are filing procedures in which the supplier sorts out the dispute without resorting to a formal administrative procedure (which in Sindec's terminology is called *Complaint*). Those cases respond for more than 68% of all *Credit Card* filings. That figure suggests that more than two thirds of *Credit Card* disputes could be settled by means of direct contacts between suppliers and consumers (for instance, using a call center). The fact that consumers resort to Procon for assistance underlines the lack of efficient trouble-solving channels between suppliers and consumers. Even when they exist, suppliers seldom show a resolute attitude towards solving the dispute.

The table below shows the most recurring filings on the subject *Credit Card* during the period under consideration.

**Top case filings within the credit card subject**

| Case filings                                                                             | Total  |
|------------------------------------------------------------------------------------------|--------|
| Improper charges                                                                         | 41,541 |
| Contractual disputes (non-delivery, transformation, transferences, irregularities, etc.) | 20,145 |
| Calculation of installments / interest charges                                           | 16,006 |
| Calculation of late due payments                                                         | 12,756 |
| Improper declination of a consumer by consumer credit rating agencies                    | 1,481  |

According to the figures above, issues such as *Improper Charges* and *Contractual Disputes* account for most of the problems reported by consumers when the subject is *Credit Card*. The prevalence of those problems on top of the inefficiency of the communication channels available to assist consumers indicates a systematic harmful attitude of suppliers towards consumers. The understanding of the root causes for that would require more in-depth studies, but it is possible to assert at this point that the process of assessing cardholders outstanding balances presents recurring flaws which have not been fixed by suppliers. It is common on the part of suppliers, for instance, the practice of breaking the pledge of “no annual fees”, which very often is what lures consumers into signing up for a credit card.

Another well-known practice is to include insurance charges which either were not previously signed upon by cardholders or resulted from a tacit purchase of an insurance policy whose detailed specifications were not ostensibly and transparently presented to the consumer. There is also the lack of transparency regarding punitive fees and penalties imposed on those late with their payments or interest charges on rotating credit lines. All those issues are aggravated by customer services whose attendants are often unprepared and lacking autonomy to actually solve the disputes.

Finally, the graphic below depicts the monthly development of consumer filings against credit cards in Procon units integrated to the Sindec system during the period. Despite the apparent stabilization of the average volume of complaints filed between November 2006 and January 2008, there is an overall upward trend when the whole data set is considered. The understanding of what motivates the growth in consumer complaints against credit cards require more in-depth studies, incorporating other socio-economic data.

