The Role of Interchange Fees in Credit Card Associations: Competitive Analysis and Regulatory Issues

by

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This paper reviews and develops the economics associated with interchange fees in credit card associations. These fees have been subject to legal action in the US and recent reports in both the UK and Australia have called for regulation of these fees. These reports have argued that interchange fees can be used to support collusive arrangements or to force cash customers to 'cross subsidise' credit card customers. We show that interchange fees have an important role in an efficient credit card scheme and that the anti-competitive fears associated with these fees are overstated. In particular, interchange fees are only a concern for competition authorities if retail level competition is relatively weak. We then review the recent joint report by the RBA and the ACCC and argue that a number of its conclusions are poorly founded.

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1 Introduction

Credit card associations, such as MasterCard, Visa and Bankcard, set interchange fees for transactions between members of the association. These same members often compete with each other on various aspects of a credit card transaction. The fact that interchange fees are the outcome of cooperation among firms that otherwise compete with each other, raises suspicion as to their efficiency and potential anti-competitive impact.

In the United States, several anti-trust actions have involved credit card interchange fees. For example, NaBanco, a potential merchant acquirer, brought an action against the Visa association alleging that the interchange fee was set prohibitively high.[1] NaBanco claimed that the fee effectively excluded entrant acquirers and favoured incumbents who operated as both issuers and acquirers.[2] That suit was dismissed but controversy remains with the U.S. Department of Justice, in 2000, initiating proceedings against MasterCard and Visa relating to dual membership by various banks in these associations.

In the United Kingdom, the Cruickshank report expressed concern that interchange fees were set too high.[3] The report argued that high interchange fees reduce the efficiency of the payments system and that the interchange fee and other aspects of card associations should be subject to tighter regulation.

Interchange arrangements in Australia are similar to elsewhere. and concerns have been raised about their efficiency and whether they facilitate competition or collusion. The 1998 Wallis report into the

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[1] To clarify the terminology used by credit card associations, *acquirers* are members of the association who provide services to (retail) merchants. *Issuers* provide services to customers who hold the card. The same financial institution can operate as both an issuer and an acquirer in one association. Interchange fees are paid between separate issuers and acquirers who facilitate a particular credit card transaction.

[2] *National Bankcard Corp (NaBanco) v Visa USA*, 779 F.2d 592 (11th Cir. 1986).

[3] D. Cruickshank, (2000), *Competition in U.K. Banking: A Report to the Chancellor of the Exchequer*, The Stationary Office: London.

financial system recommended further investigation. The Reserve Bank of Australia (RBA) and the Australian Competition and Consumer Commission (ACCC) began jointly investigating these issues in 1999. They have recently reported findings that essentially mirror those of Cruickshank.[4] In addition, the ACCC has alleged that the current centralised determination of interchange fees represents potential price fixing by leading banks.

The aim of this paper is to investigate the role of interchange fees and any potential inefficiencies and anti-competitive detriments that might arise from these fees. The academic literature on this topic is limited. We draw upon and extend this literature, paying particular attention to the Australian environment and the potential for regulation of interchange fees. As will become apparent below, our conclusions are stark. Some reasonable economic assumptions lead us to conclude that regulation of the interchange is at best, innocuous and, at worst, could seriously undermine the efficiency of the payments system.

The remainder of this paper proceeds as follows. The next two sections define what a credit card association does and considers the roles and choices of the four key participants in open loop credit card associations – customers, merchants, issuers and acquirers. In Section 4 we consider the various externalities between these participants and how different rules and restrictions may affect the efficiency of the credit card as a payment instrument. One of these mechanisms is the use of an interchange fee to share costs among issuers and acquirers. Section 5 considers the role of the interchange fee in more detail while section 6 provides a thorough analysis of its effect on competition. In section 7, we turn our attention to consider some issues that arise from the RBA/ACCC Joint Study into interchange arrangements in Australia while a final section summarises our conclusions.

[4] Reserve Bank of Australia/Australian Competition and Consumer Commission (2000), *Debit and Credit Card Schemes in Australia: A Study of Interchange Fees and Access*, Sydney.

2 Credit Card Systems

Credit card associations are sometimes referred to as 'four party' systems. This is because it is possible that up to four parties could be involved in processing a transaction. Aside from a *customer* and *merchant* who are parties to all payments transactions, the customer pays their account via their card *issuer* while an *acquirer* pays the merchant. The issuing and acquiring parties deal with one another to settle the transaction; thus completing the loop. This loop is depicted in Figure One.

Figure One: Parties to a Credit Card Transaction

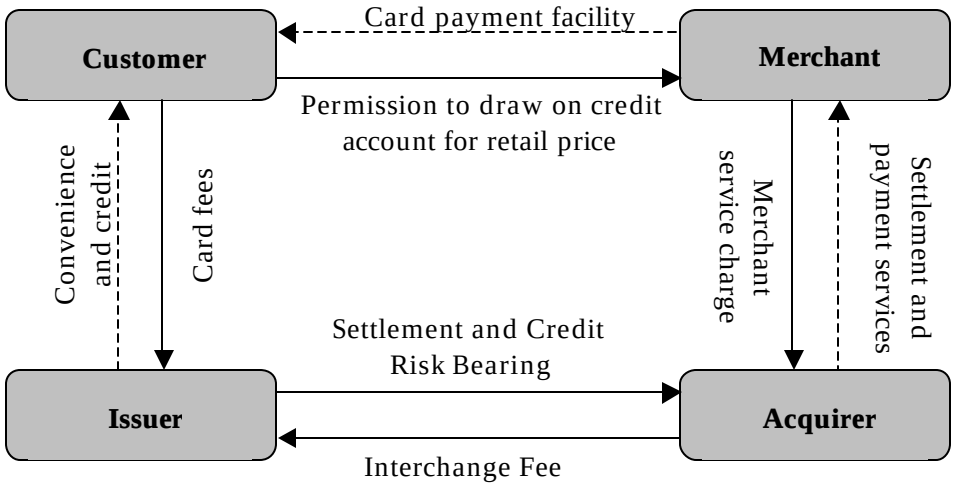


Figure One describes the flows of payments and services specifically related to a credit card transaction. It is initiated when a customer who has a credit card requests that means of payment from a merchant who offers credit card facilities. That payment request gives the merchant the right to draw on credit from the customer's issuing bank for the retail price agreed upon by the customer and merchant. The merchant then passes that right on to its acquiring bank that settles the debt in return for a merchant service charge (usually, some discount on the retail price). The acquirer then settles the debt with the

customer's card issuer and also pays the issuer an interchange fee to compensate the issuer for some of the costs associated with providing and processing the credit card transaction. The issuer finally collects the debt from the customer possibly having received other fees from the customer for the right to use the credit card.

In effect the 'system' that generates a credit card transaction involves both a joint consumer of the service (the customer and merchant) and a joint supplier of the service (the issuer and acquirer). Joint supply of complementary inputs to a good or service is not unusual. Hardware and software provided in information technology are excellent examples of this. Both are required to deliver value to a customer and usually distinct suppliers provide both goods. While sometimes, those suppliers price their respective products separately other times they agree to bundle them and agree to a compensating transfer between them. That is, computers are supplied pre-installed with software or with a voucher that offers a discount on software purchases.

Joint consumption of a service is less common. However, a common set of examples arises in telecommunications settings. Whether they are on the same or on distinct networks, parties to a call – the caller and receiver – both benefit from the service of connecting and maintaining the call itself. For most calls, it is specified that the caller pay for the call. Sometimes, however, it is recognised that a better approach has the receiver paying (e.g., for 1-800 numbers or for the additional connections associated with a forwarded call). The key feature of joint consumption is that neither consumer receives maximal benefit unless the other has agreed to also consume the service.

3 The Parties

The parties to a credit card transaction can be put into two groups: consumers and suppliers. Consumers are parties that receive benefits from credit card payments as opposed to other forms of payment. Suppliers are those parties that face net costs associated with providing credit card transactions. In a four party system, customers and merchants are the consumers while issuers and acquirers are the suppliers. In this section we describe each party's interest in turn and the key decisions they make.

3.1 Customers

Customers receive several benefits from using a credit card to purchase goods and services.[5] First, credit card payments are convenient. Customers are not required to gather nor carry cash saving them time and providing (potentially) greater security. Sometimes those customers are businesses who find having a corporate credit card for employees assists in accounting for expenditures.

Second, credit card payments offer a line of credit. Often this credit is free for a specific period of time (for up to a month and a half provided there is no existing debt). But it also may be utilised for longer periods; although this will incur an interest charge. The key point is that the line of credit is open and the customer need not negotiate credit terms at the time of transacting. In effect, this adds to convenience and also, to the extent that credit card debt can be paid by cheaper credit lines at a later period, is also potentially not as expensive as would be indicated by merely looking at current rates on credit card debt.

The 'price' paid by customers for credit cards usually involves a fixed annual fee plus charges for debt when it carries beyond the month grace period. Annual fees are sometimes waived or reduced if the customer has other services from the issuer. Customers may also receive inducements for each transaction processed in the form of rewards, often associated with frequent flier programs. These rewards are effectively a negative price and are designed to encourage credit card use.

Customers weigh up the benefits of using a particular credit card against alternative forms of payment. Because many credit card transactions involve the same retail price as transactions using cash or other payment mechanisms, customers have strong incentives to use credit cards if they have them and have no accumulated credit card debt.

The ability to widely use the credit card is critical to the customer's perceived benefits from paying annual fees. If few merchants offer card facilities for the particular card, the customer will

[5] Throughout this paper, unless otherwise stated, when we talk of customer benefits from credit card use we are referring to benefits relative to cash transactions.

be averse to paying higher annual fees. On the other hand, if many merchants accept the card, the customer suffers few penalties and may gain significant benefits from using it over other payment instruments.[6]

3.2 Merchants

There are some direct benefits that merchants receive from having credit card transactions.[7] First, there is a convenience benefit of being able to have transactions processed electronically, thereby, facilitating accounting. Second, some merchants offering goods and service remotely (either through phone, mail or ecommerce) find it impossible to use payment mechanisms that require a physical presence either through the exchange of cash or the keying of a number. Moreover, this can speed up such transactions relative to cheque payments. Finally, there are security benefits to credit card (or electronic) transactions relative to other payment instruments. Merchants are protected against fraud and customer credit risk for card transactions, so long as they have carried out the required security procedures. This contrasts, for example, with cheques.

Offering credit card facilities may indirectly benefit merchants. By having facilities, the merchant can attract more customers (who are cardholders). The profits earned from such customers are an important part of a merchant's decision as to whether to join a card system and accept the relevant card. Importantly, these profits will be partly determined by the competitive environment faced by the merchant, vis a vis the adoption of card facilities by other merchants.

The 'price' of offering credit card facilities involves a mixture of annual fees, provision of a payments infrastructure and per transaction merchant service charges paid to acquirers. In addition, the merchant

[6] Sometimes retailers offer inducements to cardholders to use other forms of payment; e.g., their own credit or lay-by terms. Thus, from a customer's perspective the decision to use a credit card at the point of sale may not be neutral as the retail price may vary. Of course, credit card associations often impose a 'no surcharge' rule on merchants offering card-processing facilities that prevents some variations in retail prices.

[7] As with customers, when we talk about merchant benefits from credit card transactions, unless otherwise stated, we are talking about those benefits relative to handling transactions in cash.

must often abide by rules that require it to honour all cards of a given association (regardless of issuer), ensure verification of a card's validity (i.e., check that it has not been cancelled or exceeded its credit limit), and also to not charge a surcharge to cardholders.

Ultimately, a merchant's decision to carry card facilities will be determined by direct benefits less the merchant service charge and other costs. Most critically, the decision will depend on the extent to which customers are likely to carry cards. Thus, a merchant will look both to its customers and to other merchants when deciding whether to adopt card facilities.

3.3 Issuers

Issuers sell credit card services to customers. They are essentially the providers of any credit and are also ultimately responsible for debt collection from customers. Hence, they perform all of the functions of any financier from checking the credit worthiness of customers to processing and calculating debt repayment schedules.

As part of a credit card system, this means that issuers must offer guarantees to acquirers that debts will be honoured. This is important because acquirers are using credit card information from merchants to complete an offer of credit. Essentially, the acquirers are agents of the issuer in offering credit terms to merchants, and ultimately customers. Thus, if a customer turns out to be unable to finance a particular transaction, the issuer bears the costs associated with recovery or non-recovery of that debt. Of course, that guarantee may only be assured if the merchant involved has taken adequate steps to ensure that a card is valid. If the transaction is small enough, such authorisation may not be required.

The issuer also offers a guarantee to customers that the issuer will reimburse the cardholder for a disputed transaction, unless it can be demonstrated that the cardholder themselves participated in fraud. For this reason the issuer will also have to deal with acquirers regarding cases of unsuccessful transaction. These might arise if the use of the card was fraudulent (e.g., stolen), the customer and merchant dispute a particular retail charge, or bankruptcy of the merchant before some refund is paid. These events will trigger some resolution – usually guided by an association's rules – to share costs

among the issuer and acquirer or determine where fault may lie. The costs associated with this process are also part of the cost of becoming an issuer.

Thus, issuers face costs associated with processing card transactions and also associated with the risks of providing credit to customers. In return for these services, the issuer is able to charge customers for the use of cards – annual fees and interest payments – or bundle card provision with benefits elsewhere as part of banking functions. In addition, issuers often receive payments – interchange fees – from acquirers. Issuers will look, therefore, to their costs, net of payments from acquirers when setting card fees for customers.

3.4 Acquirers

Acquirers are, basically, responsible for encouraging merchants to join a particular association and accept its cards. Having done this the acquirer will be responsible for processing transactions and settling them with issuers so that they can pay merchants promptly.

The risks involved in acquiring are substantially less than those for issuing. In credit card systems, issuers are really the financiers and acquirers their agents in dealing with merchants. To that end, acquirers have to ensure merchant compliance with the rules of authorisation but they are also liable to issuers if the merchant goes out of business before giving a refund to customers. Nonetheless, their role is primarily one of marketing and then processing transactions from merchants.

Acquirers earn revenue from the charges paid by merchants for various services but also must pay interchange fees to issuers. Nonetheless, their overall profits will critically depend on the number of transactions offered by their associated merchants.

4 Externalities in Credit Card Systems

An externality arises when a decision-maker takes actions that benefit or harm other agents without any (direct) compensation. For example, an externality arises when an agreement between two parties

to a transaction confers benefits or costs on parties outside the transaction. Alternatively, the action of a single individual might create uncompensated costs or benefits for others. Both of these types of externalities arise in the context of credit card systems.

Credit card systems involve what have been termed *network externalities*. A network externality arises when a decision by one agent to adopt a particular form of behaviour raises the return to others from adopting a similar form of behaviour. As we noted above, customers are more willing to hold a particular credit card if more merchants are willing to accept that card as payment and, conversely, merchants are more willing to accept a card if there are more customers who wish to use that card. In brief, customers' and merchants' decisions regarding a particular type of card tend to reinforce each other. The association of issuers and acquirers has to solve a chicken-and-egg-type problem. They need to encourage a critical mass of both customers and merchants to hold the cards or join the system.

These network effects play an important role in competition among different credit card associations and also in competition between credit cards and other payment instruments. We examine this in more detail below. For the moment, however, it is important to note the interdependency between customers' and merchants' decisions. A card association faces a complex task in ensuring that issuers and acquirers take account of these network effects.

For the remainder of this section, we focus on the other type of externality, which arises when two parties reach an agreement that affects other parties. This externality plays an important role in the type of pricing arrangements we see within credit card associations and the effect of those pricing arrangements on competition and ultimately efficiently. For convenience, we will refer to this as the intra-association externality.

4.1 A Coasian Approach

To demonstrate the effect of the intra-association externality, it is useful follow Ronald Coase's pioneering work.[8] Coase was

[8] R. Coase, (1960), "The problem of social cost", *Journal of Law and Economics*, 3, 1-44.

responsible for a result in economics, now referred to as the *Coase Theorem*. This states that if agents to a transaction can bargain freely over all relevant terms to that transaction then any resulting outcomes will be jointly efficient for those agents. This means that, even if externalities exist between agents, those agents can find means of compensating one another in a way that is mutually beneficial.[9] Moreover, if all concerned agents are part of the negotiations, the outcome will be efficient in the sense of maximising total value that can be created.

To achieve an efficient outcome there must be few if any impediments to bargaining (such as information asymmetries and contractual incompleteness) and it must be possible for agents to compensate each other. Also all relevant agents must be parties to the negotiation. It is this last requirement that concerns us here. In payments systems bargaining often takes place between different pairs of two of the four parties to a transaction. Hence, not all relevant parties are negotiating at once; leaving the possibility of inefficiencies arising because of externalities between them.

The remainder of this section will explain how the nature of transacting in a credit card system can potentially lead to inefficiencies and how retail price negotiations and interchange fees might overcome these difficulties. The appendix provides a technical analysis supporting the discussion.

4.2 Efficient Credit Card Transactions

As a starting point it is useful to establish when a credit card transaction would be efficiently undertaken. We noted in Section 3 that both customers and merchants receive potential net benefits from using a credit card over alternative forms of payment while issuers and acquirers incur costs in providing credit card services. Put simply, a particular transaction will be efficiently undertaken using a credit card

[9] Coase noted that, where such negotiations fail to emerge, this might be due to a lack of well-defined property rights.

process if the sum of the benefits exceeds the sum of the costs. Otherwise, it is better that an alternative means of payment be used.[10]

If a credit card transaction was efficient then it would probably be implemented if the customer and merchant as joint consumers and the issuer and acquirer as joint suppliers all negotiated over that transaction. So long as the benefits exceed the costs, the four parties should, in a Coasian fashion, be able to agree to a division of the net surplus from the transaction (i.e., the sum of the benefits less the sum of the costs) that ensures each party is either compensated for their costs or is otherwise left no worse off than by using the best alternative means of payment. On the other hand, if there is no net surplus from using a credit card for a transaction, there would be no way to make every party better off by participating in a credit card payment and hence, an alternative means of payment would be used. These outcomes would be efficient in that credit cards would be used if and only if the net surplus from so doing was positive.

In reality, there are many impediments to this idealised outcome. But even with those impediments in place, economists generally believe that more efficient outcomes are likely when all relevant parties are involved in the collective decision as to whether a credit card payment method is used. This is why we look to that idealised situation as an appropriate benchmark.

4.3 Separated Negotiations

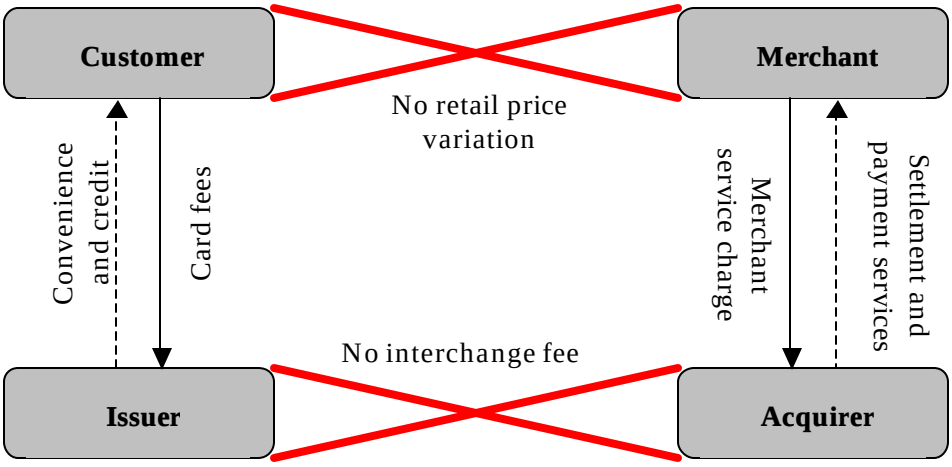
At the alternative extreme would be a situation where the customer only negotiated with the issuer while the merchant only negotiated with the acquirer. This would arise if (1) the customer and merchant were unable (or prevented) from making the retail price vary with the form of payment used; and (2) no interchange fee could be paid or negotiated between the acquirer and issuer. This situation is depicted in Figure Two.

Under these conditions, a double coincidence of negotiated outcomes needs to occur for a credit card transaction to take place.

[10] See W. Baxter, (1983), "Bank Interchange of Transactional Paper: Legal and Economic Perspectives," *Journal of Law and Economics*, 26, pp.541-588.

Both the customer-issuer and merchant-acquirer pairs must find it worthwhile to engage in their respective services. This involves the benefit to the customer exceeding the issuer's costs *and* the merchant benefit exceeding the acquirer's costs. If either of these conditions was not met, no credit card transaction would take place because either the merchant would not offer card facilities or the customer would not have a credit card.

Figure Two: Separated Negotiations



In this situation, some efficient credit card transactions would not take place. As an extreme, but illustrative example,[11] suppose that there were no costs incurred by the acquirer and that the customer benefit was insufficient to cover the issuer's costs. In this case, the transaction would not go ahead even though it is entirely possible that the sum of customer and merchant benefits could exceed the issuer's costs. The problem is that in their negotiations, the customer and issuer cannot take into account the benefit to the merchant. If they were a party to the negotiations, the merchant would want to assist the customer or issuer in facilitating an agreement, but under our assumptions here the merchant is prevented from doing this. Hence, the customer and issuer neglect the positive externality their agreement

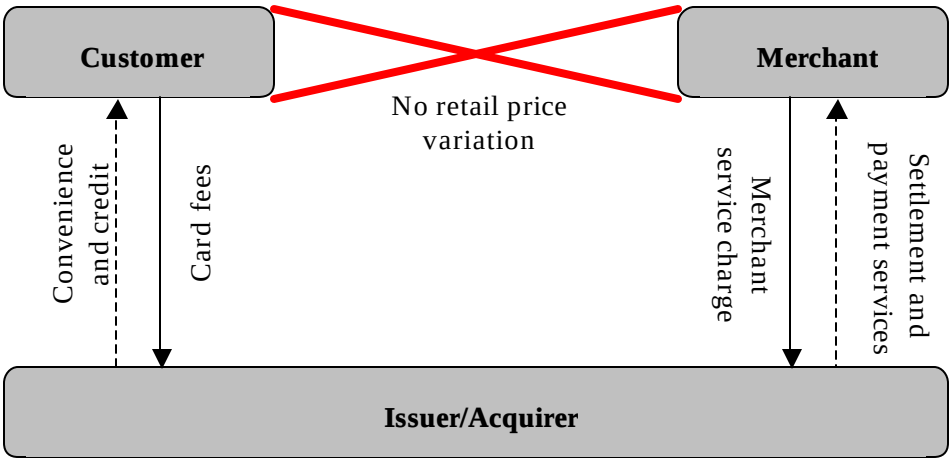
[11] The appendix presents this possibility as a more general proposition.

would give the merchant and this neglect can lead to a socially inefficient outcome.

4.4 Resolving the Inefficiency I: Closed Loop System

One method of resolving the potential for inefficiency in separated negotiations is to have a system where the issuer and the acquirer are the same party. This occurs in what has been termed a 'closed loop' credit card system where there is a single issuer/acquirer that jointly sets customers' card fees and merchant service charges. Examples of this type of system include Diner's Club and American Express.[12] This situation is depicted in Figure Three.

Figure Three: Closed Loop System



In this situation, the externality between the issuer and acquirer is resolved by having a single entity. When determining the prices paid by customers and merchants, the single issuer/acquirer takes all costs of the credit card transaction into consideration. This increases the

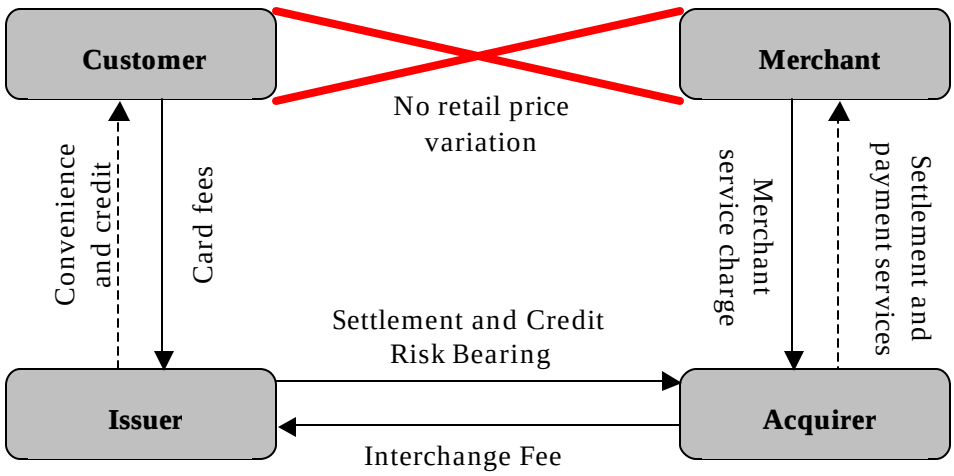
[12] Store cards are a related type of system where the merchant is also the issuer and acquirer. Both David Jones and Myer in Australia have such store cards.

likelihood that a credit card transaction for which the sum of benefits exceeds the costs associated will actually go ahead.

4.5 Resolving the Inefficiency II: Interchange Fees

In contrast, in 'open loop' systems such as Visa and MasterCard, while some issuers may also be acquirers many transactions take place between customers associated with an issuer who is not the acquirer for a particular merchant. In such systems, issuers and acquirers deal with one another not only to facilitate the processing and settlement of a transaction but also to exchange an additional payment, the interchange fee. Usually, in credit card systems, this payment flows from acquirer to issuer. This situation is depicted in Figure Four.

Figure Four: Interchange Fees



Interchange fees can assist in internalising the externalities between the two sides – customer-issuer and merchant-acquirer – of a credit card transaction. We will have more to say about the role of interchange in Section 5 below. But to see its potential efficiency properties, suppose there is only a single issuer and acquirer and that they negotiate the interchange in a Coasian fashion. There are three

distinct negotiations; between customer and issuer, merchant and acquirer and issuer and acquirer.

Once again take the extreme situation where the issuer incurs all the costs involved in a transaction but that the customer's benefit did not exceed these costs. In this situation, the acquirer could agree with the merchant on a merchant service charge – the maximal level of which would be the merchant's benefit – and in principle could pass a sufficient amount of this back to the issuer through the interchange fee to make up for any shortfall between the customer benefit and issuer costs. Appendix A demonstrates that an appropriately chosen interchange fee would restore efficiency even though no retail price variation was possible.

This demonstrates the importance of interchange fees in ensuring that externalities between the two sides of a credit card transaction are internalised. It is for this reason that an interchange fee is to be expected and reflects an efficient arrangement in an open loop credit card association. Of course, as we discuss in the next section, when interchange fees are set in a manner that is not transaction-specific, as was assumed in the idealised environment here, it has other effects as well.

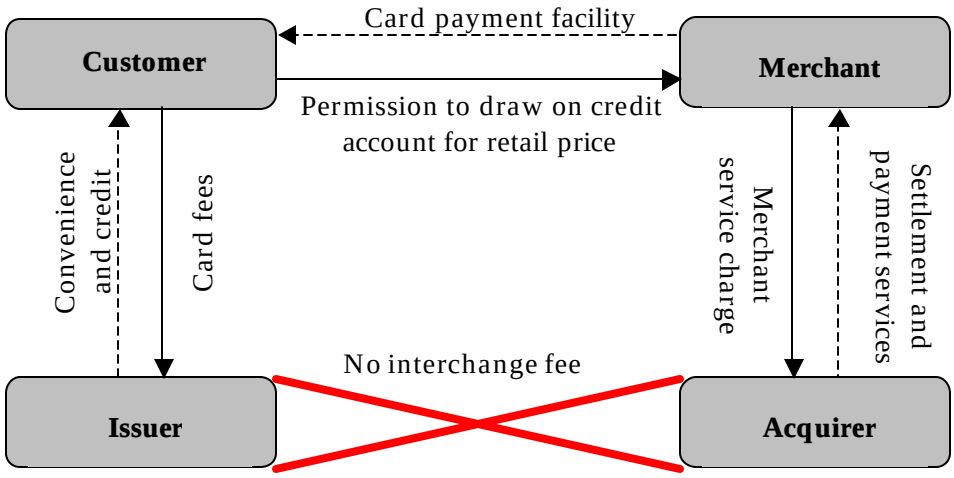
4.6 Resolving the Inefficiency III: Retail Price Variation

A final way of resolving the inefficiency is if customers and merchants could negotiate a surcharge for payments using a credit card. As noted earlier many credit card associations explicitly prevent this type of pricing. However, suppose that it was possible for the customer and merchant to vary the retail price contingent on the payment mechanism used. In this situation, the merchant would essentially face no barrier to having card facilities, as they would only pay a merchant service charge if they and the customer agreed to the transaction. Thus, the network effect on the merchant side would virtually be eliminated.

A credit card transaction would only proceed if the sum of customer and merchant benefits exceeded the merchant service charge. Moreover, this would depend on the customer perceiving that their overall surplus exceeded the fee paid to issuers. Because the merchant service charge and issuer fee must exceed the acquirer's and issuer's

costs respectively, in the appendix, we show that an efficient outcome always results.

Figure Five: Retail Price Variation



Returning to our extreme example where the issuer bears all of the costs of the credit card transaction while the customer fee is insufficient to cover these, the retail price surcharge would adjust to ensure the merchant benefit was taken into account. In this situation, that surcharge would be negative (i.e., a discount), the maximum level of which would be the merchant benefit. The discount would in turn mean that the issuer could potentially charge a fee to customers for the card that exceeds their direct benefit as they would anticipate the potential discount from using a credit card.

Like the interchange fee, retail price variation links the two sides of the credit card transaction in a way that potentially accounts for intra-association externalities, thereby, raising the efficiency of the credit card system. It should be emphasised that it is potentially sufficient to have only one linkage – interchange fees or retail price variation – to achieve an increase in efficiency.

4.7 Resolving the Inefficiency IV: Hybrid Approaches

A final set of ways that the intra-association externalities could be resolved is through a hybrid approach that involves changing the way different parties deal with one another. As an example of this, consider what would happen if a customer directly paid the acquirer for their contribution of the total processing cost. In this situation there would be no need for an interchange fee. Customers would effectively directly pay that fee. While in principle such arrangements could resolve the externality, there are likely to be transactions costs associated with such a solution and we mention such possibilities here merely for the sake of completeness.[13]

5 The Role of the Interchange Fee

Section 4 demonstrated the role of an interchange fee in improving the efficiency of credit card systems, especially in situations where retail price variation is not possible. That analysis, however, considered the formation of prices that were specifically tailored to a given transaction. In reality, however, all relevant prices – card fees, merchant service charges, interchange fees and retail prices – are set over a variety of transactions. In this section, we examine the role of in the interchange fee in this broader context where a given fee influences the prices across a range of transactions. We concentrate on the usefulness of the interchange fee in facilitating more efficient outcomes in comparison to a situation where that no fee can be charged.

5.1 Cost-Sharing Versus Fee for Service

Before considering the role of interchange fees in general, it is worth dismissing a somewhat irrelevant distinction that appears to

[13] In telecommunications, we have suggested that direct customer charging can be a means of overcoming the adverse effects of market power when interconnection fees are posted prices rather than centrally determined. See J. Gans and S. King, (1999), "Termination Charges for Mobile Networks: Competitive Analysis and Regulatory Options," *Working Paper*, University of Melbourne.

have been proffered by Visa and MasterCard in their respective submissions to the Cruickshank report on competition in banking in the United Kingdom.

In its submission, Visa argues that the purpose of the interchange fee is to facilitate in the sharing of the joint costs of providing credit card transactions.

> For Visa, interchange is a financial adjustment to reduce the imbalance between the costs associated with issuing and acquiring, with a view to increasing demand for use of the payment services. It is the combination of issuing and acquiring that creates value for all parties of the payment system. Issuing costs benefit retailers as well as cardholders and, similarly, acquiring costs benefits cardholders as well as revenues. It is unlikely that issuing costs and acquiring costs would each be covered by, respectively issuing revenues and acquiring revenues. The emphasis here is on the **joint** role of issuer and acquirer in producing joint benefits to customers and retailers and the use of the interchange fee to **optimise** the use of the system as a whole.[14]

This view is very similar to the rationale for interchange described in Section 4.5 above where we noted that issuers and acquirers were joint suppliers of a product to customers and merchants and that interchange fees would ensure that transactions that were of overall benefit to merchants and customers proceeded even though those two parties dealt with acquirers and issuers separately.

On the other hand, Cruickshank saw MasterCard's stated rationale for interchange as distinct from Visa.

> For these schemes the justification for interchange is to compensate card issuers for the cost of services they supply to acquirers through the payment scheme. Acquirers in turn supply these services to retailers.[15]

In effect, this represents a 'vertical' view of payments services. Issuers supply credit and processing services to merchants through acquirers as their 'downstream' agents. The interchange fee is, therefore, a price

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[14] Cruickshank, *op.cit*., pp.261-2, emphasis in original

[15] *ibid*., p.262.

for service provided. This 'vertical' view is somewhat misleading as issuers also provide services, from a common cost base, to cardholders.

From an economics perspective, there is no difference whatsoever between these two views of the interchange fee – that is, as cost-sharing device and a fee for service. It is merely a matter of language. To see this, suppose that an issuer's revenues from a cardholder were $30 and that that cardholder utilised their card to impose processing costs in excess of $30 on the issuer (say, $50). Suppose also that the merchant valued using credit card services at $40 while its acquirer's processing and other costs totalled $10. As noted in section 4, without an interchange fee this card transaction would not take place (even though its total benefits of $70 exceeded total costs of $60) because the issuer would not recover enough from the cardholder to cover its costs. If, however, the issuer and acquirer recognise that it is of potential benefit to the acquirer for the transaction to proceed, it would be natural for them to agree to a cost-sharing arrangement that involved the acquirer paying the issuer at least $20 to cover its shortfall. Notice that the same outcome would result if the issuer could charge the acquirer at least $20 for processing the merchant's debt settlement. Thus, whether an interchange fee is seen as a cost-sharing mechanism or a fee for service, the effect is the same – to cover any shortfall in issuer cost recovery from customers to ensure that the transaction proceed.

Therefore, both views are essentially correct as one rationale for the interchange fee's existence. As noted in section 4, without a means of sharing the potential cost imbalanced between issuer and acquirers, mutually beneficial transactions may not occur.

5.2 Provision of Incentives

The cost sharing rationale for the interchange fee is a broad statement about its overall benefit in facilitating a greater number of efficient transactions. However, the actual interchange fee also plays an important role in the margins earned by both issuers and acquirers. This will influence the profitability of various actions issuers and acquirers could individually undertake that could improve the number and value of transactions within a credit card system.

To see how the interchange fee can have an important role in setting the incentives of association members, recall the basic network externalities that govern payment mechanisms. The more customers who hold and are willing to use a credit card, the greater is the return to merchants from offering card facilities. Conversely, the more merchants who accept a card, the more useful is that credit card to customers. Thus, to be successful, a card association must encourage *both* merchant acceptance of cards and customer usage of them.

In a closed loop system, the card service provider will direct its pricing – both of card fees and merchant charges – as well as its advertising, research and development, and internal performance incentives – towards enhancing the profitability of its card service. In an open loop system, comprising distinct issuers and acquirers, coordinating various directions and expenditures cannot be done centrally. To be sure, the association can advertise its brand and also ensure that interchange practices are efficient. However, many variables, such as card fees, merchant charges and the positioning of products and investments made by individual participants, are in the hands of those participants and cannot be directly controlled.

As a result, coordination is more difficult for card associations than closed loop operators.[16] The interchange fee is one instrument available to the association to provide incentives for its members to act in the common interest of the association. When acquirers are effective in signing up merchants this confers benefits on issuers who are trying to convince customers to hold cards. This in turn benefits acquirers who gain from greater customer numbers. If the interchange fee is set too low then this might encourage acquirers to step up efforts to increase merchant adoption but, for issuers, this means that their net returns from encouraging customer card usage are diminished. Similarly, a high interchange fee might encourage issuers in their activities but will, in turn, reduce the profitability of acquirer actions.

Thus, an important role for the interchange fee is to balance the incentives of issuers and acquirers in a credit card association. Essentially, the association must determine whether the value it creates

[16] D. Evans and R. Schmalensee (1999), *Paying with Plastic: The Digital Revolution in Buying and Borrowing*, MIT Press: Cambridge (MA) chapter 7, provides a description of the difficulties MasterCard and Visa face in coordinating overall direction as compared with American Express.

will be maximised by emphasising customer or merchant usage at the margin.[17] Evans and Schmalensee explain it in this way:

> Start with an assumption that the system's economic value depends, roughly, on the product of the number of customers who carry the card and the number of merchants who accept it. This assumption implies that acquirers' efforts become more valuable to the system the more successful issuers have been and vice versa. Now suppose that a system has a lot of merchants but not many cardholders. Under these conditions, raising merchants' prices somehow and lowering cardholders' will likely increase the system's value. How can this be done when issuers and acquirers price independently? Answer: by raising the interchange fee. [18]

Thus, the interchange fee potentially plays a role in determining the overall competitive direction of a credit card association in terms of focus on customer and merchant adoption and striking a balance between these. Set the interchange fee either too high or too low and the potential imbalance will reduce the overall usage (and value) of a credit card.

5.3 Setting a common interchange fee

The discussion in section 4 did not preclude the possibility of acquirers setting differential interchange fees. In practice, however, interchange fees tend to be set co-operatively by association members. There are important reasons for this.

First, a single interchange fee jointly set by the association will reduce transaction costs. A specific acquirer might deal with many issuers. For internationally accepted credit cards, such as Visa and Mastercard, there are thousands of issuers whose customers might use the card to purchase an item from a merchant associated with a specific acquirer. It would be extremely expensive for an individual acquirer to negotiate individually with each of these potential issuers. Similarly, when issuing a card to a customer, an acquirer does not know exactly

[17] This task is complicated by the fact, as we will address more fully in the next section, that the terms customers and merchants receive will have an influence on their own dealings.

[18] Evans and Schmalensee, *op.cit.*, pp.160-1.

which merchants that customer will use. There are thousands of acquirers worldwide who might supply services to relevant merchants and the costs of negotiating individual interchange fees with each of these acquirers would be extremely high. Having a relatively small set of interchange fees, set by the card association, eliminates the need for expensive unilateral bargaining.

Secondly, individually negotiated interchange fees would undermine the universal acceptance of a credit card. As noted above, network externalities imply that a card is more valuable to both customers and merchants the more widely that card is used. As a result, card associations often have a rule requiring merchants to accept all versions of their card, regardless of the particular issuer. Under individually negotiated interchange fees, however, such universal acceptance is unlikely to be feasible. For example, if a particular issuer and acquirer have not agreed on an interchange fee, then the issuer might instruct its customers not to use the card at merchants associated with the acquirer or the acquirer might order merchants not to accept cards associated with that issuer. Such tactics might be part of robust bargaining or, where failure to agree reflects small transaction numbers and negotiation costs, such non-acceptance might be permanent. For example, it is unlikely that a small Australian issuer would have an interchange agreement with a small German acquirer. As a result, an Australian cardholder might find their card to have limited acceptability in Germany. Having the card association set the interchange fees ensures universal acceptance regardless of the identity of the issuer and acquirer, and increases the value of the credit card as a payments instrument.

Finally, individually negotiated interchange fees might be subject to competitive abuse. To see this, suppose first that issuers posted prices for interchange. In this situation, each acquirer will face a different fee (and hence a different cost) depending on the issuer associated with a specific transaction. An acquirer faces several choices. First, the acquirer might bear these differences by setting a uniform merchant services fee despite facing differential interchange fees. The merchant services fee would tend to reflect an average of the interchange fees. In this case, each issuer will have an incentive to have the highest interchange fee. To the extent that an increase in any specific issuers interchange fee is simply absorbed by the acquirer or diluted as part of a uniform merchant fee, each issuer gains all the benefits from raising its interchange fee, but shares the costs of such a rise in the fee. These costs include, for example, fewer merchants

agreeing to accept the credit card as the merchant services fee rises. Thus, issuers will tend to set interchange fees that are undesirably high from the perspective of the card association.

Alternatively, when facing different interchange fees, an acquirer might choose to set different merchant fees according to the issuer associated with any transaction. But this simply shifts the problem of differential charges from the acquirer to the merchant. If the merchant cannot distinguish between different types of credit cards when charging customers, then the merchant will base its price on an average merchant services fee. Again, each issuer will have an incentive to raise its interchange fee. Alternatively, the merchant could try to pass the differential merchant fees onto the consumers. The merchants would have to try and set different prices depending on the issuer of the credit card used by a customer. This is likely to be impractical and will undermine the universal acceptance of the credit card. Some merchants might find it better to simply reject some cards associated with different issuers to avoid the higher merchant fee associated with that issuer. Overall, the aim of the association – to have a widely accepted credit card that operates seamlessly regardless of the specific issuer and acquirer – would be fundamentally undermined.

Under bilateral negotiations, issuers and acquirers would agree to interchange fees rather than have them simply set by issuers. However, the incentive for issuers to individually increase their interchange fees, to the detriment of the card association, merchants and customers, will remain under bilateral negotiations. It is likely that the negotiated interchange fees will be higher than those set jointly be the association members as a group.

There are substantial benefits from having uniform interchange fees in a credit card system. The history of the cheque system in the United States illustrates the type of problems that can arise in the absence of uniform interchange. In the case of the US, this involved difficulties with out-of-state cheques, limited cheque acceptance and, eventually, significant government pressure to have universal 'at par' acceptance.[19]

[19] A. Frankel, (1998), "Monopoly and Competition in the Supply and Exchange of Money," *Antitrust Law Journal*, 66, pp.313-361, provides an excellent overview of the history of interchange and the US checking system.

5.4 Summary

From an economics perspective, an interchange fee is an expected feature of any open loop credit card association. *In the absence of retail price variation*, it provides a dual role of mediating the externalities between the two sides of credit card transactions by allowing issuers and acquirers to share their respective costs and in determining the incentives of issuers and acquires to gain customer and merchant acceptance respectively. This is not an unusual set of economic relationships when firms provide complementary inputs. Joint ventures and, indeed, large vertically integrated firms often specify transfer prices designed to share costs and ensure decentralised decisions are carried out in accordance with organisational goals. The absence of an interchange fee would, therefore, likely have highly adverse effects on the value realised from credit cards and consequently the efficiency of payments in the economy.

This conclusion, however, must be qualified to the extent that customers have good cash options for purchasing goods and services. As will be explained below, when such options exist, retail price variation implies that the role of the interchange fee is, in fact, neutral. That is, in the long-run, it only effects nominal variables – such as prices, cardholder fees and merchant service charges – and not real variables such as customer decisions regarding card use, merchant adoption of payment facilities, or the degree of competition among issuers and among acquirers.

6 Interchange Fees and Competition

There are two dimensions to competition in credit cards. At one level, within an association, issuers and acquirers compete for customers and merchants respectively. Second, credit card associations compete in what has been termed 'systems competition' with other credit cards and payment mechanisms. Both of these dimensions of competition could affect and be affected by the size of the interchange fee.

Of particular interest are concerns that the interchange fee can be used to soften competition and inflate prices or alternatively that the

fee may be used as a device that leads to over-use of a particular credit card or credit cards in general. On one level, these two arguments are somewhat contradictory. If the interchange fee were a potential collusive instrument designed to raise merchant service charges, such increases in the 'price' of card transactions would lead to their under- rather than over-use. The over-use argument relies on the notion that an interchange fee can be used to extract rents from non-credit as well as credit card users; thereby, making customers more likely to use credit cards at the margin. Nonetheless, each argument is similar in that each relies on the possibility that interchange fees are set too high.

The purpose of this section is to evaluate the impact of the interchange fee on competition and the efficiency or inefficiency of credit card use. We conclude that the arguments for inefficiency rest on a specific set of assumptions that are unlikely to be valid across a wide number of sectors in the economy. Hence, we argue that concerns about the use of the interchange as an instrument of market power are, at worst, implausible and, at best, highly overstated.

6.1 Interactions Between Prices

As a starting point it is useful to consider the interaction between various prices that make up a credit card transaction. These prices include the card fee and charges, the merchant service charge, retail prices for card transactions and the interchange fee.

Consider the merchant service charge set by acquirers. The costs of acquiring include the direct costs borne by acquirers and also the interchange fee they pay to issuers. Thus, an increase in the interchange fee – by raising acquirer costs – is likely to lead to an increase in the merchant service charge. This, in turn, will raise the costs faced by merchants. If, as is usually the case, merchants charge the same price to customers regardless of the payment mechanism, this increase in merchant service charge will also increase retail prices.

Issuers will set fee and other payment terms to card holding customers. Operating costs, including the direct costs associated with processing and risk bearing, will be an input into the prices set by issuers, but the interchange fee they receive from acquirers mitigates these costs. Therefore, an increase in the interchange fee lowers the net

costs of issuers and is likely to lead to lower card fees and charges. This in turn increases card adoption rates among customers.

If the overall 'price' of credit card transactions is made up of both card fees and the merchant service charge, the effect of a change in the interchange fee is ambiguous. Increasing the interchange fee merely shifts the balance in that price towards merchant charges and away from customer charges. Decreasing it would have the opposite effect. In this sense, an increase in the interchange fee cannot simply be likened to increasing the price of an input into the service. For credit card systems, the fee represents both a cost to one complementary supplier and a cost-offset to another; implying no simple relationship between the interchange fee and the overall price of the service.[20]

Complications arise to the degree that many issuers are also acquirers. For these members, the interchange fee is only a cost for transactions that are not 'on-us;' that is, for transactions where the issuer and acquirer are distinct entities. In contrast, when a transaction is 'on-us' no interchange fee is paid and the issuer/acquirer apportions costs according to their own internal procedures. In principle, these procedures should reflect the actual costs associated with a transaction and may well differ from the interchange fee. In this respect, the interchange fee is not simply a floor on merchant service charges but part of the weighted costs involved in setting a merchant service

[20] Similar trade-offs arise in other industries. Take, for example, telecommunications and the pricing of fixed to mobile calls. A critical input into the price of a call from a fixed line to a mobile phone is the termination charge the fixed line network pays the mobile network for completing the call. As the caller pays the retail price of the call, an increase in that termination charge would increase the retail call price. However, from the perspective of a mobile phone network, this makes the attraction of additional subscribers more profitable as they also attract termination revenues. In effect, this offsets the costs of signing up an additional mobile phone customer and that, in turn, will be reflected in the price they have to pay for their mobile phone subscription. Thus, a change in the termination charge (effectively a wholesale price) has an ambiguous effect on call prices overall. See J. Gans and S. King (forthcoming), "Mobile Network Competition, Customer Ignorance and Fixed-to-Mobile Call Prices" *Information Economics and Policy*, and J. Gans and S. King (1999) op. cit. note 13 for a more detailed discussion of this trade-off and the role of competition in such pricing behaviour.

charge.[21]

Clearly the naïve claim that a rise in the interchange fee will raise the 'price' of credit cards transactions has no basis in economics. The claim ignores the joint nature of the credit card process and neglects the fact that a cost to acquirers is a benefit to issuers and the cardholders who are their customers.

6.2 Incentives to Raise the Interchange Fee

As just described, a rise in the interchange fee is likely to raise merchant service charges but lower card fees. The Cruickshank and RBA / ACCC reports were explicitly concerned that card associations would have an incentive to increase the interchange fee with precisely this effect. Both argued that in card associations there would be limited resistance to higher interchange fees because some acquirers were also issuers who would benefit from higher fees and also because acquirers "are able to pass interchange fees on to their customers, the retailers, safe in the knowledge that all of their competitors face the same cost base".[22] Furthermore,

> Inflated interchange fees ... raise the cost to retailers of card payments. This reduces the acceptance of particular payment methods. If interchange rates were lower, credit and debit

[21] Even where issuing and acquiring is relatively concentrated, the proportion of 'on-us' transactions can be small. Consider the following table that derives an estimate of these for the Australian industry.

Bank	Issuer Shares of Customer Spending	Share of Acquiring Revenue	Probability of 'On-Us' Transactions (Percent)	Net Revenue from Interchange
ANZ	28	19	5.32	Positive
CBA	19	31	5.89	Negative
NAB	21	28	5.88	Negative
WBC	19	16	3.04	Positive
Other	13	6	0.78	Positive

Source: Merrill Lynch (2000), *Credit Cards: An Ace up the Sleeve*, Sydney, Table 4. Last two columns calculated assuming 'symmetric' customer and merchant types. This table includes all card associations and, therefore, slightly distorts true numbers.

[22] Cruickshank, *op.cit.*, p.264.

> cards would be likely to be accepted in a wider range of retail outlets (such as smaller retailers) or in more non retail contexts (such as paying bills). Higher interchange fees raise retail prices generally, as retailers pass on their inflated costs to their customers. This in turn leads to a reduction in output and economic welfare.[23]

Thus, not only are there supposed incentives for associations to inflate interchange fees, the consequences of this will be detrimental to overall economic efficiency.

What is interesting about this line of logic is that it can be completely turned on its head to demonstrate that associations would have incentives choose a low rather than high interchange fee. The reverse argument would go like this: *a lower interchange fee would be unlikely to be resisted by issuers for two reasons. First, many issuers are also acquirers who would benefit from the reduction in interchange fees. Second, issuers "are able to pass interchange fees on to their customers … safe in their knowledge that all their competitors face the same [net] cost base."* Following this argument through, according to the second step in the Cruickshank logic, the lower fees would raise merchant adoption incentives and lower retail prices in general as merchants pass on their lower costs to customers, leading to an increase in output and economic welfare.

The problem here is not that these two alternative lines of argument are contradictory but that each is incomplete as each focuses solely on the role of the interchange fee on a single side of the credit card transaction; Cruickshank on the merchant-acquirer side, our reformulated version on the customer-issuer side. This emphasises the need to apply a reasoning based on the potential choices made by all four parties to the transaction together.

A more sophisticated line of argument is that articulated by Frankel[24] and essentially formalised by Rochet and Tirole;[25] it was also recognised implicitly in the Cruickshank report. The argument is that, because merchants do not vary retail prices to customers based on the

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[23] *ibid*., p.81.

[24] Frankel, *op.cit*.

[25] J-C. Rochet and J. Tirole (2000), "Cooperation Among Competitors: The Economics of Payment Card Associations," *mimeo*., Toulouse, April.

form of payment (e.g., credit card versus cash),[26] cash and cheque customers are implicitly cross-subsidising card customers. The reason for this is that retail prices are based on the merchant's average merchant service charge payments. As there is a mix of customers, this means that a rise in the merchant service charge is passed on to both cash and card customers even though cash customers are not receiving the potential benefits from card transacting. This, in turn, impacts positively on customers' decisions to adopt credit cards. Recall from Section 3 that that decision is based on the direct benefit a customer will receive from having a card as compared with the benefits from cash. If retail prices were higher for credit card users than cash users, on average customers would value credit cards less than if the price is the same regardless of the payment mechanism.

The problem is that, under certain conditions where the net social value of credit cards is relatively small,[27] it is possible that this potential for cross-subsidy may lead to an over-provision of credit card transactions from a social efficiency perspective. Essentially, the ability to cross-subsidise makes merchants more willing to bear higher merchant service charges as they derive an indirect benefit from this cross-subsidy. The association, that sets the interchange fee to maximise the overall profits of its members, then finds it desirable to raise the interchange fee choosing, on balance, to earn its revenues from merchants rather than customers. This is because the higher merchant service charge, while increasing prices on average, does not change the relative prices paid by card versus cash users. Hence, up to a point, by increasing the interchange fee a credit card association with market power is able to extract rents from cash customers.

Economists are generally concerned about the distortionary impact of cross subsidies. While the beneficiaries, in this case cardholding customers, prefer this state of affairs, customers who do not have cards suffer a detriment. On balance, it would be preferable to remove the cross subsidy.

However, the proponents of the 'cross-subsidy' view overstate their case by assuming away mechanisms that would diminish or

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[26] This could be because of a no-surcharge rule imposed by the association or because of the convenience or transactions costs associated with providing such variation. We will discuss this in more detail below.

[27] See Rochet and Tirole, *op.cit.*, Proposition 3.

eliminate that subsidy. The force of retail competition as well as the fact that retail price variations are possible act to reduce the cross-subsidy and consequently, the incentive for an association to inefficiently raise its interchange fee to exacerbate such distortions.

6.3 Merchant Retail Price Competition

The force of the cross-subsidisation argument for inefficiently high interchange fees is contingent on *all* merchants in a given retail sector having card facilities and being unable or unwilling to offer card surcharges or cash discounts. This means that cash customers have no choice but to bear the higher retail prices.

In reality, in many retail sectors, merchant competition is stronger. This means that if retail prices for cash customers are high because all merchants offer card facilities, there is an incentive for one of these to offer a cash price only or alternatively for a new entrant to do so. Only when there are high entry barriers (and products are not close substitutes in the eyes of customers) will no merchant wish to do this.[28] In a highly competitive merchant segment, all cash customers will go to new entrant.

Gans and King provide contains a technical analysis of this possibility.[29] The main result is that under conditions of high retail price competition, merchants will segment themselves into card adopting and pure cash merchants respectively with card customers going to card merchants and cash ones to cash merchants. Because merchant competition is high, there will exist two prices – a cash and card price – whose differential is precisely the merchant's net costs associated with offering card facilities.

What this means is that if the interchange fee rises, this will lead to an increase in the merchant service charge. However, this will mean higher prices for cardholders only as non-card carrying merchants will not bear any of these costs and if there is perfect competition among them, will not increase their retail price. The higher price for

[28] *ibid*.

[29] J.S. Gans and S. King (2000), "The Neutrality of Interchange Fees in Payment Systems," *unpublished paper,* Melbourne.

cardholders diminishes their willingness to pay for the credit card in the first place, putting downward pressure on card fees. Gans and King demonstrate that all these price changes net out.[30] That is, the interchange fee, while causing a rebalance in card fees and merchant service charges, does not change the overall usage of cards or level of effective retail prices in the merchant sector. Moreover, this result holds regardless of the degree of competition in the issuing and acquiring segments or the level of integration among issuers and acquirers.[31]

What this means is that competition in the merchant market is likely to neutralise any *allocative* effects from higher interchange fees. From a competition perspective, we need not be concerned about the setting of interchange fees where merchant segments are moderately competitive; especially where there exist cash (or other payment type) retail prices that are themselves determined competitively. In our experience, most retail segments conform to these characteristics rather than ones where *all* merchants have card facilities. Ultimately, however, the validity of either assumption is an empirical matter.[32]

6.4 Lack of Retail Price Variation

Where retail market power is an issue or there is a high degree of product differentiation among merchants, our previous conclusion – that retail competition will neutralise the pricing effect of the interchange – will not necessarily arise. Nonetheless, the previous

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[30] *ibid*.

[31] Others had noticed that when all segments – issuing, acquiring and the retail segment – were perfectly competitive, the interchange fee did not matter. One reason for this is that each issuer and acquirer would make zero economic profits regardless and so would be indifferent as to the choice of fee (Rochet and Tirole, op cit note 25). However, the other reason was that competition would force retail price variation as the interchange fee changed; also neutralising its effect. See D. Carlton and A. Frankel (1995), "The Antitrust Economics of Credit Card Networks," *Antitrust Law Journal*, 68, pp.643-668 at pp.656-9. Those authors argued (p.660) that if there was imperfect competition among issuers or acquirers, then this neutrality would not hold. Gans and King (op cit note 29) demonstrates that this concern was unfounded and that neutrality rests critically on the existence of a competitive cash retail price in merchant segments.

[32] Interestingly, Aldie – the large scale supermarket entrant in Australia in 2000 – does not accept credit or debit card in order to focus on keeping its prices low.

analysis has assumed that it is impossible for a merchant offering credit card facilities to vary its price to customers based upon whether they use a card or not. Recall that in this situation, inefficiencies may arise because cash customers cross-subsidise card customers, giving the association an incentive to raise the interchange fee.

One reason why merchants do not vary retail prices is because the credit card association impose on merchants a condition that they do not charge a surcharge to credit card users. In Australia and the United States, however, the 'no-surcharge' rule does not prevent merchants from offering discounts to cash or cheque customers (or even EFTPOS customers). From an economist's perspective, this means that the 'no-surcharge' rule is relatively innocuous and merchants would be effectively free to vary prices according to payment mechanism; the only difference between a cash discount and a card surcharge being how you set the original retail price.

In this situation, the same outcome as the case of retail price competition will arise. That is, merchants will not find it optimal to support the cross-subsidy (even if they were monopolists) as to do so would reduce their own profits, for any level of the merchant service charge. This would mean that an increase in the interchange fee leading to higher merchant service fees would be precisely offset by lower credit card usage and lower customer fees for cards themselves.[33] On the plus-side for the association, there would be limited merchant resistance in adopting card facilities as they would not have to fear the potential profit-reducing detriment of supporting a cross subsidy from their cash customers.

In reality, however, many merchants choose not to vary their retail price according to card usage. Interestingly, it is probably only where the items concerned are 'big ticket' that there is merchant pressure on customers to chose payment methods other than by credit card. This suggests that the cross subsidy imposed by the lack of retail price variation is small. Indeed, it is more plausible that the association will choose its interchange fee to balance the incentives of acquirers and issuers rather than exploit even a small cross-subsidy. In any case, the social inefficiency may not be large. Once again, this is ultimately an empirical matter to assess the magnitudes of any cross-subsidy as well as its impact on credit card usage and retail prices.

[33] See Rochet and Tirole, *op.cit.*, for a formal analysis of this situation.

6.5 System Competition

A final mitigating effect on the potential anti-competitive effects of the use of the interchange fee by credit card associations is that there is competition among associations and with other payment mechanisms. While, in Australia, MasterCard, Visa and Bankcard tend to have the same members, American Express, Diner's Club and various store cards provide a competitive restraint on the fees and charges levied on both sides of a credit card transaction. In addition, the use of point of sale electronic transfer as well as traditional methods of payment, such as cash and cheques, provide competing payment options in the eyes of customers and merchants.

It is difficult to assess the strength of competition among these different payment methods. Evans and Schmalensee believe competition to be quite intense – even among associations with the same members – and point to expenditures on advertising and card promotion.[34] Of course, the targets for such advertising could be closed card systems such as American Express rather than Visa or MasterCard. Evans and Schmalensee however do point to various advertising campaigns where Visa and MasterCard tend to target each other. This said, some commentators believe that credit card associations command market power.[35]

The key point is that credit card systems are not monopolies and competitive pressure will limit the extent to which those associations can manipulate interchange fees away from efficient levels to extract rents from either customers – card or cash – or merchants. If a credit card raises the interchange fee by too high a level, it will face difficulties in getting merchant acceptance or invite retail price variation. Indeed, the high merchant service charges of American

[34] Evans and Schmalensee, *op.cit.*

[35] See L. Ausubel, (1991), "The Failure of Competition in the Credit Card Market," *American Economic Review*, 81 (1), pp.50-81. Ausubel conducted a large empirical study of competition in credit cards in the United States and concluded that despite large numbers of participants, price patterns did not appear to reflect those that would arise from vigorous competition. Evans and Schmalensee, *op.cit.*, rebut some of these suggestions; although the academic controversy remains.

Express have long been a problem in them gaining increased merchant acceptance.[36]

6.6 Conclusion

Naïve arguments regarding the use of interchange fees as a device to simply raise prices such as merchant service charges are highly incomplete as they could equally be an instrument whereby such prices are lowered. The more sophisticated concern is that cash customers cross-subsidise retail ones and the interchange fee could be used as an instrument to capture more rents from those customers thereby promoting over-use of credit cards.

However, this is only a concern if there is a lack of retail price competition, there are restrictions on retail price variation, *and* there is limited competition from alternative payment instruments. If any of these conditions did not hold, the usefulness and hence, impact of the interchange fee as a device for socially inefficient credit card usage is removed.

Moreover, it should be recognised that even where these conditions do hold, inefficient overprovision of credit card transactions only arises when the social net benefits from having credit card transactions relative to alternative payment instruments is small. When those net benefits are high, then Rochet and Tirole have demonstrated that it is socially efficient to have a high interchange fee and encourage customer as opposed to merchant adoption. [37]

In general, economists find it desirable to unbundle particular dimensions of a transaction and would prefer prices to reflect true costs, even if that variation in costs arises from fees charged by a card association.[38] Thus, if there is a perceived problem relating to excessive

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[36] In Boston, a group of high quality restaurants, upset over American Express's high fees boycotted the card. The so-called 'Boston Fee Party' led eventually to a special merchant service fees for that group.

[37] Rochet and Tirole, *op.cit*.

[38] Elsewhere we have suggested that regulators play a role in encouraging customer understanding of price variations among telecommunications carriers. See Gans and King, op cit note 20.

interchange fees, a preferred solution might be to increase the transparency and variability of pricing. Encouraging retail price variation and customer awareness of price differentials will help offset any potential competitive problems and can be socially desirable.

> If credit card merchant discount fees were completely unbundled, so that merchants posted a schedule of discount rates and charged these fees as a separate line item in the same manner in which sales tax is added to the transaction amount, then there likely would be more intense and direct price competition among the various payment systems and subsidies from cash paying customers would cease. Unbundling such discount fees, however, might increase transaction costs significantly for some merchants. Therefore, while it might not be advisable to *require* unbundling, merchants should be given the freedom to pass payment system costs along to consumers through whatever surcharges, rebates, or multi-tier pricing systems they choose, as long as there is full disclosure to consumers of their pricing policies.[39]

7 Issues Arising from the RBA/ACCC Joint Study

In light of the previous discussion, we tum at this point to highlight some of the key issues arising from the RBA/ACCC Joint Study *Debit and Credit Card Schemes in Australia: A Study of Interchange Fees and Access* (released in October 2000). Although that study included ATM and debit card networks, we will confine our attention here to their analysis and conclusions regarding credit card schemes. The purpose of that study was to evaluate the economic efficiency of interchange arrangements. The study broadly concluded that some of the conditions under which interchange arrangements operated (in particular the level of interchange fees themselves) and contractual terms imposed by privately operated payment systems (for example, no surcharge rules) meant that both the cost of transacting in the Australian economy were too high and that the mix of payment instruments being used was inefficient with some types of instruments

[39] Frankel, *op.cit*., p.348; emphasis in original.

(namely, credit cards) being favoured over others (namely, debit cards).

We are concerned about two aspects of these conclusions. First, we do not believe that the Joint Study has established that there is a problem in need of regulatory attention. Second, the Joint Study calculates 'efficient' interchange fees using alternative methodologies. We believe that their approach is inappropriate for two reasons. First, both methodologies assume that interchange fees for any payment system should be set at zero if possible and deviations from zero should only be based on individual participants' abilities to recovery their costs. They provide no justification for the use of this benchmark, and do not show why this benchmark would be economically efficient or socially desirable. Second, even accepting the Joint Study benchmark and approach, a fair distribution of the surplus from the payments system as well as a proper accounting of costs leads to interchange fees that are higher than those recommended by the Joint Study. Indeed, in the case of credit cards, the Joint Study's own methodology – applied properly – leads to the conclusion that current interchange fees should not be changed.

7.1 Is There a Problem?

Before considering any form of regulation, it is appropriate to ask first whether there is a problem. The Joint Study briefly looks at this issue when it considers the role of interchange. However, its analysis does not appear to be consistent with its later conclusions. Analysis of whether there is a problem with interchange is appropriately qualified. In contrast, the Joint Study's policy recommendations are based on an assumption , which is not justified by any evidence provided by the Study, that the conditions under which interchange arrangements are a problem actually hold.

To see this, consider the Joint Study's rationale for the existence of an interchange fee. It essentially mirrors our earlier discussion regarding potential externalities:

> An interchange fee can help to resolve this dilemma. Provided at least one of the participants perceives benefits in excess of costs, there is scope to share the benefits with other participants through a transfer mechanism. Suppose that merchants are convinced that there are substantial benefits

> from accepting credit cards but card issuers are reluctant to participate in the network because of high issuing costs. In these circumstances, merchants would be willing to pay a higher merchant service fee, enabling acquirers to capture some of the merchants ' net benefits and increase their revenue. If some of this additional revenue can be transferred to issuers, issuers will be more likely to participate. The transfer mechanism is the interchange fee. In this example, the interchange fee would be paid by credit card acquirers to card issuers. Acquirers will only be prepared to pay interchange fees to issuers, however, if their revenue from merchant service fees exceeds their costs *and* the interchange fees (Table 3.2).[40]

The Study sees benefits arising from the joint setting of interchange fees in card associations.

> ... their strengths are that they can make negotiations on interchange fees much easier to achieve. For instance, even if a merchant could negotiate an interchange fee directly with issuers of credit cards, the large number of negotiations would make this very difficult; an acquirer representing a number of merchants is also likely to have greater bargaining power than an individual merchant. Similarly, issuers negotiating interchange fees on behalf of a large group of cardholders might be expected to obtain a better deal than cardholders could achieve as individuals. If agency arrangements are to be an effective way of dealing with these difficulties, however, it is important that the agents face incentives to act in the interests of their customers.[41]

Thus, the Joint Study supports the idea that uniformity in interchange arrangements is desirable even though this only occurs for credit card associations.

The Joint Study then goes on, however, to suggest that the use of the interchange fee to align the interests of different parties would only be required during the 'start-up phase' of a payment system. Once the system is established, such a role for the fee, according to the Study, would disappear. This claim is not supported by formal economic

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[40] RBA / ACCC, *op.cit.*, p.26

[41] *ibid.*, pp.28-29.

argument and, at the very least, is unsupported by the evidence that for both debit and credit card associations, at least one type of provider has costs in excess of its revenues (not including interchange payments).

Even if an interchange fee was not necessary for the operations of a payments system, this does not mean that the existence of an interchange fee or its level is a problem. The Joint Study addresses this issue in section 3.3 with a discussion of the research of Frankel and of Rochet and Tirole.[42] The Study notes the argument that interchange fees for one payments instrument (e.g. credit cards) might be set too high if this leads merchants to charge higher prices for transactions involving other payments instruments (e.g. cash). As noted above this argument critically depends upon both the existence of a no-surcharge rule and a lack of retail competition.

The theoretical arguments for interchange fees in say credit card associations being too high depend on the particular economic environment faced by the payments system. These conditions were outlined in section 6 above. The policy conclusions of the Joint Study are based on an assumption that these conditions actually hold. However, no evidence is provided. Indeed, the fact that credit card use is relatively low in Australia compared with elsewhere suggests that the opposite conditions hold. Consequently, the Joint Study makes strong policy recommendations without any attempt to consider whether the economic conditions supporting their strong conclusions actually hold or do not hold.

This lack of analysis is most obvious when we consider the Joint Study's approach to the relevant market for each payments instrument and the competitive constraints facing each instrument. Put simply, there is no direct market analysis and where there is indirect market analysis it appears to be completely ignored in the policy conclusions.

To see the importance of market definition and the failure of the Joint Study to consider substitute payment instruments, recall that credit and debit cards represent only two of the types of payment instruments available to consumers. They also have available cash, cheques, direct account transfers and cards from closed associations such as American Express and Diners Club. Moreover, the banks that

[42] Op Cit note 19 and note 25 respectively.

provide cheques and direct account transfers also offer debit and credit cards. To the extent that these banks have the ability to encourage one form of payments instrument over another, they will want to encourage the instrument that has the lowest costs and is the most efficient. The Joint Study, however, concludes that debit cards are a lower cost transactions instrument than credit cards but that at the same time the banks are encouraging the use of credit cards through high interchange fees. These conclusions are mutually inconsistent. If debit cards were more efficient than credit cards then the banks would raise their profits by encouraging debit cards, not credit cards. The Joint Study reaches these mutually inconsistent conclusions because they consider each payments system in isolation without formally analysing the interaction between systems.

The most laudable recommendation of the study, in our opinion, is that the 'no surcharge' rule be eliminated. We have discussed this above. In many respects, the no surcharge rule seems like a fairly innocuous restriction at best, and at worst might be a source of concern. However, this warrants further investigation. For example, Rochet and Tirole examine the removal of the no surcharge rule and demonstrate that it could lead to under-utilisation of credit cards.[43] The elimination of the no surcharge rule requires more analysis than has been done to date.

7.2 Assessing the Level of Interchange Fees

One of the most important parts of the Joint Study is its attempt to assess whether interchange fees are too high. Obviously, such an attempt must begin by defining the efficient level of the interchange fee. It is impossible to know if the fee is either too high or too low unless we know what is the efficient level of the fee. Unfortunately, the Joint Study does not do this. Instead, in Section 3.4, it takes the view that the interchange fee is a means of allowing those who are earning profits in a card scheme to compensate other participants who face a shortfall between their revenue and costs. This approach is based on a view that an interchange fee is only justified as a mechanism for sharing costs. The approach ignores any impact of the interchange fee on the overall operation of a card system. That is, the Joint Study starts

[43] Rochet and Tirole, *op.cit*.

from the assumption that an interchange fee is a necessary evil and that, in fact, a zero interchange fee is a clear benchmark. This assumption pervades the Joint Study's analysis. However, there is no economic basis for the assumption that the desired benchmark is a zero fee.

7.2.1 Evaluating the Joint Study's Methodology

Given its importance to the Study, it is worth considering how the Joint Study attempts to quantify a desired level of interchange fee. It uses two alternative cost-based methodologies. The first approach is to identify the costs incurred by issuers and acquirers respectively. These costs are then categorised according to whether or not they can be recovered directly from the issuers' and acquirers' respective customers. The costs that cannot be recovered directly somehow form the basis of interchange negotiations. This methodology is not well defined in the Joint Study. Presumably, the costs that are not recovered directly are meant to represent common costs of the payments system. These common costs have to be divided in some way between issuers and acquirers. Given the mutually beneficial interaction between merchants and cardholders, however, any direct attribution of costs is likely to be arbitrary and difficult.

The second approach is also cost-based. It compares the costs involved in providing the payments system with the revenues obtained by issuers and acquirers. These costs and revenues might not balance. For example, with credit cards, the costs faced by an issuer might exceed the revenues received by issuers. The Study considers the interchange fee as just offsetting any shortfall to one or other provider.

The two approaches involve different assumptions regarding the role of the interchange fee. This dichotomy reflects the failure of the Joint Study to determine the basis for setting an efficient interchange fee. The first methodology implicitly allows sharing of the overall 'producer surplus' associated with providing card services. The second approach does not.

To see this, consider the Joint Study's Table 3.3:

Acquirers		**Issuers**	
Costs	40	Costs	100
Revenues	100	Revenues	80
Net	**60**	**Net**	**-20**

In this table, issuers face a shortfall in profits. So under the second approach, the Joint Study suggests that an interchange fee of $20 from acquirers to issuers would be appropriate, representing the minimum required to let issuers just break even.

The Joint Study does not apply the first methodology to this table but it can be applied if we make an assumption regarding the costs that can be directly charged to acquirer and issuer customers respectively. For example, suppose that all of the acquirer's costs can be directly charged to customers while only 80 percent of issuer's costs can be. This means that the residual 20 percent of issuer's costs would be the subject of interchange negotiations. How would these negotiations proceed? The Joint Study does not tell us, but there are (at least) two alternatives:

1. *Divide costs*: the issuers and acquirers could negotiate purely over the costs. That is, they could simply divide the unattributable costs between them, for example at $10 each. This would be achieved if the acquirers pay a $10 interchange fee to the issuers. However, in this example, issuers would still not break even with this interchange fee. The only feasible negotiation in this example would involve an interchange fee of $20 paid from acquirers to issuers – the same outcome as the Joint Study's second approach.

2. *Divide the surplus*: this is the commonly assumed form of negotiations in joint venture or cost-sharing arrangements. In this situation, the two parties consider what the net surplus is from their joint supply of a service. The parties then come to a sharing arrangement that divides this net surplus. In this example, the net surplus is $40 (= $100 - $40 + $80 - $100). Dividing this would give issuers and acquirers $20 each and the interchange fee that would achieve this would be equal to $40.

This example shows that the approaches involve distinct assumptions about how the benefits of participating in a card association should be shared between issuers and acquirers. The first approach assumes those benefits will be shared between issuers and acquirers while the second assumes that acquirers will get all of the surplus while issuers should only be allowed to break even.

To emphasise this distinction further, let us amend Table 3.3 as follows:

Acquirers		**Issuers**	
Costs	40	Costs	100
Revenues	100	Revenues	120
Net	**60**	**Net**	**20**

In this situation, there is no shortfall for issuers. Given this, the Joint Study, following their second approach, would conclude that a zero interchange fee is appropriate. Under the first approach, using a divide-the-costs methodology, the interchange fee would depend on the proportion of issuers' and acquirers' costs that could be directly attributable to their respective customers. If we make the same assumption as above, that all acquirers' costs are directly recoverable but only 80 percent of issuers' costs are directly recoverable, then 20 percent of the issuers' costs represent the unattributable costs. If these costs were divided equally between issuers and acquirers then the interchange fee would be $10. In contrast, if all of the costs were attributable then this approach would offer no guidance for the interchange fee would be as there would be no costs to divide.

In contrast, consider the second approach adopted by the Joint Study using a conventional divide-the-surplus methodology. The total surplus generated by the payments system is $80 so that an equal division of the surplus would lead to an interchange fee of $20. With this fee both acquirers and issuers earn a surplus of $40 each.

It can be argued that each of these interchange fees is reasonable given the figures presented in the table. This is exactly the problem with the Joint Study's approach. Because the Joint Study does not define an efficient interchange fee, it is possible to define a variety of different methodologies that each determines an apparently reasonable fee. However, each of these approaches is arbitrary and can provide no guidance for policy involving economic efficiency. For example, if the interchange fee has a role in aligning incentives in a card association, then altering the interchange fee will alter incentives and may raise or lower economic efficiency. The methodologies used by the Joint Study, however, are not based on a framework of economic efficiency and so they neglect any role of the interchange fee as an instrument to alter card participant behaviour. To the Joint Study, the interchange fee is simply an arbitrary means of cost recovery; thereby, de-emphasising the important influence it may have on incentives of acquirers and issuers.

7.2.2 Methodology as Applied to Credit Card Interchange

We turn now to consider the Joint Study's actual application of their methodology. In Section 5.1, the Joint Study uses data collected from banks to determine what they regard to be the efficient interchange fee for credit cards. There are, however, two substantive problems with their application. First, as noted earlier, the methodology is based on the assumption that an interchange fee as close as possible to zero is always preferred. This means that under the Joint Study's approach credit card issuers will just break even while acquirers will receive all of the net surplus from the system. There is no economic justification for this division of the surplus. Further, such a division is essentially unfair and at odds with normal business practice and economic policy.

The second problem is the omission of loyalty scheme payments from issuers' costs (or revenues). The Study claims:

> The continuing drive for new cardholders – particularly through the inducement of loyalty points – is one sign of the margins available in credit card issuing. Loyalty schemes are not included in Table 5.1 because they are not a resource cost. Card issuers pay an average of $0.46 per transaction, and a range of $0.30 to $0.62 per transaction, for benefits provided to cardholders in loyalty schemes.[44]

We disagree with this statement. Loyalty schemes are real costs to financial institutions and are real benefits to consumers. They represent actual payments made by issuers to other organisations (namely, airlines) and also items that are actually used by consumers who take into account the extent of these schemes when deciding whether to hold or use credit cards. Hence, they play the role of a negative price that one would expect to see when competition among issuers is intense.

An appropriate application of the Joint Study's own methodology (regardless of approach) should take into account the payments made by financial institutions for loyalty schemes. These should either be added to costs or removed from revenues because loyalty points are effectively a negative price to cardholders. If this is done the 'mark-up' for issuers falls from $0.76 to $0.30 per transaction

[44] RBA / ACCC, *op.cit.*, p.44.

representing a mark-up of only 15.54%. Notice that *this is precisely the competitive return that the Study sees as appropriate for card issuing*![45]

Loyalty payments are not the only important cost that is neglected by the Joint Study. For acquirers, economies of scale and risk in investment are neglected. As a result, acquirers' costs are understated by the Study. Nonetheless, remembering that the Study's second methodology sets the minimum viable interchange fee for issuers, once loyalty scheme costs are included it appears that, if anything, interchange fees should rise. This said, we must emphasise that we do not believe that the approach adopted by the Joint Study is the appropriate methodology for determining interchange fees.

The Study then considers its first approach to interchange, viewing those fees as the costs that issuers should be able to recover from customers. The Study only examines issuers and not acquirers even though they too may have some unattributable costs. By focusing on issuers alone, the Joint Study makes an implicit assumption that issuers should break even and all acquirer costs are attributable. Nonetheless, even under these strong assumptions, the Joint Study finds that this approach would justify only a modest reduction in interchange fees.

Apparently, because of this result using the first methodology (although this result is not referred to in the executive summary nor conclusions of the Joint Study), more weight is placed on the outcome of the second methodology. On this basis, the Study concludes that the interchange fee should be set to $0.19 because this is equal to the difference between issuer revenues ($1.78) and issuer costs ($1.93).[46] As we have already noted, these figures neglect the loyalty payments. Including these payments would increase the interchange fee by $0.46 to $0.65.

Remember, however, that even under this interchange fee, issuers would just break even. As noted above, there is no economic justification for such an allocation of costs and revenues. Alternatively, consider a more equitable distribution of the surplus generated by the card system. If we consider acquirer costs and revenues, it appears the

[45] *ibid*., p.46.

[46] *ibid*., p.51.

interchange fee could rise to $1.35 before acquirers would make a loss. This represents the maximum possible interchange fee. A fair division of surplus would involve an interchange fee in the middle of the lower bound of $0.65 and upper bound of $1.35; that is, $1 exactly!

Elsewhere the Joint Study calculates that the average interchange fee is about $0.95 per transaction. Thus, our calculation, that changes *only* two features of the Joint Study's approach (the inclusion of loyalty payments as costs and a fee based on a fair division), leads to a fee that is slightly above the current interchange fee.[47] This suggests that, on the basis of their own costs and revenues, the Study would have derived that *the current interchange fee is the appropriate outcome of a fair division of costs between cardholders and merchants!*

The Study appears to want to use this evidence to change the interchange fee and to effectively raise prices to cardholders. They believe that the negative price set for cardholders through loyalty schemes indicates overuse of credit cards. This conclusion is not obvious. Further, the Joint Study is concerned about is the potential for 'cross-subsidisation' when cardholders paying the same price to merchants as cash customers. As we noted above, the potential for cross subsidisation, due to the no surcharge rule, has been noted in the economic literature. The Joint Study, however, does not collect any evidence on the extent of any cross subsidy that may have allowed it to support its conclusion that this cross subsidy was an important inefficiency resulting from current arrangements.

7.3 Conclusions from the Joint Study

In their concluding section, the Joint Study argues that interchange fees for credit card associations should fall. In particular, the Study states that interchange payments should:

- not overcompensate financial institutions for the costs that they incur; and

[47] If you thought instead that the percentage over costs for issuers and acquirers should be equal (rather than costs per transaction) the interchange fee would be higher as issuer costs exceed those of acquirers.

- be subject to regular review as costs and other conditions in the relevant payment network change.[48]

Interestingly, the first of these dot points is inconsistent with the Study's actual approach. The Joint Study in determining how interchange fees should be set allows acquirers to be overcompensated while issuers just break even. In contrast, it would seem reasonable for fees to be set on the basis of a fair division of surplus at the very least.

The Joint Study approach to interchange fees is based on a narrow consideration of the costs of each particular payments instrument. Moreover, the Study does not consider the interaction between payment instruments. Different payments instruments are substitutes and altering the prices associated with one instrument will affects the use of other instruments. Similarly, the Joint Study never considers beyond a superficial level the relationship between the different fees and charges associated with a single payments instrument, including the retail prices set by merchants. In the Joint Study's analysis, retail prices, merchant services fees and card-holder charges are simply taken as given. But changing the interchange fee will lead to changes in all these other prices. It is impossible to even consider an efficient interchange fee without recognising and analysing the interdependency between retail prices, the fees set for the relevant payments instrument and the demand and supply of alternative payments instruments.

The Joint Study avoids the important economic issues by focusing on a simplistic cost-based analysis. Even so, the Study ignores some payments and, when faced with conflicting results, appears to pick the result that is in line with the underlying and unjustified assumption that a zero interchange fee is an efficient benchmark.

The Study concludes that credit cards are overutilised relative to debit cards. This is based on the finding that the costs of providing credit cards are higher than those for debit cards. However, one also has to consider the revenues from each. Credit card customers appear to be willing to pay more to use them than for debit cards. Indeed, on their own calculations, debit card networks are making losses. Thus, the difference in costs does not necessarily translate into economic

[48] RBA / ACCC, *op.cit.*, p.73.

efficiency if consumers prefer to use credit over debit cards and pay for their choice.

Even if the relative use of debit and credit cards was viewed as a problem, there is no clear analysis in the Joint Study to show that interchange fees or access issues are the critical policy variables that would re-dress this problem. Of course, this is simply one example of a problem that underlies the entire Study. At no point does the Study show that there is a problem with interchange fees or what would be the basis of an efficient fee. While the Study refers to relevant economic literature that notes the potential problems of interchange fees, the Study avoids the difficult, but necessary, task of determining if the conditions for these theoretical problems exist in Australia. Without such analysis, the Joint Study is working in a vacuum. It does not know if there is a problem and it does not know how to fix it.

Because the Joint Study does not consider the interaction and substitution between different payment instruments, its conclusions, at best, are incomplete. For example, if interchange or access leads to the overuse of credit cards, how does this explain the continued survival of closed-loop systems? Surely these schemes should be driven out of the market. Instead, they survive with what appears to be higher cardholder fees, interest rates and merchant service charges and the use of 'no surcharge' requirements and other problematic instruments.

We are left to conclude that the Joint Study is too incomplete to provide useful policy guidance. In particular, its conclusions are based on tenuous analysis that could not be used as a basis for broad scale regulation of payment systems. At the very least, some greater depth of international comparison is required along with market analysis of the degree of substitution among payment instruments (including American Express and Diners Club). Until that is done, the Joint Study's evidence points to the lack of a serious policy concern and potentially supports claims that current arrangements are appropriate and relatively efficient.

8 Conclusion

Credit card transactions are a very important part of the Australian economy. Because of their sheer volume, one needs to be

concerned about potential distortions in their pricing and how this would feed through to other sectors of the real economy. That said, this very importance also suggests that getting it wrong would be very costly. In this paper, we have outlined the various facets of the interchange fee and how this feeds into credit card pricing overall. Our analysis suggests that one should err on the side of caution in terms of interfering with current private arrangements; precisely because current concerns are overstated.

Interchange fees play an important role in allowing open-loop credit card associations to operate by allowing joint suppliers of credit card services – issuers and acquirers – to share costs. In the absence of an interchange fee there is likely to be higher customer card fees although there would be a reduction in merchant service charges. The fee also plays a role in providing incentives for cost reduction, information gathering and competition on both sides of credit card transaction.

That said, as a benchmark, the interchange fee is likely to be neutral. This is because retail price competition at the merchant level is likely to lead to distinct pricing options for customers depending upon the payment instrument they wish to use. In these circumstances, any change in the interchange fee will lead to a re-balancing of cardholder fees, merchant service discount and retail prices that is both consumer and profit neutral. Hence, a change in the interchange fee would not alter usage or efficiency of credit cards systems.

In reality, there will be factors that mean that neutrality will not hold. The retail sector is full of frictions (including scale economies and product differentiation) that may prevent market segmentation along payment lines. In this event, changes to the interchange fee may have real effects. However, it is unclear from an economics point of view whether such changes would enhance or reduce social efficiency. Before any intervention is made, we caution regulators to have a clearer understanding of the potential direction they might wish to set the interchange fee. At present, the current state of economic analysis provides no clear picture.

Even those who have argued for a change to interchange fees caution against dramatic changes.

> Significant investments have been made by individual banks and by issuers of competing proprietary cards, such as those issued by American Express and Dean Witter, on the

> expectation that they would recoup the investments in part through interchange fee or merchant discount fee earnings. Competition among banks for the resulting rents likely has dissipated and rebated to credit card users a significant share of the additional revenue. Sudden abolition of the fees could punish most the very firms that have done the most to rebate interchange profits and thus reduce the aggregate net harm to consumers. The transitional costs and incentive effects associated with such tardy policy reversal must be evaluated carefully.[49]

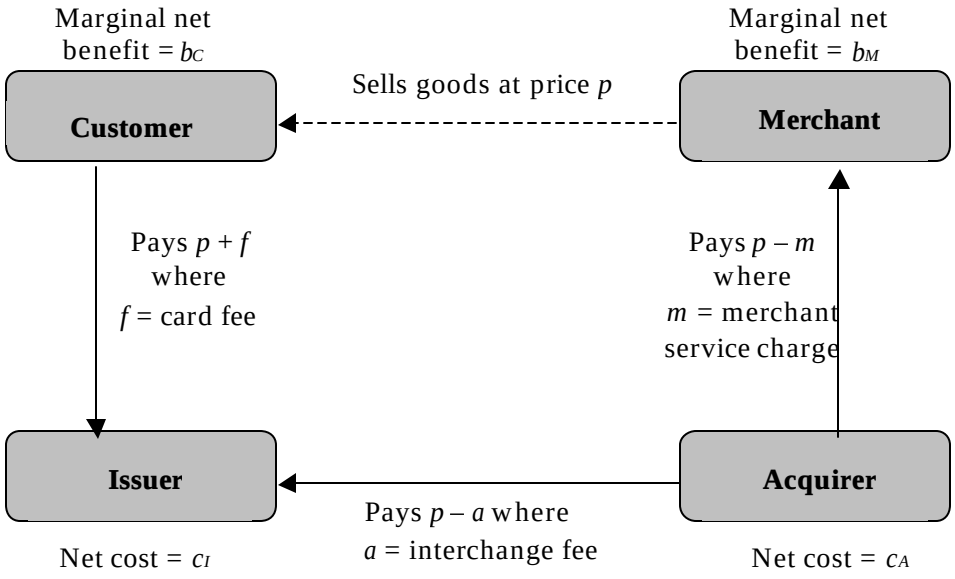
Thus, as always, one has to be concerned about the practical implications of change even where change is expected to be neutral.

[49] Frankel, *op.cit*., pp.347-8.

9 Appendix: Coasian Outcomes

In this appendix, we present a technical analysis of the issues discussed in Section 4. To do this we need some notation. The customer and merchant each potentially receive benefits from engaging in credit card transactions as opposed to other payment instruments such as cash payments. As a shorthand we can denote those benefits by b_C (customer benefit) and b_M (merchant benefit) per transaction respectively. Issuers and acquirers, however, potentially incur costs as a result of the risks and other costs associated with processing credit card payments. We denote those costs by c_I (issuer costs) and c_A (acquirer costs) respectively. Notice that all of these benefits and costs are *net*; that is, compared with what each party would receive or incur if they used another payment instrument. This notation is summarised in Figure A1.

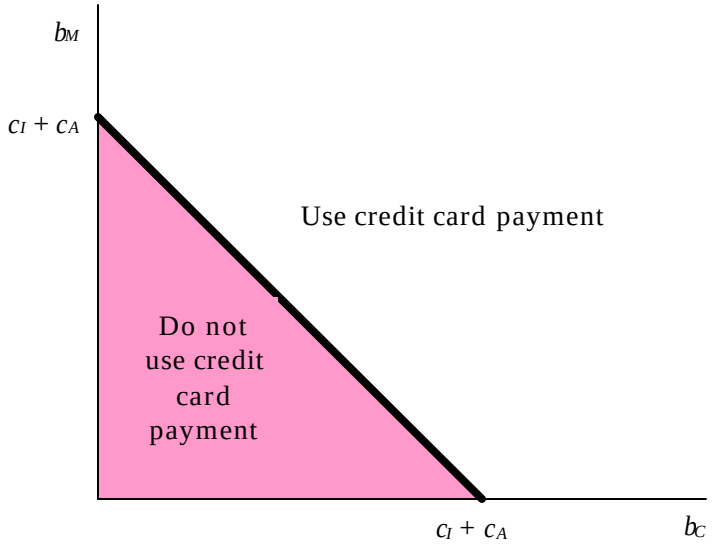
Figure A1: Benefits, Costs and Prices



9.1 Social Optimum

It is socially worthwhile for transactions to be processed via a credit card system so long as $b_C + b_M \geq c_I + c_A$. Therefore, if we ranked transactions from those with the greatest customer plus merchant benefit to those with the lowest, at the social optimum, the marginal transaction will be such that $b_C + b_M = c_I + c_A$. Figure A2 depicts the combinations of customer and merchant that would make it efficient for a given transaction to be processed by credit card rather than other payment mechanism.

Figure A2: Socially Optimal Transactions

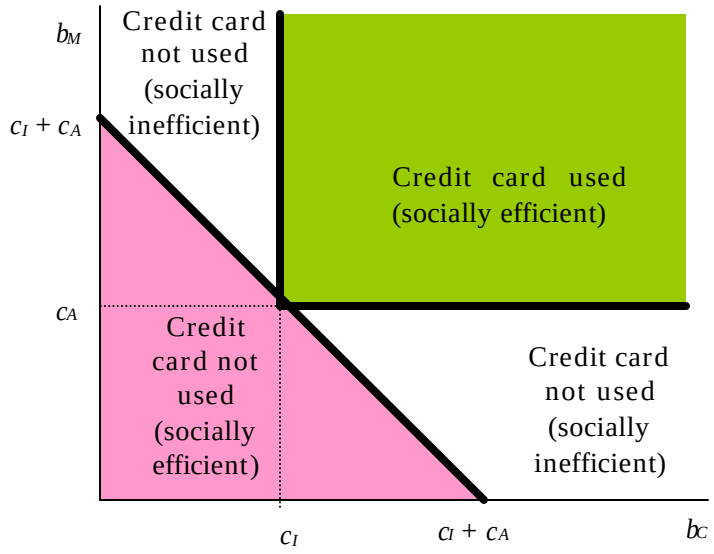


The problem in implementing this social optimum is that the demand for credit card services is a joint function of two party's benefits while the supply of credit card services depends on two party's costs. As only one beneficiary may be dealing with only one supplier at any time, the price they agree to need not necessarily lead to an overall balance between demand and supply. To restore this balance the two beneficiaries must adjust the retail price between them and/or the two suppliers must compensate one another. The latter point is where the interchange fee comes into play.

9.2 No Retail Price Variation or Interchange Fee

It is perhaps easiest to see the difficulties here by first supposing the (1) the retail price could not adjust to reflect the nature of the credit card transaction and (2) there was no interchange fee set between issuers and acquirers. In this case, a credit card transaction could only occur if two things occurred. First, that the issuer cost, c_I, must exceed the customer benefit, b_C. Second, the acquirer's cost, c_A, must be less than the merchant benefit, b_M. Figure A3 depicts when credit cards will be used under the conditions that $b_C \geq c_I$ and $b_M \geq c_A$.

Figure A2: Separated Negotiations



Notice that, under these conditions, the private decisions to use a credit card no longer match the decisions that would be socially desirable. In particular, too few credit card transactions take place. There are situations where either (1) $b_C < c_I$ and $b_M \geq c_A$ or (2) $b_C \geq c_I$ and $b_M < c_A$ so that a credit card is not used even though $b_C + b_M \geq c_I + c_A$.

The basic problem is that the decision to use a credit card depends on the coincidence of surpluses among customer-issuer and

merchant-acquirer pairs. However, a decision to use a credit card by one pair imposes a positive benefit in terms of potential surplus generated by another paid. This externality occurs among negotiating pairs and there exists no mechanism whereby it can be internalised. The end result is a socially inefficient outcome.

9.3 Resolving the Inefficiency

The essential problem is that each party's decision potentially imposes an externality on another party. That is, in their own dealings a customer and issuer neglect the negative impact a failure to agree may have on the benefits accruing to the merchant and acquirer and vice versa. There are three ways – closed loop, interchange fees and retail price variations – that can resolve this externality and link the two transactions. We deal with each in turn.

9.3.1 Closed Loop System

In a closed loop system the issuer and acquirer are the same firm and incur joint supply costs of $c_I + c_A$. In this case, suppose that while $b_C + b_M \geq c_I + c_A$, $b_C < c_I$ and $b_M \geq c_A$;[50] a situation that led to no credit provision in our previous case. In this situation, the closed loop supplier would be constrained to offer the customer a card fee less than its benefit. The maximum card fee would be $f = b_C$. In this case, in negotiations with the merchant the issuer/acquirer would receive $f - c_I - c_A$ if the transaction went ahead while the merchant would receive b_M. The surplus in these negotiations is positive if and only if $b_M \geq f - c_I - c_A = b_C - c_I - c_A$ that is mathematically equivalent to the condition for a credit card transaction to be socially efficient.

Basically, the closed loop card service supplier can internalise the externality between the two sides of the credit card transaction so that the equivalent between private and social efficiency is restored.

[50] The other case of inefficiency is resolved in a symmetric manner.

9.3.2 Interchange Fees

In an open loop system the issuer and acquirer agree to compensate one another in the event that one side of the transaction cannot recover costs from its beneficiary. To see this suppose that

and $b_M \geq c_A$.[51] In this situation, the issuer cannot charge the customer a fee high enough to cover its costs. The highest fee that can be charged is $f = b_C$. The acquirer can negotiate a merchant service charge, *m*, that recovers its costs. Suppose that the issuer and acquirer agree to an interchange fee of *a*. Then the acquirer and merchant will have to negotiate a charge, *m*, that exceeds $c_I + a$. Suppose that *a* is the minimum amount necessary to cover the issuer's shortfall; i.e., $a = c_I - f$. In this case, $m > c_A + a = c_A + c_I - f > c_A + c_I - b_C$. As $m \leq b_M$, this condition translates to $b_M > c_A + c_I - b_C$; once again equivalent to the condition for a socially efficient card transaction.

The interchange fee in this environment is a substitute for the efficiency-enhancing effects of a closed loop situation. Provided that fee is set correctly – as we assume it is here – then it can be used to compensate the side of the transaction for the external benefit an agreement there would impose on the other side. Hence, interchange arrangements provide a means for internalising the externalities between the two sides of a credit card transaction.

9.3.3 Retail Price Variation

Suppose that there is no interchange fee (i.e., $a = 0$) but the customer and merchant could, during their dealings, share their mutual net gains from engaging in a credit card transactions. That is, suppose that the retail price, *p*, is discounted by an amount, *s*, if a credit card is used rather than an alternative form of payment, i.e., cash.

Returning to our running case of potential inefficiency where $b_C < c_I$ and $b_M \geq c_A$, suppose that the issuer charges a card fee, *f*, that exceeds its costs; i.e., $f \geq c_I$ while the merchant service charge covers the acquirer's costs; i.e., $m \geq c_A$. In this situation the customer would

[51] In the alternative inefficient case, efficiency can be restored with the use of a negative interchange fee; i.e., $a < 0$.

choose not to hold a credit card unless the savings in terms of retail price, *s*, were sufficient to compensate for any shortfall; i.e., $s \geq f - b_C$. On the other hand, the merchant will not offer credit card facilities only if the discount is sufficient low; i.e.,

. Putting these two inequalities together implies that the card transaction will only go ahead if $b_M - m \geq s \geq f - b_C$ or $b_M - c_A \geq c_I - b_C$; a condition equivalent to the condition justifying a socially efficient card transaction.

Thus, retail price variation can be used in a similar manner to the interchange fee in compensating one side of the card transaction through the net surplus that potentially exists on the other side.