generate association profits. Instead, market power is exercised to allow members to earn greater profits.

III. CONSUMER AND MERCHANT BENEFITS OF CARDHOLDING AND USE

21. Much of the public interest analysis of interchange rates and no-surcharge rules flows from the effects these policies have on the realization of economic benefits by consumers and merchants. Hence, it is useful to begin with a careful review of the potential sources of those benefits.

A. CONSUMER BENEFITS

22. Credit and charge cards serve both as a *payment mechanism* and—for many consumers—a *source of credit*. The term payment mechanism refers to any medium that can be used to effect a transaction. Examples include cash, cheques, debit cards, and credit and charge cards. Several payment mechanisms are various types of cards. A *general purpose credit card* is a plastic card that can be used at a wide variety of merchants to make purchases on a revolving credit line.[16] A *proprietary credit card* is a credit card that is accepted as payment only at a specific merchant or small set of merchants that issue the card (*e.g.,* a David Jones credit card). Credit cards offer two sources of credit. One, they offer unsecured, revolving lines of credit. Second, they offer a float comprising the time between when a purchase is made and when the consumer has to pay his or her credit card bill, which typically occurs monthly. A *charge card* offers only the second type of credit. Like a credit card, a charge card allows deferred payment, but instead of being allowed to run a balance, the user must pay his or her account in full after a set period, usually about one month.[17] The American Express Green card is the most well known charge card.

23. Another type of plastic payment card does not extend credit facilities. A holder of a *debit card* has the amounts purchased using the card deducted from his or her designated deposit account by the card issuer on a pay-as-you-buy basis, with a lag ranging from a few seconds to a few days.[18] A debit card typically can be used to make purchases at retailers (also known as EFTPOS) or to withdraw cash from automatic teller machines.

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16 Merchants can include supermarkets, department stores, other retailers, hotels, restaurants, airlines, and government agencies, among others.

17 Charge cards are sometimes referred to as travel and entertainment, or T&E, cards because of their historical origins as cards used by travellers.

18 *On-line debit* refers to debit cards that require the buyer to type his or her Personal Identification Number (PIN) on a PIN pad as part of the authorization process. *Off-line debit* refers to debit cards that rely on a signature as part of the security process for authorization, the way credit and charge cards typically do. Visa supports off-line debit cards in Australia. Despite the name, off-line debit cards usually make use of electronic

24. A single consumer may make use of cash, cheques, a debit card, and one or more general purpose credit cards. He or she may also carry the proprietary credit card of a department store or petrol retailer. The reason a single consumer makes use of this variety of payment mechanisms is that different mechanisms are best suited for particular situations. The choice of which payment mechanism to use for a particular purchase depends upon a matching of consumer, transaction, and payment mechanism characteristics.

25. The mix of transactions and the importance placed on various payment mechanism characteristics depend on characteristics of consumers, including a consumer's income and the extent to which the consumer travels for either business or recreation.

26. Characteristics of transactions include: the amount; the location (*e.g.,* local, out-of-state, or while traveling in a foreign nation); whether the transaction is planned, impulse, or the result of an emergency; whether the consumer and merchant are physically in one another's presence during the transaction (*e.g.,* a purchase in a department store versus a purchase over the telephone or Internet); and whether the purchaser deals with the seller repeatedly.

27. Characteristics of a payment mechanism include: security (such as how much the payment mechanism exposes a consumer to the risk of theft); flexibility (the extent to which a consumer has to plan in advance to be able to make a payment); ubiquity of acceptance; and ancillary benefits (*e.g.,* loyalty programs, travel insurance, and warranty extensions); and whether there are charges or fees associated with use of the mechanism. Some payment mechanisms (*e.g.,* credit and charge cards) have associated credit facilities, but others (*e.g.,* cash and debit cards) do not.

28. A consumer's choice of payment mechanism ultimately is made based on a assessment of the relative costs and benefits of different payment mechanisms in a given circumstance. The degree of substitution among various payment mechanisms will vary across situations. For example, cash may be a good substitute for a general purpose credit or charge card when spending $30 to buy CDs at a record store. However, cash is a poor substitute for a general purpose credit or charge card when making purchases on the Internet. And although a general purpose credit card and a David Jones proprietary credit card would be close substitutes for purchasing clothes at David Jones, they would not be substitutes for purchasing clothes at a Grace Bros. department store.

29. The overall degree of substitution among different payment mechanisms is sufficiently limited that the Australian Competition and Consumer Commission has concluded that, when assessing competition in a recent bank merger, credit cards constitute a relevant product market.[19]

30. It is important to recognize that this finding does not imply that credit and charge card pricing terms are irrelevant when consumers choose among payment mechanisms. First, various

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authorization.

19 Australian Competition and Consumer Commission, "ACCC Not to Oppose Commonwealth Bank/Colonial Merger," Press Release, June 8, 2001, at 4.

general purpose credit and charge cards generally are much closer substitutes for one another than are cash, cheques, and debit cards. Hence, distorted prices may lead consumers to make the wrong choices among credit and charge cards. Second, for sufficiently large price differentials, some consumers will be willing to switch among different types of payment mechanisms.[20]

31. The discussion of pricing raises a second important point. Consumers may face two forms of price signal that influence their payment mechanism choices. First, there are the direct prices associated with use of a given payment mechanism, such as transactions fees or rebates. Second, in some circumstances, retail prices charged by merchants may vary with the type of payment mechanism used (*e.g.,* cash discounts).

B. MERCHANT BENEFITS

32. Generically, there are two reasons why a merchant might benefit from having its customers use credit or charge cards:[21, 22]

- *Transactions Costs Savings.* Some parties assert that purchases made using credit cards may entail lower merchant transactions costs than those made using other payment mechanisms.[23] Cash, for example, has costs associated with security, and cheques are subject to fraud costs.[24] In a July, 2001 survey of its members, the Australian Retailers' Association (ARA) collected information on the costs to retailers of accepting different payment methods. When the merchant service fee is included, credit and charge cards are the most costly payment methods to accept in terms of both absolute amounts per transaction and relative to transaction value. The average per-transaction cost of accepting a bank-issued credit card was $1.04 (1.9 percent of the transaction value). The corresponding figures for a charge card were $2.01 and 2.9 percent. In contrast, the acceptance costs were $0.12 (0.7 percent) for cash, $0.49

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20 This point is addressed further in the second appendix.

21 Generally, a merchant derives benefits only when a card is used. In theory, a merchant could benefit from card *holding* if it gave consumers the confidence or ability to patronize a given merchant even though the cardholder used a different payment mechanism at that merchant. This benefit does not appear to have been raised in either the *Joint Study* or the responses to it.

22 The merchant might also get increased information about its customers by being able to track their purchases. This benefit does not appear to have been raised with respect to general purpose cards in either the *Joint Study* or the responses to it.

23 See MasterCard International Incorporated, *Submission to the Reserve Bank of Australia,* June 8, 2001 (hereafter *MasterCard Submission*), at 4; St. George Bank, Comments on "A Study of Interchange Fees and Access in Debit and Credit Card Schemes in Australia" at 1.

24 See *American Express Submission* at 9 and 10 for a list of other benefits a merchant potentially enjoys on a per-transaction basis.

(1.4 percent) for cheques, and \$0.17 (0.3 percent) for debit cards.[25] Netting out the merchant service fee would greatly reduce the merchant's apparent cost of accepting credit and charge cards. The ARA points out, however, that much of the cost of a transaction consists of staff time in processing the transaction. Because credit and charge cards generally require signature verification, such transactions consume more time than an otherwise comparable debit transaction.[26] Even without merchant service fees, the average cost of a credit or charge card transaction is \$0.29 per transaction.[27]

- *Increased Sales.* Consumers may make purchases using their credit cards that they would not otherwise make from the merchant.[28] If these purchases take place at prices that exceed the merchant's marginal costs of the transaction (including costs associated with the use of a credit or charge card), then these additional sales constitute a benefit to the merchant.

33. There are three important points that must be recognized to understand the implications of merchant benefits for economic efficiency.

34. First, merchants and their customers have commercial relationships. A merchant sets a price for the good or service sold to its customers. Through this pricing mechanism, a merchant's transactions benefits may be passed on to consumers. If, as has been claimed by some, credit and charge cards are cheaper (netting out both costs and benefits) for the merchant than are other payment mechanisms, then merchants have incentives to encourage credit and charge card use relative to the use of other payment mechanisms. These incentives exist even for merchants with market power.[29] Moreover, competition among merchants may create additional market forces that drive merchants to pass the transactional benefits through to their customers.

35. Second, it is important to recognize that any benefits from increased sales are derived from consumer preferences. Unlike transactions benefits, a merchant does not earn increased sales benefits directly from a consumer's use of a credit or charge card. Instead, the merchant

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25 Australian Retailers Association, "Credit Card Schemes in Australia," Submission to the Reserve Bank of Australia (hereafter *Australian Retailers Submission*), at 19-20.

26 *Australian Retailers Submission* at 20.

27 Data provided to the Reserve Bank of Australia by the Australian Retailers Association.

28 Visa states that "These benefits arise when people with credit cards make more purchases, larger purchases and in some cases, new types of purchases." Visa International Service Association, "Credit Card Schemes in Australia: A Response to the Reserve Bank of Australia and Australian Competition and Consumer Commission Joint Study," prepared by Network Economics Consulting Group Pty Limited, January 2001 (hereafter *Visa Response*), at 21.

29 For example, a monopoly merchant has incentives to encourage its customers to use the least-cost payment mechanism because that results in the greatest merchant profits, all else equal.

derives benefits only if the consumer prefers to use a credit or charge card *and* makes greater purchases because the card is a payment option. Because of the derived nature of this type of merchant benefits, it does not automatically follow that increased card use gives rise to merchant benefits. To see why, consider the following example. Suppose that there are two types of customer. One type greatly values using a credit card. The other type is indifferent between paying cash and using a credit card in the absence of a card loyalty program, but strictly prefers to use a credit card if it pays a one percent rebate.[30] Moreover, suppose that the merchant is charged the full cost of the rebate program (say, 0.25 percent for administrative costs and one percent to cover the cost of the funds rebated to card users) through the merchant service fee that it pays.[31] Given that it bears these costs of 1.25 percent, and consumers of the second type do not value card use per se, the merchant would be better off if these consumers did not hold cards. The merchant would make the same sales, but would do so at a lower cost. And, if these consumers did hold credit cards, the merchant would be better off if it could induce them to use cash rather than credit cards by passing part of its savings from the use of cash to them.

36. Third, it is important to distinguish between the benefits enjoyed by a single merchant and the overall effects on merchants collectively.[32] Consider the benefits of card acceptance that a merchant garners from increased sales at positive margins. An individual merchant may recognize that failure to accept a major general purpose credit card would lead potential customers to patronize rival merchants that accept those customers' preferred cards. Hence, from the individual merchant's perspective, card acceptance generates significant additional sales benefits. The benefits to the overall economy, however, depend on the effects on merchants as a whole (in addition to effects on consumers). It is easy to see that the collective effects may be very different from the individual effects. The reason, of course, is that the merchant's acceptance decision may have negative effects on rival merchants; the merchant accepts credit cards in part to take business away from its rivals. Thus, the collective benefits of a merchant's accepting credit and charge cards may be much lower than the merchant's individual benefits.[33]

37. Although individual merchants may increase their shares by accepting credit and charge cards, the public policy question is whether the use of these cards leads to a permanent increase in sales from the perspective of the economy as a whole. There is a significant literature on the macroeconomic effects of different types of payment and credit mechanisms. This literature

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30 One could also consider an example involving consumer switching between two payment mechanisms that are closer substitutes, such as two different credit cards.

31 For purposes of this illustrative example, assume that any other transactions costs of card or cash use are zero.

32 Visa makes this point with respect to the no-surcharge rule. See footnote 155 below.

33 This point is also made by Julian Wright, "The Determinants of Optimal Interchange Fees in Payment Systems," Department of Economics Working Paper No. 220, University of Auckland, July 19, 2001 (hereafter *Optimal Interchange Fees*), at 7.

sheds light on the claim that credit and charge card use leads to a permanent and significant increase in aggregate consumption, and suggests that this claim is ill founded.

- Consider first, a pure consumption-loan model with non-storable commodities.[34] By assumption, in any given period society has a fixed amount of total resources available for consumption: Anything created during a period that is not consumed in that period perishes. The use of borrowing and lending may improve consumer welfare by allowing an individual to smooth consumption over his or her lifetime. However, there is no change in aggregate consumption per period as the result of this credit activity—everything is consumed in the period it is produced and that total is fixed. Although the model clearly makes unrealistic simplifications, it shows the danger of confusing the effects on a single individual with the effects on the economy as a whole.
- If one relaxes the assumption that all goods are perishable, a consumer may hold inventories as a means of smoothing his or her consumption over time (*e.g.,* saving for retirement). In this setting, the extension of credit across individuals can raise consumer welfare by reducing the need to hold unproductive inventories. Instead of storing a commodity for future consumption, one individual can consume the good today in exchange for a commitment to supply some amount to the lender in the future. Thus, some output may be consumed earlier rather than held as inventories.
- Use of credit cards may reduce transactions costs associated with purchasing goods and services in the marketplace. Under certain plausible assumptions about household tastes, the reduction in transactions costs can lead to increased consumption of market-traded goods relative to home-produced goods (*e.g.,* home-cooked meals).[35]
- One could include the possibility of investment in productive capital. However, in theory the introduction of credit cards could reduce investment and thus, over time, reduce the level of per-period consumption.
- By reducing the transactions costs associated with making purchases while travelling, credit and charge cards may increase sales to foreign nationals visiting Australia.[36]
- In theory, general purpose credit and charge cards could lead to a redistribution of sales from low-margin to high-margin products.[37] But these products might also be the ones

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34 For a seminal analysis of consumption-loan models, see Paul A. Samuelson, "An Exact Consumption-Loan Model of Interest with or without the Social Contrivance of Money," *The Journal of Political Economy,* **LXVI**, No. 6, December 1958:467-482.

35 See, for example, Robert M. Townsend, "Financial Structure and Economic Activity," *American Economic Review,* **73**, No. 5, December 1983: 895-911.

36 *American Express Submission* at 10.

37 More precisely, the welfare effects would depend on the pattern of producer surplus, including input suppliers.

most likely to have proprietary cards in the absence of general purpose cards. Thus, claims of any such benefits must be regarded as highly speculative.

38. This discussion indicates that credit allows the smoothing of consumption in the face of uneven income streams, may reduce the need to hold unproductive inventories, and might reduce transactions costs. But one must be careful not to overstate the benefits. Moreover, one must recognize that these are beneficial effects of *credit in general,* not specifically benefits of *card* use. Thus, one must also examine the extent to which credit and charge card transactions generate these benefits. The Australian economy has other forms of credit available that can be used to engage in lifetime income smoothing (*e.g.,* home mortgages). The existence of other forms of credit does not remove the benefits of credit cards for many consumers as a means of short-term or small-scale smoothing, but it reduces the importance of credit cards for overall macroeconomic performance. A closely related question concerns the extent to which particular uses of credit cards give rise to these benefits. For example, so-called transactors may not use credit cards to smooth consumption flows, and thus their use of the cards may not generate many of these benefits.

39. The fact that credit and charge card use may not increase aggregate consumption, or may do so by significantly less than some parties imply, does not mean that credit cards have no beneficial effects. But, as will be shown below, the considerations identified here have significant consequences for efficient pricing and whether markets succeed or fail to attain efficient outcomes.

IV. THE POSSIBILITY OF EXTERNALITIES

40. A notable feature of consumer and merchant benefits is that a single card-based transaction can generate benefits for both sides of the transaction simultaneously. Moreover, each side needs to take actions in order for a transaction to take place. This fact raises the possibility each side will make privately optimal, but socially inefficient, decisions because it will fail to take into account effects on the other side of the transaction. This section explores these implications further and poses questions answered in the following sections.

A. NETWORK EFFECTS

41. A general purpose credit and charge card is valuable to consumers because it can be used to pay for purchases at a variety of merchants. All else equal, an actual or potential cardholder places greater value on a card issued on a network with more extensive merchant acceptance. Thus, the greater the number of merchants who accept a given system's cards, the greater the number of consumers who wish to carry and use the card. This positive relationship between network size (as measured by the number and variety of merchants) and consumer valuation is an example of a more general phenomenon that economists refer to as *network*