Interchange Fees in Australia, the UK, and the United States: Matching Theory and Practice

By Fumiko Hayashi and Stuart E. Weiner

Interchange fees are an integral part of the pricing structure of credit and debit card industries. While in recent years the theoretical literature on interchange fees, and payment cards in general, has grown rapidly, the empirical literature has not. There are several reasons for this. First, comprehensive data are hard to obtain. Second, the industries are very complicated, and empirical models need to incorporate many industry-specific features, such as payment-card network rules and government regulations. And third, empirical studies may require a generalized empirical model since, typically, only a few payment card networks exist in a given country. However, because of the first and second reasons, generalizing empirical models may prove problematic.

This article seeks to provide a bridge between the theoretical and empirical literatures on interchange fees. Specifically, the article confronts theory with practice by asking: To what extent do existing models of interchange fees match up with actual interchange fee practices in

various countries? For each of three key countries—Australia, the United Kingdom, and the United States—models that "best" fit the competitive and institutional features of that country's payment card market are identified, and the implications of those models are compared to actual practices. Along what competitive dimensions is there alignment? Along what competitive dimensions is there not alignment? What country-specific factors appear to be important in explaining deviations from theoretical predictions? The results suggest that a theory applicable in one country may not be applicable in another and that similar interchange fee arrangements and regulations may well have different implications in different countries.

The first section of the article briefly describes the mechanics of interchange fees. The second section surveys existing theories of interchange fees. The discussion focuses on assumptions regarding the degree of network competition, the degree of intranetwork (issuing and acquiring) competition, and the behavior of consumers and merchants. The third section attempts to match the theory with practice by examining in some detail interchange fee developments in the three countries. These case studies provide useful insight into interchange fee competition issues.

I.   MECHANICS OF INTERCHANGE FEES

Credit and debit card industries are examples of two-sided markets. The distinguishing feature of two-sided markets is that they contain two sets of end users, each of whom needs the other for the market to operate. In the case of credit and debit cards, the two end-user groups are cardholders and merchants.

Payment card systems take one of two principal forms. They may be three-party systems: cardholders, merchants, and a single financial institution that offers proprietary network services, for example, American Express. Alternatively, they may be four-party systems: cardholders, merchants, card issuing banks, and merchant acquiring banks, using the services of a multiparty network such as MasterCard, Visa, or a domestic debit card network. In four-party systems, the interchange fee is an instrument that networks can use to achieve a desired balance of

cardholder usage versus merchant acceptance across the two sides of the market, in the same way that proprietary systems can achieve directly. In other words, interchange fees are a mechanism that can be used to transfer revenues from one side of the market to the other to generate the desired level of card activity.

In most cases, interchange fees are paid by the merchant acquiring bank to card issuing banks.[1] Typically interchange fees are a component of a larger set of fees charged by merchant acquiring banks and therefore are indirectly paid by merchants.

Interchange fees are set under a variety of arrangements. In some networks, they are collectively set by the members of the network; while in others they are set by network management. In some countries, they are subject to regulatory limits.[2] Network rules, which likely affect the level of interchange fees, also exhibit considerable variation across countries. These rules include no-surcharge rules, HAC rules, and net issuer rules. No-surcharge rules prevent merchants from charging customers for the use of the network's card. Honor-all-card rules require merchants to accept the network's branded card regardless of the issuer.[3] Net issuer rules require merchant acquiring banks to issue a minimum level of cards in order to participate on the acquiring side of the market.

II. INTERCHANGE FEE THEORIES

Interchange fees and related payment card issues have been the subject of a growing body of theoretical work in recent years.[4] This section surveys a portion of this work, focusing on models that examine various factors potentially affecting interchange fees. To review this literature somewhat systematically, we group possible factors into four categories: assumptions regarding networks, assumptions regarding issuers and acquirers, assumptions regarding end users (consumers and merchants), and assumptions regarding other possible factors. A single factor, by itself, is highly unlikely to determine the level of interchange fees. Rather, interaction among factors, in some or all of these four categories, typically proves critical.

Assumptions

Table 1 presents a summary of many of the key theoretical articles on interchange fees written over the last several years. The papers, organized by the assumed level of network and intranetwork (issuer and acquirer) competition, are listed in the third column of the table. As will be discussed in the third section, use of these two categories proves to be a useful "first-step" sorting mechanism when comparing model assumptions and predictions with actual interchange fee arrangements.

The first organizational division, reflected in the first column of Table 1, is the assumption regarding network competition. Many models assume there is no competition among card networks, either explicitly, by assuming a monopolistic network, or implicitly, by not considering network competition in the setup. Other models assume there is competition among networks. In some cases, these networks are defined as identical, competing within the same payment instrument (for example, credit vs. credit or debit vs. debit). In other cases, these networks are defined as asymmetric, competing across different payment instruments (for example, credit vs. debit or PIN debit vs. signature debit), across different network schemes (three-party vs. four-party), or within the same payment instrument but facing different cost structures.

The second organizational division, shown in the second column of Table 1, is the assumption regarding intranetwork competition. A key feature of most models is the assumed degree of competition among card issuing banks and among merchant acquiring banks. This degree of competition is typically modeled with reference to the price-cost margins of issuers and acquirers. A zero margin is taken to imply perfect competition. A positive margin is taken to imply some market power. As seen in Table 1, some models assume both issuers and acquirers operate in perfectly competitive markets, some assume both issuers and acquirers have some market power, and still others assume only issuers have market power.

The remaining "Assumption" columns in Table 1 list other important factors assumed or incorporated in the respective models. Column 4 focuses on network attributes. In addition to the assumed degree of network competition, three additional network attributes are considered: whether the model in question assumes a three-party or four-party scheme; what the objectives of the networks are; and whether there is a single or multiple interchange fee structure. Possible network objectives include maximizing the number of transactions or market share; maximizing network profits (in a three-party scheme); and maximizing members' joint profits (in a four-party scheme), perhaps weighted more on the issuer or acquirer side. In addition, networks may seek to address any imbalances between the costs and revenues of issuers and acquirers, and between the demand of consumers and merchants. Finally, models may incorporate either a single interchange fee or, alternatively, multiple interchange fees that vary according to type of industry or transaction volume.

Column 5 focuses on intranetwork attributes. In addition to the assumed degree of competition on the issuing and acquiring sides of the market, three additional attributes are considered: the degree of pass-through of interchange fees from issuers and acquirers to cardholders and merchants, respectively; the relative cost structures facing issuers and acquirers; and whether issuers and acquirers are the same or different entities.

The next two columns turn to assumptions regarding the end users in payment card models. Consumer characteristics (column 6) include the demand for products (elastic or inelastic); the demand for cards (exogenous or endogenous; singlehoming or multihoming); and the demand for specific card transactions (homogeneous or heterogeneous transactional benefits). The types of fees and rewards that consumers face also vary by model.

Merchant characteristics are listed in column 7. Some models assume that merchants are strategic in their card-acceptance behavior—that is, they are competitive. Others assume that merchants are monopolistic. Models also differ according to whether merchants are assumed to derive homogeneous or heterogeneous transactional benefits, and whether they pay per-transaction fees and/or fixed fees. Finally, column 8 shows other factors that are built into various models. Chief

Table 1

KEY ASSUMPTIONS AND RESULTS IN PREVIOUS LITERATURE

Assumptions								Results
Network Competition	Intranetwork Competition	Paper	Network Competition, Scheme, Objectives, IFs	Intranetwork Competition, Pass-through Costs, Entities	End Users		Others	
					Consumers	Merchants		
1	2	3	4	5	6	7	8	9
No network competition	Both issuers and acquirers are perfectly competitive	Katz (2001)	• Competition is not considered • 4-party scheme • No assumption on the network objectives • Single IF	• Issuers and acquirers are perfectly competitive • 100% pass-through IF • Fixed costs for card issuing and per transaction cost for both issuing and acquiring sides • No assumption on entities	• Endogenous cardholding and a fixed card fee is charged • The card provides no transactional benefits but makes some transactions possible • Receive per transaction rebate • Elastic demand for goods	• Monopolistic merchants • Homogeneous in card benefits • Pay per transaction fee	• Effects of NSR is considered	• Under NSR, card is likely overused if rebate is provided to card users

Table 1 (Cont.)

Assumptions								Results
Network Competition	Intranetwork Competition	Paper	Network: Competition, Scheme, Objectives, IFs	Intranetwork: Competition, Pass-through, Costs, Entities	End Users: Consumers	End Users: Merchants	Others	
1	2	3	4	5	6	7	8	9
		Rochet and Tirole (2002) (Section1–4)	• Competition is not considered • 4-party scheme • Maximize issuers' profits = set highest IF that induces merchant card acceptance • (Multiple IFs are possible)	• Acquiring is perfectly competitive and issuing involves some market power • 100% pass-through IF on acquiring side • Per transaction cost is fixed and no fixed costs • No assumption on issuing and acquiring entities	• Cardholding and card usage are not distinguished (exogenous cardholding) • Card benefits are drawn from density function h (and do not vary by network) • Pay per transaction fee • Inelastic demand for goods	• Strategic merchants • Homogeneous merchants	• NSR • HAC	• Card issuers competition likely lowers interchange fees
No network competition (Cont.)	Acquirers are perfectly competitive & issuers involve some market power	Wright (2003)	• Competition is not considered • 4-party scheme • Maximize issuers' profits • Single IF	• Acquiring is perfectly competitive and issuers can be monopoly or symmetric Cournot oligopoly • 100% pass-through IF on acquiring side • Fixed costs for card issuing and per transaction cost for both issuing and acquiring sides	• Endogenous cardholding and a fixed card fee is charged • Heterogeneous in card benefits • Pay per transaction fee • Inelastic demand for goods	• Monopolistic merchants and competing merchants according to Bertrand are considered • Homogeneous in card benefits • Pay per transaction fee	• Effects of NSR is considered • HAC	• With monopolistic merchants NSR is preferred by both the network and the regulator, since it increases card demand • With competitive merchants both network and regulator is indifferent between surcharge and no-surcharge
		Schwartz and Vincent (2006)	• Competition is not considered • 4-party scheme • Maximize issuers' profits • (Multiple IFs are possible)	• Acquirers are identical and perfectly competitive and issuers are identical and collude in pricing to card users (competitive card issuers are considered in section 6) • 100% pass-through IF on acquiring side	• Exogenous cardholding (some fraction of consumers hold a card) • Cardholders use only cards and pay/receive per transaction fee/rebate • Elastic demand for goods	• Monopolistic merchants • Homogeneous in card benefits • Pay per transaction fee	• Effects of NSR is considered • (HAC)	• If rebates to card users are not feasible, NSR reduces total consumer surplus • Card user rebates raise IF and total consumer surplus, but reduce cash users' surplus

Table 1 (Cont.)

	Assumptions								Results
Network Competition	Intranetwork Competition	Paper	Network: Competition, Scheme, Objectives, IFs	Intranetwork: Competition, Pass-through, Costs, Entities	End Users — Consumers	End Users — Merchants	Others		
1	2	3	4	5	6	7	8		9
No network competition (Cont.)	Both issuers and acquirers involve some market power	Gans & King (2002)	• Competition is not considered • 4-party scheme • Maximize members' joint profits • Single IF	• Issuers and acquirers are competing perfectly or imperfectly (two-part pricing and linear pricing) • Per transaction cost is fixed and no fixed costs exist	• Exogenous cardholding (possibly pay a fixed card fee) • Homogeneous in card benefits • Transactional benefits decrease as more transactions made by the card • Pay per transaction fees • Elastic demand for goods	• Monopolistic merchants • Homogeneous in card benefits • Transactional benefits decrease as more transactions made by cards • Pay per transaction fee and fixed fee	• Effects of NSR is considered • HAC		• Under NSR and linear pricing, the profit-maximizing IF increases as acquirer competition increases and issuer competition decreases • Under the same condition, the cost-minimizing IF is independent of acquirer competition but decreases as issuer competition increases
		Schmalensee (2002)	• Competition is not considered • 4-party scheme • Maximize members' weighted joint profits (issuers likely hold more voting power than acquirers) • Single IF	• Both bilateral monopoly and multiple issuers & acquirers are considered • Per transaction cost is fixed and no fixed costs exist • Different entities in the case of bilateral monopoly and no assumption in the case of multiple issuers and acquirers	• Cardholding and card usage are not distinguished (exogenous cardholding) • Consumer (partial) demand for transaction is decreasing in cardholder per transaction fee • No assumption on consumer demand for products	• No strategic motive to accept cards • Merchant's (partial) demand for transaction is decreasing in merchant fee	• NSR • HAC		• Under bilateral monopoly, the more weight the issuer has in the network's objective function, the higher the inter change fees • Under bilateral monopoly, when consumer and merchant demand are identical, the necessary condition for profit maximization is satisfied when interchange fee is set to equalize issuer and acquirer unit costs • If consumer's and merchant's partial demand for transactions are linear and have the same slope, and if acquiring side competes more intensely than issuing side, it is profit maximizing to raise interchange fee above the output-maximizing level

Table 1 (Cont.)

Assumptions				Assumptions				Results
			Network Competition, Scheme, Objectives, IFs	Intranetwork Competition, Pass-through, Costs, Entities	End Users		Others	
Network Competition	Intranetwork Competition	Paper			Consumers	Merchants		
1	2	3	4	5	6	7	8	9
No network competition (Cont.)	Both issuers and acquirers involve some market power (Cont.)	Wright (2004)	• Competition is not considered • 4-party scheme • Maximize members' (weighted) joint profits • Single IF	• Multiple symmetric issuers and symmetric acquirers • Pass-through IF is considered • Per transaction cost is fixed and no fixed costs exist	• Exogenous cardholding with no costs (all consumers hold a card) • Card benefits are drawn from density function h • Per transaction fee (rebate) is charged (received) • Inelastic demand for goods	• Both strategic merchants and monopolistic merchants are considered • Merchants in a given industry are homogeneous in card benefits but each industry has different card benefits, which are drawn from density function g	• NSR • HAC	• If higher interchange fees increase per-transaction profits to issuers more than they decrease per-transaction profits to acquirers, (pass-through costs to user fees is higher on the acquiring side than the issuing side), profit-maximizing IF is higher than out-put maximizing IF • When merchants compete according to Hotelling model, and issuers and acquirers pass-through costs at the same rate, profit-max IF will be higher than welfare-max IF if the average transactional benefit over all those merchants who accept cards is lower than the fee they pay at the profit-max IF

Table 1 (Cont.)

Assumptions								Results
Network Competition	Intranetwork Competition	Paper	Network Competition, Scheme, Objectives, IFs	Intranetwork Competition, Pass-through, Costs, Entities	End Users — Consumers	End Users — Merchants	Others	
1	2	3	4	5	6	7	8	9
	Both issuers and acquirers are perfectly competitive	Guthrie and Wright (2006)	• Identical network competition • 4-party scheme (3-party scheme is also considered as an extension) • Maximize weighted sum of end-user surplus • Single IF in a network	• Both issuing and acquiring are perfectly competitive • 100% pass-through IF on both sides • Per transaction cost is fixed and no fixed costs • No assumption on issuing and acquiring entities	• Endogenous cardholding (whether to hold two cards, one, or none) and no costs of holding a card • Card benefits are drawn from density function h and do not vary by network • Per transaction fee is charged • Inelastic demand for goods	• Strategic merchants • Both cases where homogeneous and heterogeneous in card benefits with a single IF are considered • Card benefits do not vary by network	•NSR •HAC	• Intersystem competition may raise IFs with heterogeneous merchants but not with homogeneous merchants
Competition	Acquirers are perfectly competitive & issuers involve some market power	Rochet and Tirole (2002) (Section 5)	• No assumption on whether competing two networks are identical • 4-party scheme • Maximize issuers' profits = set highest IF that induces merchant card acceptance • (Multiple IFs are possible)	• Acquiring is perfectly competitive and issuing involves some market power • 100% pass-through IF on acquiring side • Per transaction cost is fixed and no fixed costs • No assumption on issuing and acquiring entities	• Cardholding and card usage are not distinguished (exogenous cardholding) • Card benefits are drawn from density function h (and do not vary by network) • Per transaction fee is charged • Inelastic demand for goods	• Strategic merchants • Homogeneous merchants	•NSR •HAC	• 4-party scheme network competition has no impact on IF if consumers hold at most one card. Otherwise, it increases merchant resistance and thus lowers IFs
	Both issuers and acquirers retain certain per transaction margins	Manenti and Somma (2002)	• Competition between a not-for-profit network jointly run by members and a proprietary network • Networks compete according to the Hotelling model • Maximize total profits • Single IF	• Per transaction margins to issuers and to acquirers are proportional to net costs • Per transaction cost is fixed and no fixed costs • Issuers and acquirers are different entities	• Cardholding and card usage are not distinguished (make only one transaction) • A fixed card fee is charged (no per transaction fee) • Consumer taste for the network is uniformly distributed over an interval • Inelastic demand for goods	• No strategic motives • A fixed fee is charged (not per transaction fee) • Merchants maximize their utility (not profits) • Merchant's taste for the network is uniformly distributed over an interval	•HAC	• When intranetwork competition is symmetric (ratios of issuer and acquirer prices to their net costs are the same), equilibrium networks' profits are independent of the interchange fee • If acquirer's margin (relative to the net costs) is greater than issuer's, the proprietary network's profit increases with the nonprofit network's interchange fee

Table 1 (Cont.)

	Assumptions							Results
					End Users		Others	
Network Competition	Intranetwork Competition	Paper	Network Competition, Scheme, Objectives, IFs	Intranetwork Competition, Pass-through, Costs, Entities	Consumers	Merchants		
1	2	3	4	5	6	7	8	9
		Guthrie and Wight (2003)	• Identical network competition • 4-parry scheme • Maximize members' joint profits = maximize the number of transactions • Single IF	• Multiple symmetric issuers and symmetric acquirers • Per transaction margins to issuers and to acquirers are constant (and tend to be zero). • 100% pass-through IF • Per transaction cost is fixed and no fixed costs exist • No assumption on issuing and acquiring entities	• Endogenous cardholding decisions (whether to hold two card, one card, or none) and no costs of holding a card • If consumers obtain positive intrinsic benefit from holding cards, multi-homing is equilibrium, otherwise consumers hold at most one card • Card benefits are drawn from density function h and do not vary by network • Pay per transaction fee • Inelastic demand for goods	• Both strategic merchants and monopolistic merchants are considered • Both cases where homogenous and heterogeneous in card benefits with a single IF are considered • Card benefits do not vary by network	•NSR •HAC	• Greater intersystem competition may raise IFs if most merchants accept multiple cards and consumers typically carry a single card (heterogeneous merchants). • Greater intersystem competition may lower IFs if most consumers hold multiple cards and merchants will reject the more expensive card
Competition (Cont.)	Both issuers and acquirers retain certain per transaction margins (Cont.)	Rochet and Tirole (2003)	• Competition between networks with symmetric consumer demand • Both 4-parry scheme and 3-parry scheme are considered • 4-parry schemes maximize the number of transactions and 3-parry schemes maximize profit • Single IF	• Per transaction margins to issuers and to acquirers are constant and the same for both networks • Both issuers and acquirers join only one network • 100% pass-through IF on both sides • Per transaction cost is fixed and with and without fixed costs are considered • No assumption on issuing and acquiring entities	• Cardholding and card usage are not distinguished (exogenous cardholding) • Three types of consumers (marquee, captive, and multihoming) are considered • With and without fixed fee are considered (With a fixed fee, a consumer holds at most one card) • Heterogeneous in card benefits • Card benefits vary by network • Pay per transaction fee • Inelastic demand for goods	• No strategic motives • Heterogeneous in card benefits with a single IF • Card benefits do not vary by network	•NSR •HAC	• As more cardholders become multihoming, merchant fee decreases and cardholder fee increases • The presence of buyers generating a high surplus on the merchant side raises merchant fees and lowers cardholder fee • Captive cardholders tilt the price structure to the benefit of merchants

Table 1 (Cont.)

Assumptions								Results
Network competition	Intranetwork Competition	Paper	Network — Competition, Scheme, Objectives, IFs	Intranetwork — Competition, Pass-through, Costs, Entities	End Users — Consumers	End Users — Merchants	Others	
1	2	3	4	5	6	7	8	9
Competition (Cont.)	Intrasystem competition is not considered	Chakravorti and Roson (2006)	• Both symmetric and asymmetric competition are considered • 3-party scheme • Maximize profits	• Intrasystem competition does not exist • Fixed costs for card issuing and per transaction cost for acquiring side • Costs may vary by network (asymmetric competition)	• Endogenous cardholding and a fixed card fee is charged • Hold at most one card • Heterogeneous in card benefits • Card benefits vary by network • No per transaction fee	• No strategic motives (each merchant sells an unique good) • Heterogeneous in card benefits • Card benefits vary by network • Pay per transaction fee and no fixed cost	•NSR	• Total fees charged across both sides are always lower in duopoly than in monopoly network (symmetric competition) • Under asymmetric competition, a network with the lower consumer fixed fee always has the higher merchant per transaction fees

among them are the presence or absence of assorted network rules and bylaws. These include no-surcharge and nondiscrimination rules, HAC rules, and net issuer rules.

Results

It is probably fair to say that the results of the papers summarized in Table 1 vary as much or more as the underlying assumptions in these papers. Key results are listed in column 9.

Perhaps the most important general result involves network competition. The effect of network competition on interchange fees is not uniform but varies widely depending on other factors. Some key factors include consumer and merchant demand characteristics, and the nature of intrasystem competition.

To the extent consumers are singlehoming, that is, using only one payment card, networks can act as monopolies. Thus, interchange fees are not reduced by network competition (Rochet and Tirole 2002). However, as consumers become multihoming, merchant resistance to interchange fees increases, and network competition lowers interchange fees (Rochet and Tirole 2002, 2003; Guthrie and Wright 2003).

To the extent that merchants are homogeneous, with an inelastic demand for transactions, network competition leads to a lower (or equal) interchange fee than noncompetition. However, if merchants are heterogeneous (elastic demand), the competitive interchange fee can be higher than the monopolistic interchange fee (Guthrie and Wright 2006). Network competition lowers interchange fees for both strategic (competitive) and monopolistic merchants. However, interchange fees for monopolistic merchants are lower than those for strategic merchants whether the network is competitive or not (Guthrie and Wright 2003).

Intrasystem competition is similarly influential. Several models show that differences in issuers' and acquirers' margins affect equilibrium interchange fees (Manenti and Somma 2002; Rochet and Tirole 2002; and Guthrie and Wright 2006). Differences in these margins also affect competing networks' profits (Manenti and Somma 2002).

A number of other interesting results involving network competition fallout of these models as well. These include: (1) network competition lowers the total fees charged across the issuing and

acquiring sides of the market (Rochet and Tirole 2003; and Chakravorti and Roson 2006); (2) network competition may raise interchange fees if consumers hold a single card and merchant demand for transactions is elastic (Guthrie and Wright 2003, 2006); and (3) if the network is a monopoly, interchange fees can vary depending on the interaction of network objectives and issuer and acquirer margins (Gans and King 2002; Schmalensee 2002; Wright 2003, 2004; and Schwartz and Vincent 2006).

Clearly, the nature of network competition is central to many of the results of the models in Table 1. Another important role is played by the various network rules and bylaws. Most of the models, for example, explicitly assume a no-surcharge rule and implicitly assume an honor all cards rule. Relaxing these assumptions can lead to differing results. If merchants are allowed to surcharge, for example, interchange fee levels may change depending on any number of additional factors, including the effective cost of surcharging to merchants, merchant competitiveness, and the price elasticity of consumer demand for goods (Gans and King 2002; Katz 2001; Wright 2003; and Schwartz and Vincent 2006).

What one comes away with after surveying this rich theoretical literature is an appreciation for the many factors that may affect interchange fees. Even a single factor may impact interchange fees differently, depending on other factors. Determining the actual impact of such variables is, in the end, an empirical question. We attempt to take a step in this direction in the next section.

III. COUNTRY CASE STUDIES

The previous section surveyed some of the important contributions in the theoretical literature on payment card interchange fees. This section details actual market conditions in three countries—the United States, Australia, and the UK—and compares these conditions with theory. Interchange fees have been a focus of much debate in these three countries in recent years. The key question asked is: To what extent do actual interchange fee practices "line up" with model assumptions and predictions? For each country, we first characterize the credit and debit card industries by the level of network and intranetwork competition.

Chart 1

U.S. CREDIT CARD MARKET
NETWORK MARKET SHARE

Percent   Purchase Transactions

Visa ◆ MasterCard ■ American Express ▲ Discover+Diners ✕
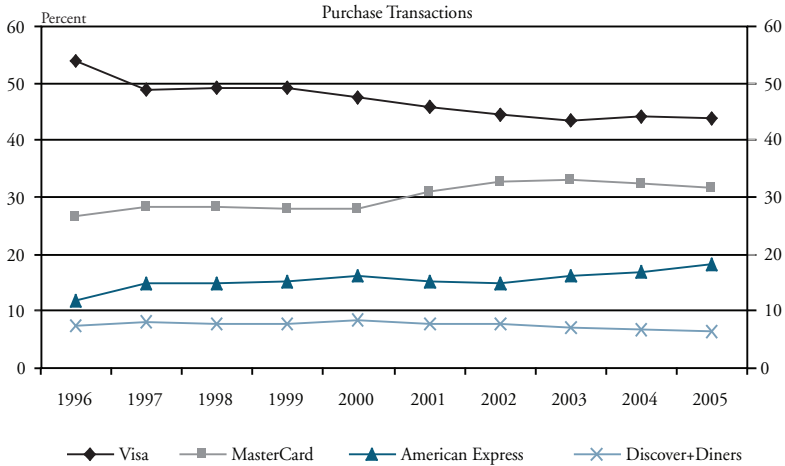
Source: *Nilson Reports*

We then try to match a country's experience with existing theory, suggesting additional assumptions and institutional features that may help explain that country's situation.

United States

Network competition exists in the United States, both within and across payment card instruments.

The United States has six credit card networks. The three largest—Visa, MasterCard, and American Express—compete aggressively with one another. Visa has the largest market share, followed by MasterCard and American Express. Visa's market share has declined somewhat in recent years, as measured by purchase value, number of transactions, and number of cards (Chart 1). The remaining three credit card networks—Discover, Diners Club, and JCB—have relatively small market shares (Chart 1).

The United States has two signature-based debit card networks (Visa Check Card and MasterCard MasterMoney) and 13 PIN-based debit card networks. Competition has been especially pronounced in

Chart 2

U.S. PIN DEBIT CARD MARKET
NETWORK MARKET SHARE

Transactions
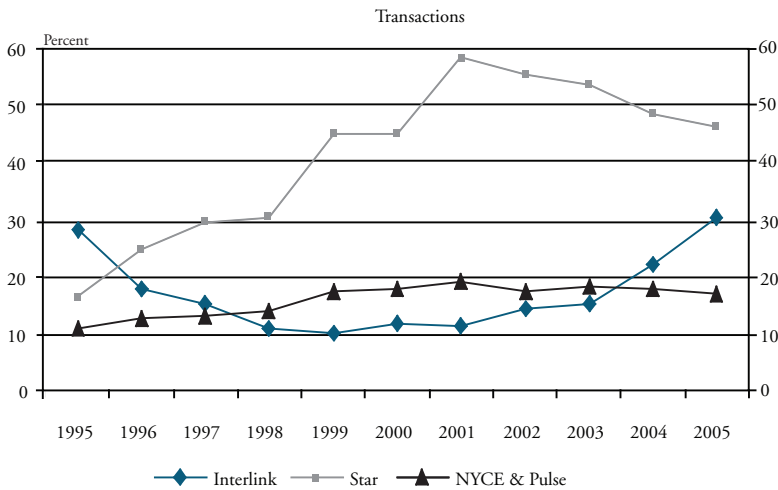
Source: *Nilson Reports*

the PIN debit market, especially among the four largest networks. The market share of Visa's Interlink network has trended up in recent years, while those for Star, NYCE, and Pulse have fluctuated (Chart 2). These large PIN-based networks also compete vigorously with the two signature-based networks.[5]

It is unclear to what extent credit and debit cards compete. Overall debit card market share (signature plus PIN) has been rising in recent years, and, in 2003, the number of debit card transactions exceeded the number of credit card transactions for the first time (Chart 3). However, in terms of purchase value, the difference between credit and debit cards has been stable over the last five years, suggesting perhaps that debit card transactions are largely substituting for paper-based (check and cash) transactions and not for credit card transactions (Chart 3). One can safely say, however, that there is competition within the credit card industry, within the PIN debit card industry, and across the PIN and signature debit card industries.

Chart 3
U.S. PAYMENT CARD MARKET

Purchase Value

Billions

(Chart showing Purchase Value in billions for Credit Card, Signature Debit, PIN Debit, and Debit Card, 1997–2005, ranging from $0 to $2,000)

Purchase Transactions

Billions

(Chart showing Purchase Transactions in billions for Credit Card, Signature Debit, PIN Debit, and Debit Card, 1997–2005, ranging from 0 to 25)

◆ Credit Card   ■ Signature Debit   ▲ PIN Debit   ✕ Debit Card
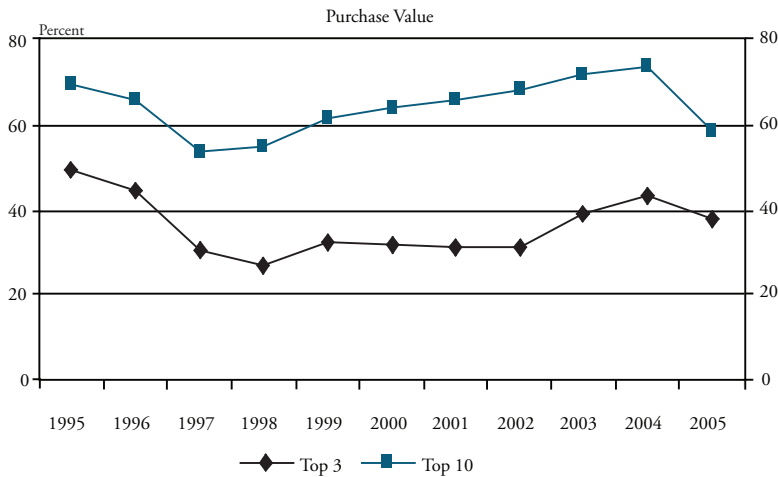
Source: *Nilson Reports*

Intranetwork competition also exists in the United States, as both the acquiring and issuing sides of the card market appear to be competitive. With regard to the acquiring market, although the largest acquirers' market share has increased slightly in the last ten years, acquirers' margins per transaction reportedly have been declining (Chart 4).[6]

Chart 4

U.S. SIGNATURE-BASED CARD ACQUIRING MARKET
## MARKET SHARE OF TOP ACQUIRERS

Purchase Value

Source: *Nilson Reports*

On the issuing side, top credit card issuers' market shares have increased significantly in the last ten years (Chart 5). Nevertheless, this market appears to be quite competitive. No annual fees, generous reward programs, and free or low introductory interest rates are typical in the industry, as issuers compete aggressively for customers. The story is somewhat different with respect to debit cards. Here, market shares of top issuers are much smaller than in the credit card market, but the degree of competition is hard to gauge (Charts 6 and 7). Because debit cards are tied to demand deposit accounts, it is costly for consumers to switch issuers. At the same time, however, many banks use their debit products as a strategic tool, providing rewards for signature card transactions and charging so-called PIN fees for PIN card transactions. On net, it is probably fair to view card issuing—both credit and debit—as a competitive environment.

Matching theory and practice. As noted earlier, both network and intranetwork payment card competition exist in the United States. In terms of network competition, competition between Visa and Master-Card in the credit card market, and among the top networks in the PIN

Chart 5

U.S. CREDIT CARD ISSUING MARKET
MARKET SHARE OF TOP ISSUERS

Total Value
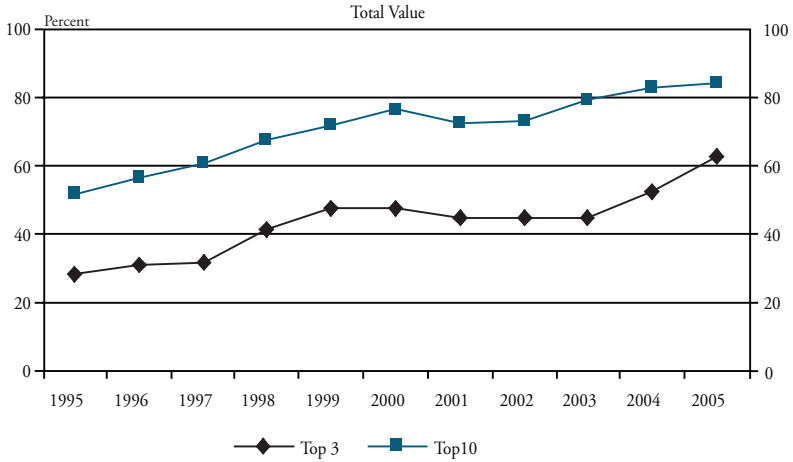
Source: *Nilson Reports*

Chart 6

U.S. SIGNATURE DEBIT CARD ISSUING MARKET
MARKET SHARE OF TOP ISSUERS

Purchase Value
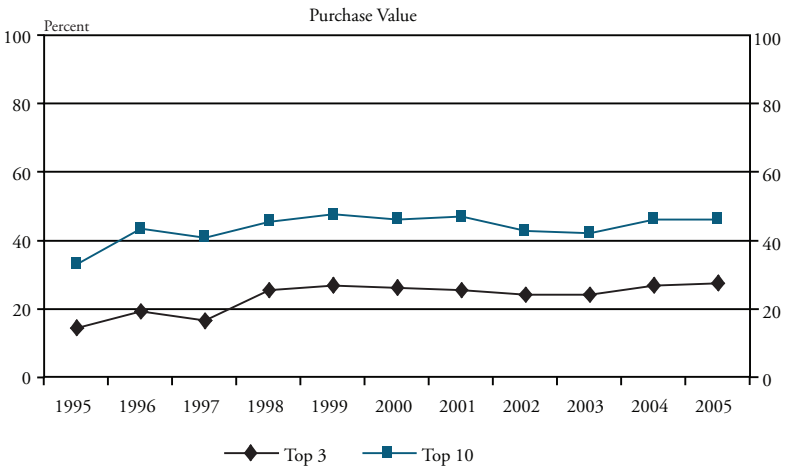
Source: *Nilson Reports*

Chart 7

U.S. PIN DEBIT CARD ISSUING MARKET
MARKET SHARE OF TOP ISSUERS

Transactions

Percent
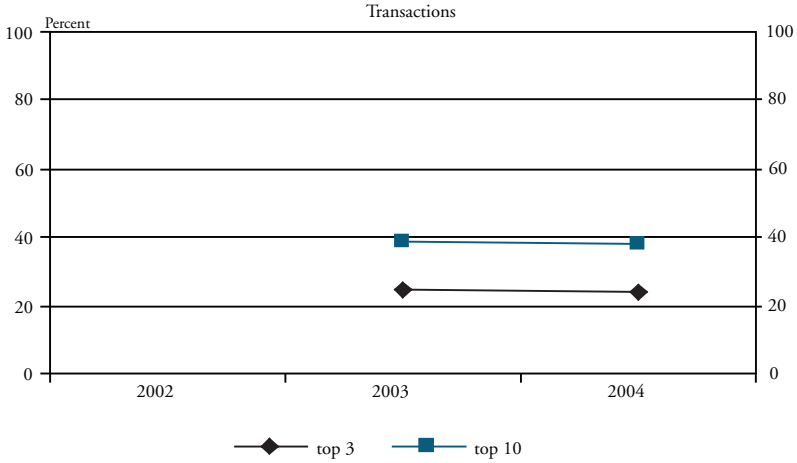
Source: *EFT Data Book* 2003-2005 editions

Chart 8

U.S. SIGNATURE-BASED CARD ACQUIRING MARKET
MARKET SHARE OF NON-BANK ACQUIRERS

Purchase Value

Percent
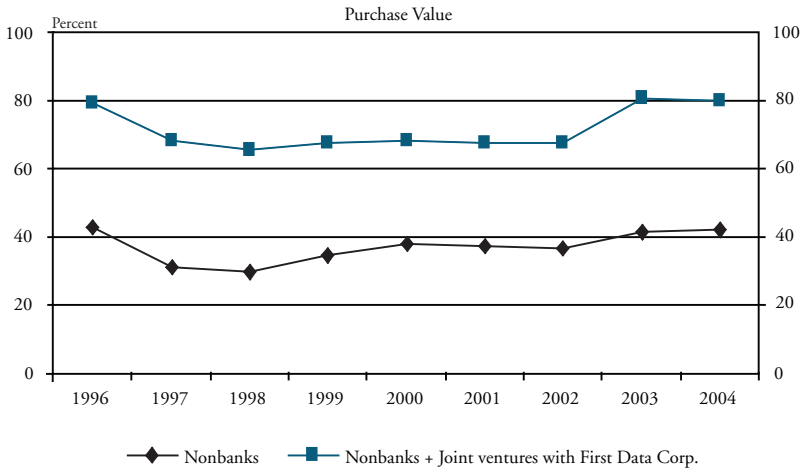
Note: The First Data Corp. is the top nonbank acquirer in the United States.

Source: *Nilson Reports*

debit market, fits well with the identical four-party network schemes assumed in Guthrie and Wright (2003, 2006) and Rochet and Tirole (2002, 2003). Competition between Visa/MasterCard and American Express, on the other hand, fits well with Manenti and Somma (2002).

In terms of intranetwork competition, although both the acquiring and issuing sides of the market are competitive, it is difficult to judge which side is more competitive or which side experiences lower margins per transaction. Revenues (not margins) are much higher for issuers than acquirers, but their costs per transaction are unknown. It does appear that pass-through of interchange fees is 100 percent on the acquiring side, while on the issuing side it is less than 100 percent.[7], [8]

On balance, network objectives are likely to be weighted more heavily toward issuers than acquirers in the United States. One reason is that even the largest nonbank acquirers do not have voting power in association networks and market share of nonbank acquirers is fairly large (Chart 8). A second reason is that large bank acquirers are typically large issuers as well. Therefore, maximization of issuer profits, number of transactions, and the weighted sum of end-user surplus with a high weight on consumers appear to be plausible assumptions in the U.S. case. These assumptions are made by Guthrie and Wright (2003, 2006) and Rochet and Tirole (2002, 2003).

Other important factors in the United States are merchant demand for card transactions and consumer cardholding behavior. Most industries in the United States are quite competitive. As a result, merchants clearly have a strategic motive to accept cards. In addition, unlike in most other countries, interchange fees in the United States are set in a very detailed manner according to industry category and size of the merchant (Table 2). Thus, a single interchange fee applies to a relatively homogeneous set of merchants, and this industry-specific fee less likely impacts consumer cardholding behavior, which is consistent with Rochet and Tirole (2002). U.S. households typically hold multiple credit and debit cards—that is, they are multihoming.[9] However, also consistent with Rochet and Tirole (2002), these multihoming cardholders often appear to prefer a particular card over the others.[10]

Taken in sum, the assumptions in Rochet and Tirole (2002) fit the U.S. payment card market well. However, the model does not predict that network competition raises interchange fees, which, arguably, is

Table 2

U.S. INTERCHANGE CATEGORY BY SELECTED BRAND

Visa	MasterCard		Star
Credit, Signature Debit	Credit	Signature Debit	PIN Debt
Retail[#,+] Supermarket[#,+] Automated fuel dispenser[+] Service station[+] Hotel & car rental[+] Passenger transport[+] Restaurant[+] Small ticket Retail 2 (Emerging)	Merit III[#,+] Supermarket[#,+] Convenience[+] Travel industries[+] Passenger transport Warehouse club[#,+] Public sector Service industries Merit I[+]	Merit III[#] Supermarket[#] Petroleum Convenience Travel industries Passenger transport Restaurant Small ticket Emerging markeet Warehouse club[#] Public sector Service industries Merit I	Grocery & wholesale Club[#] Petroleum[#] Small ticket Medical QS restaurant All other retailers[#]
e-Commerce basic[+] e-C Hotel & car rental[+] e-C Passenger transport[+] e-C retail[+]			
Standard Electronic Card not present[+] Key entry[+]	Standard[+] Key entered[+]	Standard Key entered	

#: tiered fee structure

+: varies by consumer credit card type

Sources: Greensheets, *Star 2005 Fee Schedule*

occurring in the United States. The model also predicts that competition among issuers lowers interchange fees, which also seems to contradict the U.S. case.[11] The only model that predicts that network competition may raise interchange fees is Guthrie and Wright (2003, 2006). However, to generate this result, the model assumes that the same interchange fee is charged to different types of merchants. This assumption does not necessarily fit well with the case in the United States, where interchange fees vary by industry and size of the merchant.

Can theory and fact be reconciled? Additional considerations may help explain the U.S. situation. For example, modeling issuers' behavior may prove critical. Oligopolistic issuers may alter their card portfolio, if not change networks, according to profitability. Network competition,

therefore, gives networks a strong incentive to try to attract issuers as much as possible. One of the strategies for doing so is to provide issuers with higher interchange fees. these fees allow issuers either to generate higher revenue per transaction or to provide the issuers' customers more generous rewards or both. By offering rewards, issuers may be able to stimulate their existing customers' spending on their cards or to lure customers away from their rival issuers. It is very likely that an issuer and its rival issuers are members of the same network. Then, higher interchange fees may not necessarily increase the its total transaction volume or the network's (weighted) member joint profits.

If cardholders' rewards are not just money transfers from merchants (or their customers) to cardholders but incur additional costs on issuers, the issuers' per transaction costs may not be fixed, as many papers assume.[12] Rather, they depend on whether the cardholder per transaction fees are negative (which means issuers provide rewards) or non-negative. Whether the cardholder per transaction fees are negative may greatly depend on the level of interchange fees.

As noted, U.S. interchange fees are set by industry. As a result, modeling consumer cardholding and merchant card acceptance under a single interchange fee does not fit the U.S. case. In a given industry, perhaps the merchant's card acceptance does not influence its customers' cardholding behavior.

Australia

Network competition likely exists in Australia.

There are six credit card networks in the country. The three largest—Visa, MasterCard, and Bankcard—have a combined market share in excess of 80 percent. The remaining market is divided among American Express, Diners Club, and JCB. Individual network share data are not available for recent years, but in 2001-02, shares in terms of number of credit cards were 53.4 percent for Visa, 22.7 percent for MasterCard, 15.4 percent for Bankcard, 6.5 percent for American Express, 1.9 percent for Diners, and essentially negligible for JCB. From 2002 to 2005, the combined American Express/Diners share has increased slightly (Chart 9).

Chart 9

AUSTRALIA CREDIT CARD MARKET
NETWORK MARKET SHARE
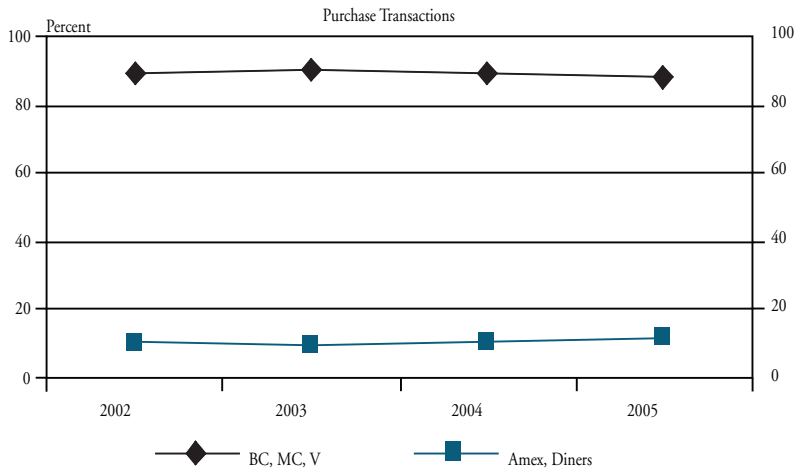
Note: Purchase transactions are the first half of each year.

Source: Reserve Bank of Australia

There are two debit card networks in Australia, EFTPOS and Visa Debit. EFTPOS is PIN-based, while Visa Debit is signature-based. Based on statistics furnished by the Building Society to the Reserve Bank of Australia, EFTPOS share of the overall debit network is roughly 90 percent, while Visa Debit's is roughly 10 percent.[13] Visa Debit cards are primarily issued by credit unions and building societies that were precluded from issuing credit cards. EFTPOS cards, in contrast, are issued by all types of financial institutions.

Credit card and EFTPOS debit card transactions have exhibited an interesting growth pattern in recent years (Chart 10). In 1995, credit and EFTPOS debit transaction volumes were about the same. From 1996 to 1998, debit volume exceeded credit volume, but, from 1999 to 2004, credit volume exceeded debit volume. In 2005, volume for the two instruments has essentially been the same again. This may imply that, in Australia, credit and EFTPOS debit are relatively close substitutes, and hence credit card networks and the EFTPOS network see each other as competitors.

Chart 10
AUSTRALIA PAYMENT CARD MARKET

Transaction Value

Billions

Transactions

Millions

EFTPOS   Credit
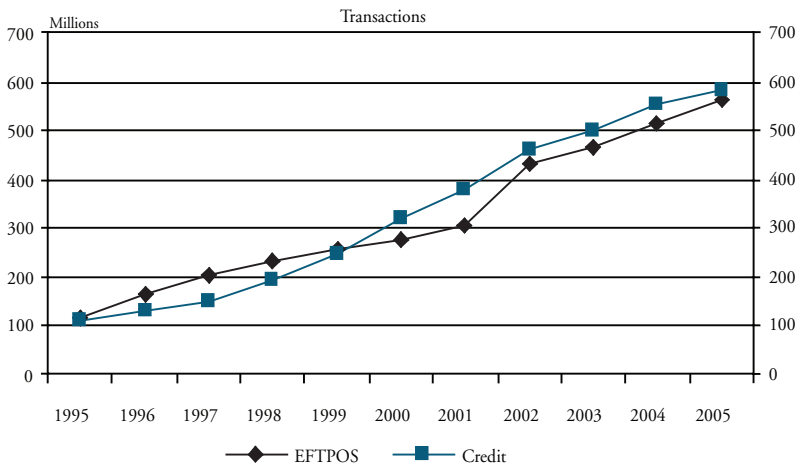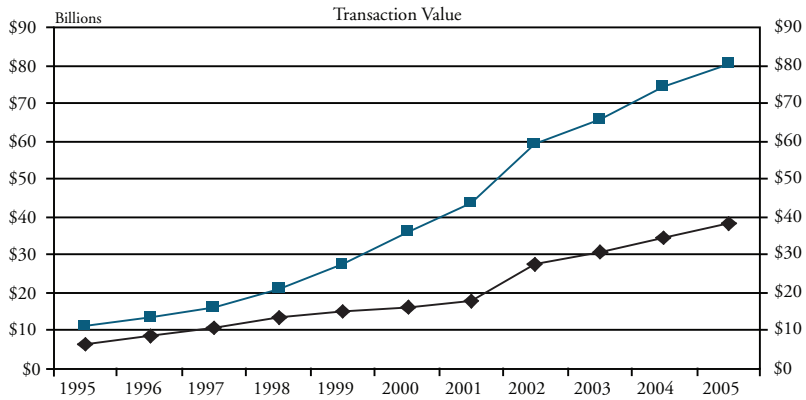
Source: Reserve Bank of Australia

Intranetwork competition. Both the acquiring and issuing sides of the card market appear to be competitive in Australia.

While the acquiring market is highly concentrated, a large portion of recent interchange fee reductions has been passed through to lower merchant service charges (MSC). The four largest banks in Australia acquire about 95 percent of transaction volume and 85 percent of transaction value.[14] However, according to the Reserve Bank of Australia, the average MSC for four-party networks in Australia has declined from 1.46 percent prior to regulation to 0.97 percent since regulation. This roughly 50-basis-point decline is in line with the decline in interchange fees pre and post regulation.

The four largest banks issue 55 percent of the number of cards and account for 70 percent of transaction volume.[15] Although many banks reportedly have cut reward-program benefits as a response to lower regulated interchange fees, they still provide rewards to their cardholders. This may imply that a portion of interchange fee revenue remains passed through to cardholders and that credit card issuing is competitive. Also indicative of competition is the fact that two of the four largest banks now issue and promote American Express cards as well as Visa and MasterCard cards.

Regarding EFTPOS debit card issuing, the combined market share of the four largest banks is large. Issuers typically charge per-transaction fees to their cardholders after a certain number of free transactions. Issuers seem to compete by using the per-transaction fees or free transactions as their strategic tools.

Matching theory and practice. As suggested above, the Australian payment card market probably can be characterized as exhibiting both network and intranetwork competition. In light of this, which theoretical model(s) best "lines up" with Australian interchange fee practices?

None of the models appears to closely fit the Australian market over a large number of parameters. For example, competition between Visa and MasterCard, between Visa/MasterCard and Bankcard, and between credit cards and EFTPOS can all be characterized as four-party scheme network competition. Although the competition between Visa and MasterCard can be regarded as identical, the other two competitive relationships cannot. A number of important papers adopt four-party schemes, but all of them assume either identical networks or symmetric

network competition (Guthrie and Wright 2003, 2006; Rochet and Tirole 2002, 2003). Chakravorti and Roson (2006) assume asymmetric network competition but they adopt either a three-party scheme or an issuer-controlled four-party scheme. EFTPOS cannot be regarded as issuer-controlled because interchange fees flow from issuers to acquirers in this market.[16] And most important, of course, interchange fees are now regulated in Australia, which likely has fundamentally changed pricing dynamics. This "new regime" must be taken into account in analyzing current Australian conditions.

Other factors to consider in addressing the Australian situation include differences in acquirer and issuer margins, merchant strategy, consumer cardholding, and surcharging. Acquirers appear to maintain a constant margin regardless of interchange fee levels, while issuers' margins appear to be influenced by the level of interchange fees. Most models assume constant margins on both sides of the market; only Wright (2004) considers interchange fee pass-through.

Regarding merchant strategy, it is generally believed that the Australian retail industry is more concentrated than that in the United States. It is unclear, however, how competitive Australian merchants are in practice. Merchants likely have a strategic motive to accept cards. Unlike in the United States, each network sets a single interchange fee for a typical point-of-sale transaction—that is, interchange fees do not vary by industry. This implies that heterogeneous merchants face a single interchange fee, consistent with Guthrie and Wright (2003, 2006); Rochet and Tirole (2003); Chakravorti and Roson (2006), Schmalensee (2002); and Wright (2004). Consumers typically pay an annual fee for credit cards with an interest-free period. To join a reward program, an additional annual fee is charged. Such endogenous cardholding with a fixed cost is assumed by Chakravorti and Roson (2006), Katz (2001), and Wright (2003).

Merchants were not allowed to surcharge prior to credit card reform. Since then, surcharging has been permitted, but few merchants reportedly have elected to do so. According to a recent survey, however, nearly half of Australia's merchants plan to apply surcharges to credit card transactions in 2006.[17] To sufficiently capture developments in the

Australian payment card market, future models will probably need to explicitly assume the option of merchant surcharging as well as interchange caps for four-party schemes.

United Kingdom

Network competition. It is unclear to what extent network competition exists in the UK. Whether the two dominant networks, Visa and MasterCard, compete against each other in both credit and debit markets, in just one market (likely debit), or whether Visa focuses on credit and MasterCard focuses on debit, is an open question.

There are five credit card networks in the country. The two largest, Visa and MasterCard, together have a more than 90 percent market share.[18] In addition, the number of Visa and MasterCard credit/charge cards has been increasing in recent years, while the sum of those of other networks (American Express, Diners, and JCB) has not. Purchase values show the same trend (Chart 11).
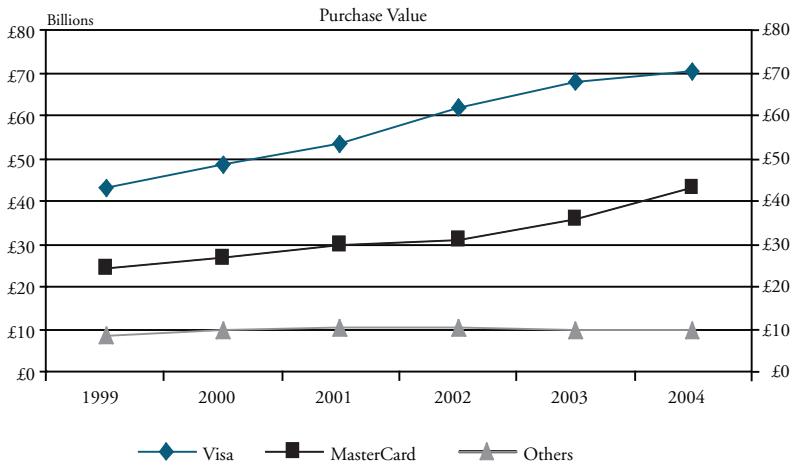
In the debit card market, the two networks, Visa and MasterCard, have essentially equal (50-50) market shares (Chart 12). A typical UK bank is a member of both the Visa and MasterCard networks, but in issuing debit cards banks choose one brand or the other. According to Cruickshank (2000), Switch's (now MasterCard) interchange fee was considerably lower than Visa's in 2000, suggesting that, on revenue grounds, Visa would be more attractive. However, potentially offsetting this is the fact that MasterCard's debit card, Maestro, is more popular throughout Europe.

Two other facts make the UK card market interesting. First, unlike in most other European countries, debit cards have not markedly outstripped credit cards in terms of usage (Chart 13). Second, unlike in Australia, credit card-debit card network competition is subtle, if it exists at all, because there is no third network equivalent to EFTPOS.

Intranetwork competition. Both the acquiring and issuing sides of the card market are competitive in the UK.

The acquiring market is relatively concentrated. In 2002, the top two acquirers had 40 percent and 30 percent market shares, respectively. However, it is likely that the market share of the top three

Chart 11
UK CREDIT/CHARGE CARD MARKET

Billions   Purchase Value

[Line chart showing Visa, MasterCard, and Others purchase values from 1999 to 2004, with y-axis from £0 to £80 billions. Visa rises from about £43 to £70, MasterCard from about £25 to £43, Others remains flat around £10.]

Legend: ◆ Visa   ■ MasterCard   ▲ Others

Sources: BIS, *European Payment Cards* 2004-05

Chart 12
UK DEBIT CARD MARKET

Billions   Purchase Value

[Line chart showing Visa and MasterCard (Switch) purchase values from 1999 to 2004, with y-axis from £0 to £90 billions. Both rise from about £30-34 to about £73-77.]

Legend: ◆ Visa   ■ MasterCard (Switch)
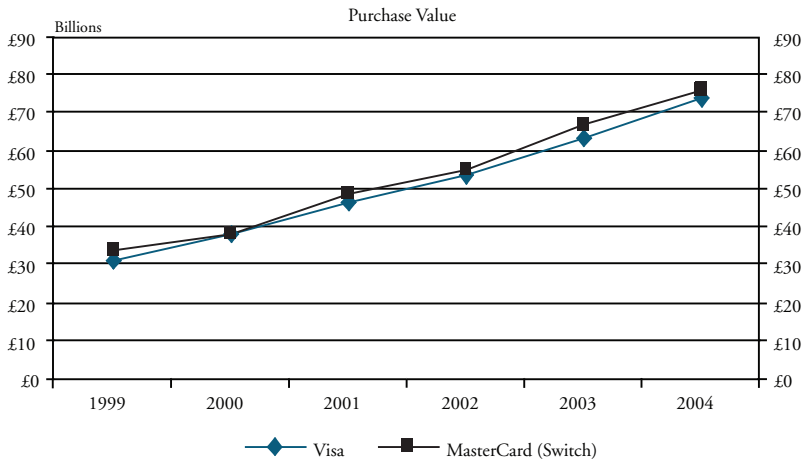
Sources: BIS, *European Payment Cards* 2004-05

Chart 13
UK PAYMENT CARD MARKET

Purchase Value

Billions

Transactions

Millions

Credit Total   Debit Total
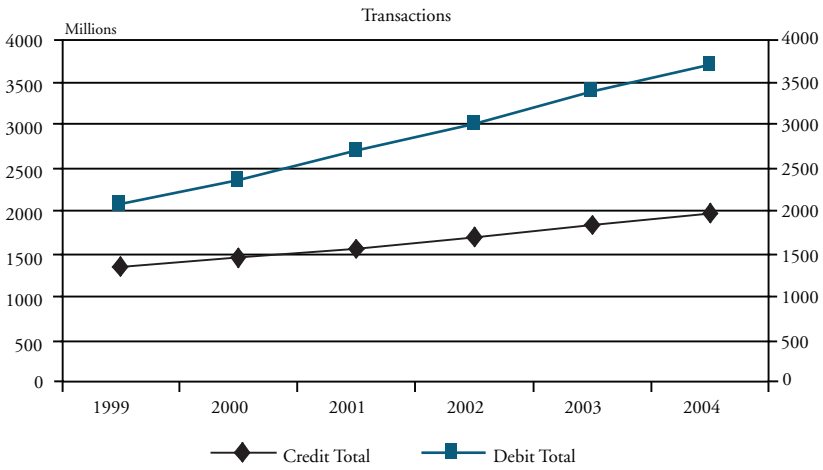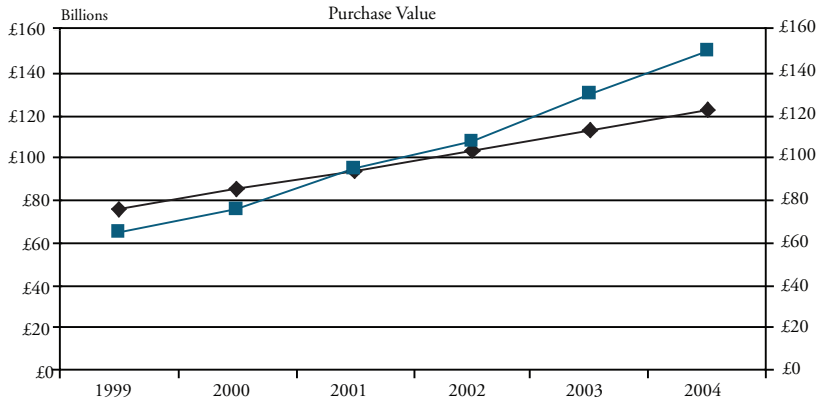
Sources: BIS, European Payment Cards 2004-05

acquirers has declined recently, and the difference between MSCs and interchange fees in the UK is comparable to the average difference in the United States.[19]

The issuing market is clearly competitive. With respect to credit cards, no annual fees, free or low introductory interest periods, and cash rebates are broadly used. In addition, several U.S. issuers, including Capital One, Citibank, and MBNA, have entered the UK market in recent years, and their combined market share now accounts for 20 percent of credit cards issued. Smaller UK banks have also entered the market. With respect to debit cards, banks' debit card market shares correspond closely with the current account market shares.

Matching theory and practice. As noted above, the degree of network competition in the UK is difficult to gauge. Intranetwork competition, on the other hand, exists.

To the extent Visa and MasterCard compete in the credit card market, it can be characterized as an identical four-party scheme (Guthrie and Wright 2003, 2006; Rochet and Tirole 2002, 2003). To the extent Visa and MasterCard compete in the debit card market, competition is again four-party, but it may or may not be identical network competition. According to Cruickshank (2000), Visa debit and Switch (MasterCard) interchange fees were quite different in 1998: The Visa debit interchange fee was at least twice as much as the Switch interchange fee. However, the more recent *European Payment Cards Yearbook* (2004-05) reports that the average interchange fee on Visa debit is thought to have fallen sharply from the figure reported in Cruickshank (2000). Depending on how close the two networks' interchange fees now are, they may be regarded as almost identical. If they are not identical, Chakravorti and Roson's (2006) asymmetric network competition model may fit well. Although their model assumes a three-party scheme, it can also accommodate an issuer-controlled four-party network. Since Visa debit issuers typically are not Switch issuers, an issuer-controlled four-party assumption may be valid.

In terms of intranetwork competition, it is hard to judge which side is more competitive or which side receives higher margins. However, in the UK, all networks are still subject to so-called "net issuer rules"— only issuers can be acquirers. In addition, many aspects of merchant acquiring, such as transaction processing and recruitment of retailers,

are outsourced to third-party service providers who do not have voting power. Therefore, a network's objective is likely to be weighted more on the issuer side. As a result, maximizing members' (weighted) joint profits (with a higher weight on the issuers), maximizing the number of transactions, or maximizing a weighted sum of end-user surplus (with a higher weight on the consumer side) is a plausible assumption. These assumptions are made in Guthrie and Wright (2003, 2006) and Rochet and Tirole (2002, 2003), with network competition; and in Rochet and Tirole (2002), Wright (2003, 2004), Schwartz and Vincent (2006), and Schmalensee (2002), without network competition.

There are additional factors to consider as well. One, although the degree of competition among merchants is unknown, merchants likely have a strategic motive to accept cards. If they did not have such a motive, they may not have complained about credit card interchange fees to the Office of Fair Trading in the early 1990s. Two, credit and debit card interchange fee schedules are not publicly available. However, according to Cruickshank (2000), credit card interchange fees vary according to a number of factors, including whether a transaction is domestic or cross-border, whether it is a face-to-face or a mail order transaction, and on the level of information about the transaction that is provided to the issuer. Visa's pricing in the UK may therefore be somewhat similar to Visa's pricing for EU cross-border transactions and, unlike in the United States, a single rate may typically apply to retail Point of Sale (POS) transactions in the UK. This implies that heterogeneous merchants largely face a single interchange fee, as assumed by Guthrie and Wright (2003, 2006), Rochet and Tirole (2003), Chakravorti and Roson (2006), Schmalensee (2002), and Wright (2004).

In addition, there are consumer factors to consider. Consumers can hold credit cards with no annual fees, so endogenous cardholding with no fixed fees might be an apt description in the UK credit card market (Guthrie and Wright 2003, 2006; Gans and King 2002). On the other hand, since the debit card is a demand deposit account product, debit card holding might be exogenous.

There are other factors to consider as well. UK merchants are prohibited from surcharging debit card transactions, but they are permitted to surcharge credit card transactions. However, most merchants choose not to surcharge for credit card transactions; surcharging may require

some costs to merchants. Thus, interchange fees are not neutral, unlike the Gans and King (2002) prediction.

On balance, the assumptions in Guthrie and Wright (2003, 2006) appear to fit UK payment markets well if Visa and MasterCard compete against one another. The model predicts that with competition among heterogeneous merchants, network competition may raise interchange fees if networks place more weight on consumer surplus than on merchant surplus. Since credit card reward programs are very popular in the UK, consumer surplus is likely weighted more heavily than merchant surplus. However, unlike the model's prediction, UK credit card interchange fees have been declining. The decline in interchange fees may not be a result of market equilibrium but may be due instead to regulatory pressure from the Office of Fair Trading.

If, on the other hand, Visa and MasterCard do not compete in the UK, assumptions in Rochet and Tirole (2002) may fit well with the UK debit card market and assumptions in Wright (2004) may fit well with the UK credit card market. While credit card interchange fees likely have been lowered because of regulatory pressure, debit card interchange fees have not been subject to regulatory concerns. As Rochet and Tirole (2002) predicted, debit card issuers' competition may have lowered interchange fees of Visa debit.

IV. SUMMARY

This article has sought to provide a bridge between the theoretical and empirical literatures on interchange fees. Specifically, the article confronts theory with practice by asking: To what extent do existing models of interchange fees match actual interchange fee practices in various countries? For each of three countries—Australia, the UK, and the United States—models that "best" fit the competitive and institutional features of that country's payment card market are identified, and the implications of those model are compared to actual practices.

Not surprisingly, the models examined—while certainly yielding insight into developments in these countries—are limited in their applicability and predictive power. This reflects the fact that country-specific factors are typically very important. The next step, of course, is to try to

gather comprehensive data that capture these institutional features as well as interchange structures and prices, so that analysts can conduct rigorous econometric analysis.

ENDNOTES

[1]In Australia, interchange fees of EFTPOS, a domestic PIN-based debit card scheme, go in the opposite direction.

[2]Weiner and Wright (2005).

[3]Before the so-called Wal-Mart settlement, the HAC rule in the United States required merchants who accept a network's credit card to also accept that network's signature-based debit cards. Currently, networks require merchants to accept both consumer and corporate cards and accept both nonreward and reward cards.

[4]Other surveys are provided by Schmalensee (2003), Evans and Schmalensee (2006), Roson (2005), and Weiner and Wright (2005).

[5]For discussion of PIN vs. signature debit competition, see Hayashi and others (2003).

[6]According to the Star's fee structure, a processing fee is around 3 cents per transaction and according to the FMI, the acquirer's processing charge is between 2.5 cents to 6.5 cents per transactions, these fees have declined slightly in the last several years.

[7]A typical merchant fee consists of three components, an interchange fee (to the issuer), a processing fee (to the acquirer), and a switch fee (to the network).

[8]According to a large credit card issuer's annual report, the average growth rate of interchange fee income (after deducted the costs of reward program) exceeds the average growth rate of transaction value. This suggests that interchange fee does not pass-through 100 percent on issuing side.

[9]According to the BIS, the number of debit cards and credit cards issued in the U.S. in 2002 were 260.4 million and 709 million, respectively. The U.S. population in the same year was 288.2 million.

[10]Some studies pointed this out. For example, the *2004 Preferred Card Study* by Edgar, Dunn, and Company concluded that "rewards dominate the reasons to use a specific credit card for 6 in 10 Americans."

[11]See, for example, Hayashi (2006) for the trends of U.S. interchange fees.

[12]This is very likely. Some issuers outsource their reward program administration to third-party service providers.

[13]*Building Society Comments on RBA Draft Standards for Visa Debit and EFT-POS* (April 29, 2005).

[14]Reserve Bank of Australia and Australian Competition and Consumer Commission (2000)

[15]Authors' calculation from *Nilson Report*.

[16]On the other hand, competition between four-party scheme and three-party scheme may fit well with Manenti and Somma (2002).

[17]See, for example, *American Banker* vol. 170, no. 148.

[18]*European Payment Cards Yearbook* (2004-05).

[19]According to the *2002 MSC Survey* by Payment Systems Europe Ltd, average credit card MSC in UK has been stable around 1.5-1.6 percent from 1995 to 2002. According to Cruickshank (2000), average credit card interchange fee was 1-1.1 percent. In the United States, average MasterCard and Visa credit card MSC is reportedly around 2 percent and average interchange fees are around 1.5 percent.

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