Winter 2004

The Payment Card Economics Review

Volume 2

The Industry and Its Legal Challenges

An occasional publication of payingwithplastic.org.

payingwithplastic.org

TABLE OF CONTENTS

INTRODUCTION

Out of sight, out of mind: The sheer efficiency of the major payment card systems has reduced the industry's profile in the public consciousness, even as cards become ubiquitous. Virtually all retailers in the United States now take plastic. Transaction processing has become so rapid and so cheap that it has become practical to use plastic to pay for minor purchases ranging from movie tickets to Big Macs. And when cash is needed in Baltimore, Bucharest or Beijing, it is as close as the nearest ATM machine.

All the more ironic, then, that beneath this nearly seamless façade that bespeaks of the value of competition and rapid innovation lies an industry with very unusual characteristics. For one thing, two of the largest players are associations of banks whose members cooperate in building and running a payment card platform, while at the same time using that platform to compete vigorously with each other. For another, a card platform depends on demand from two distinct, yet interdependent, sources—cardholders and the merchants who accept cards. And one unintuitive consequence is that the prices for services received by either side are unlikely to reflect direct costs.

The sheer novelty of an important industry that does not play by the rules according to Adam Smith has, not surprisingly, attracted the attention of economists. More problematically, the inability to fit the payment card business into familiar organizational boxes has posed challenges for regulators and judicial systems.

The first three essays in this volume offer perspectives on the industry's structure.

In *More than Money: The Development of a Competitive Electronic Payments Industry in the United States,* David Evans traces the evolution of the broad-purpose payment card from its origins in the 1950s. With just three nationwide card systems in the early years, it was the invention of a different form of enterprise—the "co-opetitive" Visa and MasterCard associations—that made aggressive competition possible.

Visa and MasterCard members thus cooperate to minimize costs on branding, advertising, technology and product development, while still competing on fees and services. The end-product, Evans reports, has been the transformation of the elitist travel and entertainment card business into an industry that extends payment card convenience and consumer credit to tens of millions of middle and lower-income families.

Lest one put the cart before the horse, Howard Chang's *Payment Card Industry Primer* lays out the basic economics and institutional framework of the industry. The cards themselves are divided into a variety of categories, from simple payment cards that aggregate charges on a monthly bill, to credit cards that offer revolving credit, to prepaid cards that store value in sequestered accounts, to debit cards that tap personal bank accounts much like checks. The transactions systems used by the proprietary card issuers are relatively simple in concept, linking the card—issuing and merchant—servicing arms of a single company like American Express or Morgan Stanley's Discover. MasterCard and Visa, however, run "four party" systems that link cardholders to card issuers to merchants and their banks. Transactions systems also vary in technology, with high speed electronic networks for clearing now being supplemented by "smart" cards that carry information in memory chips.

In surveying the industry, Chang notes that both the issuing and acquiring businesses are highly competitive, but with markedly different structures. The issuing side comes close to the textbook definition of a competitive industry, with many firms, none individually dominant, competing to offer cards to consumers. On the acquiring side, economies of scale have driven down the number of major competitors, but prices have continued to decline as the remaining competitors vie with each other for retailer accounts, especially major ones.

In *It Takes Two to Tango: The Economics of Two-Sided Markets*, David Evans outlines the economic implications of "two-sided" markets (which include the payment card industry). Two-sided markets serve two classes of customers whose demand is interdependent. That is, one class of customers only values the product if the other class is on board. Most two-sided markets are subject to "network externalities" in which the numbers of customers on one side increases the value of the product to customers on the other.

Thus payment cardholders won't value the service unless lots of merchants accept the cards, and merchants won't accept the cards unless lots of customers have cards and choose to use them. Other examples of two-sided markets exhibiting network externalities include computer operating systems, which serve as a bridge between computer users and software applications makers, and real estate brokers, who match buyers and sellers.

Two-sided markets, Evans notes, pose novel challenges to business. Demand from the two sides must be balanced—generally by shifting a disproportionate share of costs to one side. And sufficient scale must be reached to realize network externalities, which often implies high start-up costs. The large scale needed to realize efficiencies in two-sided businesses may also raise competitiveness issues. But in scrutinizing the organization of these businesses, Evans argues, competition authorities cannot simply apply criteria developed for conventional market structures.

The next two essays outline the broadening role of credit in the American economy.

In *The Growth and Diffusion of Credit Cards in Society*, David Evans documents the transformation of payment cards from an elite service to an indispensable tool for the great majority, in the process cutting transactions costs and democratizing credit for consumers. In 1970, just 16 percent of American families used cards to purchase goods and services roughly equal to just 4 percent of their incomes. By 2001, 73 percent had cards and used them for purchases equal to 18 percent of their incomes.

The impact of cards is particularly striking on the low end of the income distribution. From 1970 to 2001, the portion of low-income families (defined here as $16,100 in 2001 dollars) with payment cards rose from 2 percent to 38 percent. These families gained access to credit at competitive rates, allowing many of them to save on interest paid from less competitive sources of credit—consumer finance companies and payroll check advances.

David Blanchflower and David Evans analyze *The Role of Credit Cards in Providing Financing for Small Businesses*. While it is difficult to distinguish between unsecured credit card debt created for business and consumption

purposes, there is good evidence that the cards have been heavily used by the self-employed for business purchases since the early 1990s. Moreover, American Express, Visa and MasterCard have all offered cards designed specifically for small businesses since the 1980s.

Overall, 68 percent of small firms used some kind of credit card to make purchases, and one in four took advantage of access to the cards' revolving credit. Firms that had been denied other forms of credit in the past three years were more likely to use credit cards, suggesting that card credit has eased the liquidity constraint that pinches a disproportionate number of small businesses.

The last four essays tackle questions in antitrust law and economics raised by the unusual organization of the payment card industry.

David Evans and Richard Schmalensee lay out the issues in the first of the landmark antitrust cases testing the organization of the payment card associations in *Joint Venture Membership: Visa & Discover Card (1993)*. Dean Witter, which owned the Discover Card, purchased a defunct savings and loan association in 1990 and tried to issue Visa cards through the S&L. When Visa refused to permit this on the grounds that the corporate parent owned a competing card system, Dean Witter sued in federal court under the Sherman Act.

Evans and Schmalensee trace the events from the initial jury decision in favor of Dean Witter to its reversal by the 10th Circuit Court of Appeals. The original case would likely have been dismissed on summary judgment, they say, if it weren't complicated by the fact that Visa is a joint venture of card issuers rather than a proprietary firm. The appellate court was thus forced to look at the functional nature of the joint venture to distinguish Visa's cooperation in pursuit of efficiency from collusion to restrict market entry.

Howard Chang, David Evans and Richard Schmalensee focus on a more recent case that never went to trial*, The Retailer Class Action Antitrust Case Against the Card Associations*. Under standard agreements used by Visa and MasterCard, retailers have not been permitted to pick and choose among the type of cards they accepted. Wal-Mart challenged this "honor-all-cards" policy because it wanted to accept the associations' credit cards, but did not want to pay the fees associated with their debit card transactions since alternative debit systems were much

cheaper. Wal-Mart and a number of other merchants sued on behalf of all U.S. retailers, arguing that the rule amounted to illegal tying under the antitrust laws.

When the courts certified the broad class of retailers as plaintiffs and thereby opened the card associations to the risk of tens of billions of dollars in damages, both Visa and MasterCard chose to settle. Chang, Evans and Schmalensee analyze the substantive issues made moot by the class action certification and settlement. They argue that the honor-all-cards rules gave the card associations a useful tool to get both sides on board for debit transactions. They note, moreover, that the fact that the card association members are already highly competitive makes it questionable whether lower fees for debit cards will come out of the hides of the banks.

In *Has the Consumer Harm Standard Lost its Teeth?* Howard Chang, David Evans and Richard Schmalensee examine the consequences of applying weak and strong "rule of reason" standards of harm in assessing antitrust liability. On one end of the spectrum, a strong standard requires evidence of significant harm to consumers in the form of higher prices or reduced output. At the other end, a weak standard views harm to competitors as a proxy for harm to the competitive process—and thus indirectly, for harm to consumers.

The authors use an "error-cost" framework to analyze the polar standards as applied to the landmark *Microsoft* and *Visa* cases brought by the Clinton Administration. A strong standard for consumer harm is far preferable, they argue, because it would reduce the costs from "false convictions" while imposing relatively small costs from "false acquittals." The authors use the *Microsoft* and *Visa* cases to discuss the types of consumer harm analyses they believe could realistically have been required of plaintiffs, but that were not undertaken.

Christian Ahlborn, Howard Chang and David Evans examine the role of "interchange" fees set by the card associations. In *The Problem of Interchange Fee Analysis: Case without a Cause?,* they note that many analysts wrongly view transactions-related fees set by the card associations as efforts to price as a cartel. In fact, they say "interchange" fees levied by card-issuing banks on transactions routed through separate merchants' banks are needed both to balance demand on the two sides of the market and to prevent free-riding by individual banks that would undermine the association.

They also counter a related argument—that merchants' practice of charging the same for card and cash transactions distorts resource allocation. Retailers deliver a complex mix of ancillary services—parking, good service, easy return policies—that do not uniformly benefit customers, and acceptance of payment cards at no extra charge is just one more. Equally important, it is far from clear that the implicit subsidies given to card users are greater than those given to users of cash and checks.

MORE THAN MONEY: THE DEVELOPMENT OF A COMPETITIVE ELECTRONIC PAYMENTS INDUSTRY IN THE UNITED STATES

David S. Evans,
NERA Economic Consulting

INTRODUCTION

Paying electronically with plastic has become a way of life for most consumers and merchants in the United States. The same is true in every industrialized country and in many other nations around the world. Today, most Americans carry several cards in their wallets, each bearing a series of thirteen to sixteen digits.[1] And most merchants accept many different brands of cards for payments.

In the United States, an intensely competitive industry services two sides of the market—consumers who would like to pay with plastic, along with merchants who are willing to be paid with plastic. And the explosive growth of this "two-sided market" has generated important benefits for consumers and merchants alike.

Vigorous competition in payment cards simply didn't exist in the 1950s and 1960s, and its subsequent development was neither accidental nor inevitable. How this market came to be is mainly the story of Visa and MasterCard.

Created in 1970, Visa's founders envisioned a world in which all payments would be made electronically. To this end, they built an association that any qualified financial institution is welcome to join. The association is built on a model of "co-opetition"—cooperation plus competition.[2] Members *cooperate* in a few key areas that generate efficiencies for consumers and merchants—such as sharing the operation of the vast computer networks that now enable transactions to be completed in a few seconds. Members *compete* in every other dimension—interest rates, fees, service and innovative offerings. MasterCard followed a similar model.

---

1 The paper focuses on cards that can be used at many different merchants, and excludes store cards—such as the Macy's card—that can be used only for purchases at the store that issued the card. In 2002, the number of store cards in circulation was not far behind the number of general-purpose debit, credit and charge cards (547 million to 866 million), but they accounted for less than one tenth of the charge volume ($128 billion to $1.7 trillion). THE NILSON REPORT, No. 784 (Mar. 2003); THE NILSON REPORT, No. 785 (Apr. 2003); and THE NILSON REPORT, No. 790 (Jun. 2003). In addition to Visa and MasterCard debit cards that carry the Visa or MasterCard flags, there are also debit cards issued on electronic funds transfer (EFT) systems such as STAR or NYCE, which started as ATM systems. As with other Visa and MasterCards, Visa and MasterCard debit cards are authorized using a signature, and are thus called "signature debit" cards. As with ATM transactions, EFT system debit cards are authorized using a personal identification number (PIN), and are commonly called "PIN debit" cards. They can only be used at merchants that have installed PIN pads and chosen to accept such cards. Signature debit and PIN debit transactions are also referred to in the industry as "off-line" and "on-line" debit respectively, although both types of debit are electronic. See DAVID EVANS & RICHARD SCHMALENSEE, PAYING WITH PLASTIC: THE DIGITAL REVOLUTION IN BUYING AND BORROWING 316 (1999). The data above include both signature debit and PIN debit.

2 *See* ADAM M. BRANDENBURGER & BARRY J. NALEBUFF, CO-OPETITION (1997).

The success of this model is borne out by the explosive growth in the use and acceptance of cards in the last three decades. In the United States:

- Between 1971 and 2002, the number of cards per household grew from 0.8 to 7.8, while the total number of cards increased from almost 55 million to 866 million.[3] Between 1970 and 2001, the proportion of households with at least one credit card increased from 16 percent to 73 percent.[4]
- The number of merchants that accept cards increased from around 820,000 in 1971 to over 5.3 million in 2002.[5]
- The volume of transactions charged on cards increased from about $40 billion in 1971 to about $1,676 billion in 2002—an average annual growth rate of 13 percent, which reflects the substantial gains in the use of cards by consumers and merchants.[6]
- The number of financial institutions issuing cards grew from about 600 in 1971[7] to well over 8,000 in 2002.[8]

The vibrant market for electronic payment cards has generated some obvious benefits for consumers. As Table 1 indicates, cardholders enjoy the ability to use their cards at millions of merchants across the nation—a level of freedom and convenience only dimly imagined when the first Diners Club card was issued a half century ago, but which Americans now largely take for granted. Note that all the dollar figures in this paper are adjusted to reflect purchasing power in 2002.

---

3 Data from Visa U.S.A., THE NILSON REPORT, No. 756 (Jan. 2002); THE NILSON REPORT, No. 759 (Mar. 2002); THE NILSON REPORT, No. 760 (Mar. 2002); U.S. Census Bureau (visited Dec. 12, 2002) <http://www.census.gov/hhes/income/histinc/h05.html>; *The Trick is Managing Money*, BUS. WK., June 6, 1970; and Irwin Ross, *The Credit Card's Painful Coming-of-Age*, FORTUNE, Oct. 1971.

4 Calculations based on data from the Survey of Consumer Finances.

5 Data from Visa U.S.A. These are data on the number of Visa merchants over time. This understates the number of total merchants that accept some general-purpose payment card. The degree of understatement is likely greater (on a proportional basis) for 1971 than for 2001.

6 Excludes cash from ATMs and at point of sale. Both charge volumes are in 2002 dollars. Data from THE NILSON REPORT, No. 784 (Mar. 2003); THE NILSON REPORT, No. 785 (Apr. 2003); and *The Trick is Managing Money, supra* note 3.

7 There were 245 Visa issuers in 1971. Data on the number of MasterCard issuers in its early years are very limited. Based on relative MasterCard and Visa purchase volumes in 1971, a very rough approximation puts the number of MasterCard issuers at around 350. Data from THE NILSON REPORT, No. 285 (June 1982); and Visa U.S.A. Adding the proprietary systems yields an estimated total of around 600 issuers.

8 The number of issuers in 2001 does not include debit-only MasterCard issuers (those that issue MasterCard debit cards but not credit cards) because data are not available. Such issuers probably number in the hundreds or more. In addition, data on banks that issue only PIN-based debit cards—those belonging to the EFT systems (such as STAR or NYCE)—and do not issue Visa or MasterCard credit or debit cards are not available. Such issuers likely number in the hundreds, if not the low thousands.

Table 1. Statistics on U.S. General-Purpose Payment Cards for 2002

Total Cards	866 million
Proportion that are Credit/Charge Cards[1]	71%
Proportion that are Debit Cards	29%
Number of U.S. Merchants that Accept Cards	5.3 million
Average Annual Charge per Household on Cards[2]	$15,066
Proportion of Consumer Expenditures on Cards	27%

1 Includes both revolving credit and 30-day charge cards.

2 Reported in 2002 dollars. Excludes cash obtained at ATMs and at point of sale.

Sources: THE NILSON REPORT, No. 784, 785; U.S. Census Bureau http://www.census.gov/prod/2003pubs/p60-221.pdf

This paper discusses the roles of Visa and MasterCard in creating this unique blend of competition and cooperation, and the benefits this hybrid system has produced for American consumers and businesses.[9]

UNDERSTANDING TWO-SIDED MARKETS

Electronic payment cards serve two groups of customers simultaneously. Consumers use the cards to make payments and merchants accept the cards to facilitate payment. Cards would have no value unless both groups used them. What merchant would install equipment to take cards that no one used for payment? What consumer would bother to carry a card no merchant accepted?

This is what economists call a "two-sided market"[10]—a market in which the businesses that serve as intermediaries have to get two distinct groups of customers on board to create a commercially viable product. Real estate, bond markets, video game consoles, advertising-supported media and computer operating systems are all examples of markets with two sides. Dating clubs (such as singles bars or discotheques) are another example and help explain the intuition.

9 Cards are not without their critics. A common complaint is that they induce people to borrow too much. Similar complaints have been levied against new methods for borrowing since the introduction of widespread installment lending in the late 19th century. *See* LENDOL CALDER, FINANCING THE AMERICAN DREAM: A CULTURAL HISTORY OF CONSUMER CREDIT 17, 292-93 (2001). The hostility to borrowing—or rather for charging people to borrow—goes back to the birth of civilization and has resulted in prohibitions during various periods. *See generally*, SIDNEY HOMER & RICHARD SYLLA, A HISTORY OF INTEREST RATES (1996). Some analysts and regulatory authorities have made a separate claim that cards are used too much—and that cash and paper checks are more efficient payment media. *See* Alan S. Frankel, *Monopoly and Competition in the Supply and Exchange of Money*, 66 ANTITRUST LAW JOURNAL 313, 346 (1995); and Reserve Bank of Australia, *Reform of Credit Card Schemes in Australia IV: Final Reforms and Regulation Impact Statement* (Aug. 2002), at 4, 34. Moreover, there is no shortage of accounts of card misuse by consumers, the criminal use of cards, and bad behavior by businesses that compete in the card industry. But this paper is not the place to address these arguments.

10 *See* David Evans, *The Antitrust Economics of Multi-Sided Platform Markets*, YALE JOURNAL ON REGULATION, Vol. 20, 2003. This is a revised version of an earlier paper, *The Antitrust Economics of Two-Sided Markets*, AEI-Brookings Joint Center for Regulatory Studies Related Publication 02-13 (Sept. 2002) (visited Jan. 20, 2003) <http://www.aei.brookings.org/admin/authorpdfs/page.php?id=189>.

To work well, a dating club needs both men and women, and in roughly equal numbers. Men and women jointly benefit, and the club incurs costs for them together. In these kinds of two-sided markets, the prices charged each side do not necessarily have much relationship to cost for two reasons. First, businesses have to set prices to get both sides on board, and that means focusing on relative demand. Second, the costs are in large part common costs, so that any allocation to one side or the other would be arbitrary. In practice, businesses in many two-sided markets tend to collect the bulk of their revenues from one side or the other. Dating clubs, for example, generally charge men more than women.[11]

Since the birth of the industry, a significant portion of the revenue from payment cards has come from the merchant side.[12] This is most easily seen in the case of charge card transactions. Cardholders pay nothing for the transaction. And, since they do not have to pay anything until their card bill becomes due, they get an interest-free loan for two to six weeks. Many receive additional benefits or incentives linked to transactions volume, such as frequent flier miles. In some card programs, members pay an annual fee—but it typically does not cover the value of the float and other benefits received.

FROM EXCLUSIVITY, COMPETITION: A BRIEF HISTORY OF HOW THE MARKET DEVELOPED

Diners Club pioneered payment cards in the early 1950s, giving away cards to Manhattan consumers and then persuading restaurants that there were enough cardholders to make it worth their while to sign up. By 1960, Diners Club was the biggest payment card company with 1.1 million cardholders, but it faced competition from recent entrants: American Express and Carte Blanche.[13] These three were the big travel and entertainment (T&E) cards, which in those days were generally accepted only at hotels, airlines and restaurants frequented by "businessmen" on expense accounts.

The T&E cards were targeted to an elite group of customers—mainly corporate travelers and the well-heeled. As Diners Club put it, "you can readily figure that if a person doesn't earn [$35,000], he won't qualify."[14] American Express had

11 *See* Evans, *The Antitrust Economics of Multi-Sided Platform Markets, supra* note 10.

12 Many cards—even those that do offer a line of credit—are used mainly for transactions. The preponderance of the revenue from these cards comes from the merchant side, although issuers do get significant revenue from consumers who choose to finance purchases on their credit cards.

13 *Tougher Going for Credit Cards*, Business Week, Sept. 10, 1960.

14 Income is reported in 2002 dollars. Richard Rutter, *Personal Finance: The Era of the Credit Card,* New York Times, Feb. 8, 1965.

similar income requirements, and both firms required evidence of a steady employment history.[15] Only 9.2 percent of households had a T&E card in 1970.[16] The wealthy were most likely to carry them—about 20.6 percent of households in the top income quintile held cards, compared to only about 2.2 percent of households in the lowest income quintile.[17]

This exclusivity carried over to the merchant side, as well. Although most luxury stores, upscale restaurants and hotels accepted American Express cards, most other retailers did not. American Express's merchant base of 142,000 was just 6 percent the size of the base today.[18]

Compared to today, costs were relatively high while convenience was relatively low. Merchants paid a "merchant discount" of 5-7 percent of the bill to American Express, while cardholders paid an annual fee of about $45.[19] There were no free offerings or incentives, such as frequent flier miles or free insurance, and cardholders could use their cards for relatively few transactions. Merchants were required to get "authorization" over the phone from American Express to accept a card for large transactions—a process that took several minutes and was generally not possible after normal business hours.

One of the main problems was limited competition. Until the mid 1960s, merchants and consumers had just three choices of payment cards that could be used nationally—American Express, Diners Club and Carte Blanche. American Express had a slight lead over Diners Club in the number of cardholders (1.7 million to 1.5 million), but Diners Club had a slight lead in merchants (150,000 to 142,000).[20] Carte Blanche had a comparable merchant base, but less than half the cardholders. By the end of the 1960s, American Express, with 3 million cardholders to Diners Club's 2 million, was acknowledged as the "giant of the T&E cards" and was "the biggest and most profitable."[21] It had gained the same dominance in T&E cards that it traditionally held in traveler's checks.[22]

---

15 *Id.*

16 Calculations based on data from the Survey of Consumer Finances. Figures are from 1970, the earliest year for which data are available.

17 *Id.*

18 Figures are adjusted for the growth in retail establishments over time. *Credit Card Franchises Offered by Four Major Firms,* Burroughs Clearing House, Sept. 1966; U.S. Census Bureau, Statistical Abstract of the United States: 1995; U.S. Census Bureau, Statistical Abstract of the United States: 2002; and The Nilson Report, No. 784 (Mar. 2003).

19 Annual fee is reported in 2002 dollars. *American Express, Like Rivals, Will Offer Franchises to Banks for Its Credit Cards,* Wall Street Journal, July 15, 1966; Peter Z. Grossman, American Express: The Unofficial History of the People Who Built the Great Financial Empire 303 (1987).

20 *Credit Card Franchises Offered by Four Major Firms, supra* note 18.

21 *The Santa Claus that Makes You Pay,* Business Week., Dec. 20, 1969; and *The Trick is Managing Money, supra* note 3.

22 *The Trick is Managing Money, supra* note 3.

Although payment cards had a long way to go to become a truly competitive industry, American Express did help to lay the foundation for today's industry. Taking up Diners Club's idea, American Express mastered the business of getting both sides on board for its T&E card. Even before its first transaction, it had acquired a cardholder base of 150,000 from a hotel card program (as well as the program's 4,500 hotels for its merchant base) and another 45,000 cardholders from *Gourmet* magazine's dining card program.[23] It thus instantly had a substantial base of cardholders, which it used to help sign up merchants.

A number of banks had also entered the payment card business, but their cards—sometimes called "shopper" cards—targeted a different cardholder and merchant base. These bankcards were typically held by "housewives," as the newspapers of the day put it, and could be used only at retail stores in the locality the bank did business.

In this era, regulation restricted banking operations to, at most, a single state. In theory, an individual bank could have expanded its card program beyond its banking region. But, since cardholders were often recruited from the ranks of bank depositors and since one of the goals was to cross-sell banking services to merchants that signed up for the card program, banks did not generally attempt this strategy.

All told, there were about forty such regional bankcard programs in the industry's early days.[24] Two of the largest were those of Bank of America, which later evolved into Visa, and Chase Manhattan, which had such a difficult time building a viable business that it sold its card operations in 1962.[25] Chase Manhattan's problems were not unique; other bankcard issuers also sustained substantial losses at the start of the industry.[26] Nor were the T&E issuers much better off. Diners Club was profitable, but Carte Blanche was known in the trade as "Carte Rouge" for its steady losses. The American Express card was also in the red until 1962, the first year it made a small profit.[27]

The size of the California market put that state's bankcard issuers in a better position than most. Bank of America offered a card to consumers and retailers

---

23 Peter Z. Grossman, American Express: The Unofficial History of the People Who Built the Great Financial Empire 283 (1987); *American Express Gets Gourmet Guest Club's Credit Card Members*, Wall Street Journal, June 26, 1958.

24 Gavin Spofford & Robert H. Grant, *A History of Bank Credit Cards*, The Federal Home Loan Bank Board, Washington, D.C., June 2, 1975, at 6.

25 Gavin Spofford & Robert H. Grant, *A History of Bank Credit Cards*, The Federal Home Loan Bank Board, June 2, 1975.

26 *Id.*

27 *Bill Dodgers,* Newsweek, Feb. 22, 1963.

throughout the state. By 1966, eight years after its introduction, 1.8 million cardholders and 61,000 merchants had signed up.[28] Bank of America wanted the BankAmericard to be used by cardholders and merchants nationally. Since its banking operations were limited by regulation to California and expanding its card program nationally would have been a risky proposition requiring large amounts of capital, it sought to franchise the system instead. In the first year, seven banks in other states signed up to issue BankAmericards. Although this franchise system soon collapsed, it gave birth to what later became Visa and to the "co-opetitive" model that is responsible for the competitive market we see today.

THE BIRTH OF CO-OPETITION

In 1966, Bank of America had announced that it would license its BankAmericard program to selected banks across the country, thus becoming a national competitor to the three major T&E programs. Within two months of the BankAmericard announcement, American Express, Diners Club and Carte Blanche (which had been acquired by Hilton, and was later acquired by Citibank) responded by offering their own franchise opportunities.[29]

The franchise programs of the "big four" were viewed by some as "the most significant advance yet" in the industry.[30] The industry might have continued to evolve in this direction, with three or four major systems using banks as distributors. Under such a structure, each system would have tried to make a profit from its licensing agreements. For example, Bank of America charged its franchisees a royalty of 0.5 percent of cardholder volume and an entry fee of about $113,000.[31] With only three or four national franchises, every card transaction could have been subject to such a markup.

But for many banks, there were significant negatives to the franchise approach. Major banks, such as Wells Fargo in California and Chase Manhattan in New York, were not eager to issue someone else's card. The successful franchise systems we're familiar with—McDonald's, The Athlete's Foot, Mail Boxes Etc.—typically give unknown local entrepreneurs the opportunity to operate outlets with prominent brand names. Although some franchisees, particularly those with multiple locations, can become quite successful, they generally have little ability or desire to promote their own brand names over the franchiser's. This was not the case with the major banks.

---

28 *Credit Card Franchises Offered by Four Major Firms, supra* note 18.

29 *Carte Blanche Offering Its Credit Card System to Banks on Franchise,* WALL STREET JOURNAL, July 7, 1966; and *American Express, Like Rivals, Will Offer Franchises to Banks for Its Credit Cards, supra* note 19.

30 *Credit Card Franchises Offered by Four Major Firms, supra* note 18.

31 Entry fee is reported in 2002 dollars. *Bank of America Plus Nationwide Licensing of its Credit Cards,* WALL STREET JOURNAL, May 25, 1966.

Developing a proprietary card system was another option. Citibank, in addition to owning Carte Blanche, started its Everything Card in 1967 with the goal of developing a national brand.[32] Most other banks did not find the go-it-alone option attractive. It was risky, expensive and, even if successful regionally, would ultimately run up against the problems that led Bank of America to offer franchises to expand nationally.

The Solution—"Co-opetition"

The solution that many banks chose was to cooperate as well as compete. A patchwork of different bank alliances began to form at the same time as the franchising announcements. During the late 1960s co-opetition began to win out over the franchise model.

Various alliances of banks coalesced under the Interbank Card Association umbrella and adopted the Master Charge brand that had been created by several California banks. Citibank dropped its proprietary Everything Card and joined Interbank.[33] For the most part, the larger banks chose Interbank (now MasterCard) over BankAmericard (now Visa). In contrast to the BankAmericard franchise model, Interbank charged only a "modest" entrance fee and a small annual fee to cover the operating costs of the joint enterprise.[34] Even more important, as noted, banks sold a brand they jointly owned rather than that of another bank—a significant plus for banks harboring hopes of national expansion after regulation was loosened.

By many measures, BankAmericard was not doing badly. Under its franchise system, it had about 24 million cardholders in 1969 (a sizeable jump from the 1.8 million in 1966), along with a merchant base of about 500,000 (up from 61,000 in 1966).[35] But BankAmericard was in the process of being overtaken by Interbank,[36] and its franchisees were extremely restless.

The immediate problem was that many BankAmericard issuers were losing money.[37] There were authorization-call delays comparable to those already noted for the American Express system. In addition, there were seemingly insurmountable problems with processing transactions. In those days, each card transaction

---

32 *The Santa Claus that Makes You Pay, supra* note 21.

33 *The Santa Claus that Makes You Pay, supra* note 21.

34 *Id.*

35 National BankAmericard 1973 Annual Report, at 5-6; and *Credit Card Franchises Offered by Four Major Firms, supra* note 18.

36 The earliest available data for Interbank are for 1971, by which time it had over 40 percent more cardholders than BankAmericard.

37 Paul, Chutkow, Visa: The Power of an Idea 82-3 (2001); and Joseph Nocera, A Piece of the Action 66-9 (1994).

generated a slip of paper that had to be physically moved from the merchant to its bank, to the cardholder's bank, and then to the cardholder—the cardholder's bank and merchant's bank were often different. And there were also substantial problems with consumer fraud, as well as suspicions of fraudulent behavior by banks.

Under Dee Hock's leadership, BankAmericard (Visa) adopted a co-opetition framework similar to that of Interbank (MasterCard). We discuss Visa's organizational development in more detail than MasterCard's because there is a substantially more complete historical record—at least three books have been written that cover the formation of the Visa co-opetitive enterprise, but there are apparently none covering MasterCard.[38] However, the information available indicates that MasterCard, and the other bank alliances that joined MasterCard, operated similarly.[39]

The Principles of Co-opetition

Visa's co-opetitive enterprise was based on several principles:

- It should be equitably owned by all participants.
- It should be open to all qualified participants.
- Authority should be equitable and distributive.
- To the maximum degree possible, everything should be voluntary.

These principles enabled the banks to achieve what most, if not all, could not do on their own without taking on huge risks. And it enabled them to achieve what they could not have achieved as franchisees of a large, ambitious bank and what they could not countenance as the alternative—ceding control of the card industry to American Express and other bank and non-bank rivals. Even the biggest banks would have had difficulty developing a national card. The co-opetition model gave each member bank control over its own destiny while offering national reach.

Co-opetition provided the framework for addressing a number of problems related to the processing of transactions among member banks, which at the time still

38 Nocera, *supra* note 37; Chutkow, *supra* note 37; Dee Hock, Birth of the Chaordic Age 124-25 (1999).

39 Arnold H. Lozowick, *Compatible Bank Credit Cards,* Bankers Monthly Magazine, July 15, 1967; Arnold H. Lozowick, *Compatible Bank Credit Cards* (Second Part), Bankers Monthly Magazine, Oct. 15, 1967; and *The Santa Claus that Makes You Pay, supra* note 21. The history of relations between Visa and MasterCard is long and complicated. They initially had no members in common. Following an antitrust challenge to its exclusivity rule, Visa gave in when it could not gain support from the U.S. Justice Department. Substantial overlap of memberships of the two associations, known as "duality," followed. Then, in the 1990s, Visa and MasterCard began to separate, with both establishing partnership programs to discourage divided loyalty. Evans & Schmalensee, *supra* note 1, at 94.

relied on people and paper. A merchant had to make a phone call to get authorization for large transactions, and because that was time consuming, the merchant could accept transactions below a "floor limit"—commonly around $200—without calling.[40] Such a system was obviously both inefficient and conducive to fraud. Moreover, the settlement of transactions required each bank issuer-acquirer combination to exchange paper and settle accounts. As more and more members joined the system, the number of such issuer-acquirer combinations grew exponentially.

Another problem was the lack of trust among members.[41] Under the crumbling franchise system, some issuing banks would receive sales drafts, collect payment from cardholders and sit on the drafts for weeks earning interest to which they were not entitled.[42] Some merchant banks would lie about the size of the merchant discounts they collected, since they were supposed to turn over the entire discount to the issuing bank.[43] Restoring order and trust thus required that the banks agree on common rules and technology. The rules covered situations in which a customer with a card from one bank charged a purchase at a merchant serviced by another bank. The merchant's bank could cut whatever deal it could manage with the merchant, and the cardholder's bank could offer any terms it chose to cardholders. But the merchant's bank had to pay the cardholder's bank an "interchange fee," calculated according to a system-wide formula established by Visa. This reduced the uncertainty and instability that had plagued the BankAmericard franchise system.

An interchange fee is needed when the cardholder's bank differs from the merchant's in order to address the problems inherent to two-sided markets. In such a marketplace, rational pricing is not directly related to the costs incurred in serving a given cardholder or merchant for two reasons. First, prices have to be set to get both sides on board, and that means focusing on relative demand. Second, many of the costs incurred are common, and even when not obviously common the services provided benefit both sides. That implies allocating costs to one side or the other is arbitrary. For example, processing a card transaction benefits the merchant by providing payment and benefits the cardholder in settling for goods purchased. While overall costs do guide the sum of the prices charged to each side, they do not offer guidance in setting prices for any one side. These complications do not arise in a card system where a single company or bank serves both the cardholder and the merchant. In that case, there is no need for an interchange fee since the costs and revenue generated from both sides of the transaction flow to a single entity.

40 A $50 floor limit, common around that time, would be the equivalent of about $200 in 2002 dollars.

41 NOCERA, *supra* note 37, at 68.

42 *Id.*

43 *Id.*

The technology side of the Visa solution entailed building computer systems that could automate both the authorization of transactions at the time of sale and the bookkeeping among members to settle transactions at the end of the day. Visa built the BASE-I system using computers from Digital Equipment Corporation. The system allowed a merchant's authorization request to be transmitted over phone lines from the merchant to the cardholder's bank, with Visa providing backup when the cardholder's bank was closed.[44] BASE-I cut the wait for an authorization from four minutes on average to about forty seconds.[45] It cost about $10 million to build, but saved members over $100 million in fraud in its first year of operation.[46] Visa then set about building BASE-II, which computerized the entire interchange system and solved the other major member headache—the physical interchange of paper among members.[47] MasterCard, following Visa, made similar efforts to move its systems off paper and on to computers, with its own BankNet and I-Net systems.[48] Table 2 shows the division of cooperation and competition in the Visa system.

---

44 CHUTKOW, *supra* note 37, at 155.

45 NATIONAL BANKAMERICARD 1973 ANNUAL REPORT, at 4.

46 CHUTKOW, *supra* note 37. Figures reported in 2002 dollars.

47 *Id.*

48 EVANS & SCHMALENSEE, *supra* note 1.

Table 2. Cooperation Where It Makes Sense; Competition Everywhere Else

Cooperation	Competition
The creation of a brand—BankAmericard gave way to Visa in 1976. **Brand advertising**—slogans such as "It's everywhere you want to be." **Technology**—automated and improved the speed and convenience of transaction authorization and processing… developed the prototype merchant dial-in terminal in 1980, negotiated with suppliers to manufacture it, and offered interchange incentives to encourage merchants to install them… developed a neural network system to detect fraud… developed smart card technology and standards to allow members to issue them. **Product development**—led to a wide range of offerings (e.g., credit, debit, secured and smart cards) that members can offer to different consumer segments (e.g., consumers across the income spectrum, and companies from small businesses to major corporations).	**Fees**—banks compete on cardholder and merchant pricing. For cardholders, banks set annual fees, fixed/variable interest rates, late charges, and other fees. For merchants, banks decide what to charge for card transactions, as well as for any other services and/or equipment provided. **Features**—banks compete with cardholder and merchant features on top of features inherent in card transactions. For cardholders, banks could offer rewards such as cash back or frequent flier miles, affinity programs, online account access, annual account summaries, and the like. For merchants, banks could offer additional services such as assistance with providing or installing equipment, integration with merchant's accounts receivable systems, and enhanced reporting or analysis of transactions. **Service**—banks compete on service quality. For cardholders and merchants, banks could decide what level of service they wanted to offer (and pay for). **Marketing**—banks compete on techniques for acquiring cardholders, such as advertising, mailings, sophisticated cardholder data-mining strategies, Website development, and targeted offers.

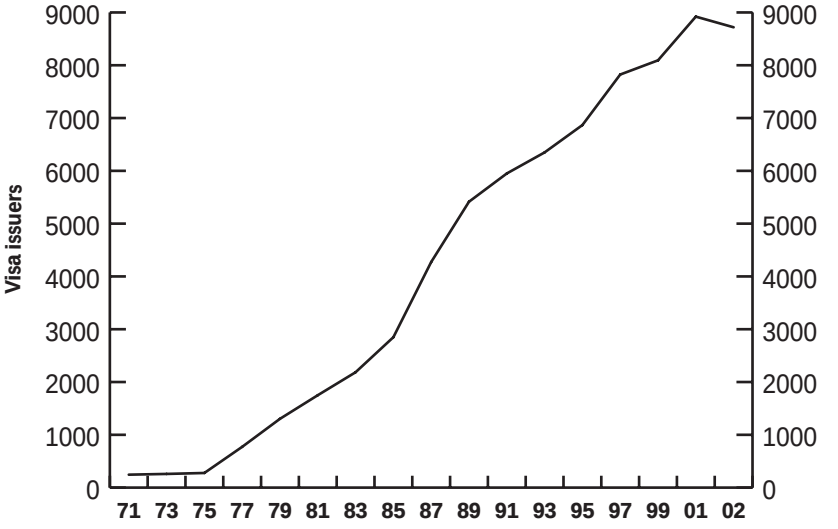
A few statistics illustrate that the associations run on a large amount of competition with a small dose of cooperation. Association membership fees and dues for Visa and MasterCard, which cover the costs of the centralized operations, account for only about one and a half percent of the total direct expenses incurred by members.[49] Visa's centralized activities are conducted by a staff of about 1,300 employees—less than half a percent of the total estimated card employees at Visa issuers.[50]

49 Data from Visa U.S.A.

50 2002 Providian Financial Annual Report; The Nilson Report, No. 780 (Jan. 2003); The Nilson Report, No. 784 (Mar. 2003). The number of card employees at Visa issuers is based on an extrapolation of the number of employees at Providian, which is effectively only in the card business. This is intended to give a sense of the relative order of magnitude, not to provide a precise estimate of such employees.

As shown in Figure 1, the mixture of cooperation and competition spurred explosive growth in the number of Visa issuers in the United States.[51] Although precise data are not available, MasterCard enjoyed similar issuer growth over the same period.

Figure 1. Growth of Visa Issuers in the United States, 1971-2002



Today, there are well over 8,000 issuers of credit, debit and charge cards in the United States.[52] They send out some 5 billion direct-mail solicitations a year[53] in addition to advertising in other ways. Competition has generated a state of constant flux in the industry, with new entry and expansion by existing issuers driving down prices and enhancing services to consumers.

Several giant non-financial firms, including AT&T and General Motors, started card programs in the late 1980s and early 1990s. Within four years of its entry, AT&T had issued 22 million cards (it subsequently sold its card operation to Citicorp in 1998).[54] After its first year, the GM MasterCard was labeled "the most

51 Figure 1 is based on data from Visa U.S.A. For historical data on issuers, Visa has used a method for estimating the number of independent issuers. More precise data, not available on a historical basis, indicate that this method has underestimated the number of issuers by about 15 percent in recent years.

52 *See supra* note 8.

53 W.A. Lee, *Poll: Lower Rates, Fewer Zero-Interest Offers,* American Banker, July 9, 2002. This figure is for credit card solicitations alone.

54 The Nilson Report, No. 588 (Jan. 1995).

successful launch in credit card history," attracting more than 5 million accounts.[55] Another important part of industry growth was the rise of "monolines," banks specializing in the card business, that have grown with essentially no branches or checking account customers. Between 1995 and 2002, for example, three monoline bankcard issuers, MBNA, Capital One and Providian, accounted for almost one-half of the net system-wide growth in the number of Visa and MasterCard credit cards outstanding.[56] These three issuers now account for over a quarter of all balances on Visa and MasterCard credit cards.[57]

Similar competition has emerged outside the United States. Bank of America had already signed up major banks in 11 other countries by 1966, the year the bank began its U.S. franchising efforts.[58] By 1972, the European franchisees were looking for independence from Bank of America.[59] They saw the Visa model in the United States as an attractive alternative. Visa worked with the European banks to form a global association, Visa International (then IBANCO), which came into existence in 1974 with the same co-opetitive model that Visa used in the United States. Today, Visa and MasterCard are accepted at over 29 million merchants worldwide.[60] There are about 1.7 billion cards bearing the Visa or MasterCard flag, which gives cardholders the option to pay with these cards at all of these merchants.[61]

The co-opetition model allows for a global system that is in some respects highly decentralized, allowing card issuers in different regions and countries to tailor their programs to local needs. This has enabled different kinds of cards and technologies to be tried in different countries. For example, high telecommunications costs encouraged the French card system to invest in "smart" cards. Although these cards haven't been as clever as the name suggests, they do enable merchants to authenticate transactions without connecting to a central computer. Thus in France, a cardholder types her PIN into a machine, which compares it to the number contained on a chip embedded in the card. In contrast, low telecommunications costs in the United States encouraged card systems to invest in computerized switching technologies, which have reduced authorization time to a few seconds.

---

55 *Where Cobranding is Today,* Credit Card Management, Nov. 1993.

56 The Nilson Report, No. 612 (Jan. 1996); The Nilson Report, No. 617 (Apr. 1996); The Nilson Report, No. 784 (Jan. 2003); The Nilson Report, No. 784 (Mar. 2003).

57 The Nilson Report, No. 780 (Jan. 2003); and The Nilson Report, No. 784 (Mar. 2003).

58 Chutkow, *supra* note 37, at 123.

59 *Id.,* at 126-131.

60 The Nilson Report, No. 786 (Apr. 2003).

61 The Nilson Report, No. 786 (Apr. 2003). In some countries with nationally branded cards the card will go through the national system rather than the Visa or MasterCard system unless the cardholder is from outside the country.

THE BENEFITS OF CARDS TO CONSUMERS AND MERCHANTS

The impact of the co-opetition model can be seen most clearly by examining how payment cards have diffused through the American economy, along with the specific benefits they have brought to cardholders and merchants.

In 1970, the earliest year for which we have data, 16 percent of households had one or more credit cards. By 2001 this figure had reached 73 percent. Unlike the T&E cards of the 1950s and 1960s, which were marketed mostly to the wealthy and to business travelers on corporate expense accounts, the typical household with a payment card today looks like the typical American household. Cards have become widely available—indeed, many of the poor and unemployed depend on them, and, for better or worse, college kids have them, too. The fraction of businesses that take cards has also increased: the domestic Visa merchant base, which totaled 820,000 in 1971, is six times larger today.[62]

Table 3 summarizes the benefits of today's competitive electronic payment card market to consumers and merchants, many of which are discussed in more detail below.

Table 3. Comparing Cardholder and Merchant Benefits of Electronic Payment Cards

Cardholder Benefits	Merchant Benefits
• Available across much of the socio-economic spectrum	• Fast, convenient and secure form of payment
• Use is often free unless credit is desired	• Guaranteed payment as long as secure procedures are followed
• Increased freedom to choose among merchants, not just where cardholder has charge account or is known well enough to have check accepted…can shop for bargains around town or on the Internet	• Eliminates need to operate in-house credit plans
• Avoid having to carry a lot of cash or a checkbook	• Puts smaller merchants (including minority/women-owned merchants) on equal footing with larger merchants
• Zero liability for fraud or loss	• Access to vast majority of consumers
• Right to dispute merchant charges	• Critical to growth of Internet and mail order merchants
• Manage finances more efficiently with one monthly bill	• Critical to growth of travel industry
• Travel is easier and cheaper	• Allows hotels and car rental agencies to take a virtual deposit
• Important non-discriminatory source of credit for disadvantaged groups and small business owners	• Allows merchants to provide a payment choice valued by many of their customers

62 Figures are adjusted for the growth in retail establishments over time. Visa U.S.A.; The Nilson Report, No. 784 (Mar. 2003); U.S. Census Bureau, Statistical Abstract of the United States: 1995; and U.S. Census Bureau, Statistical Abstract of the United States: 2000.

Transactions Are Fast and Secure

Consumers and merchants value the speed and ease with which card transactions take place. It typically takes just a few seconds between the time a consumer presents a card and the time the merchant returns the receipt for a completed transaction.[63] Consumers do not have to carry checkbooks and spend time getting their checks approved. They also do not have to carry wads of cash, or go to the trouble of keeping cash on hand in anticipation of their spending needs, or lose the float on cash that could otherwise be earning interest in bank accounts.[64] Nor, with the zero-liability guarantees on most cards, need they worry about theft or fraud.[65] For their part, merchants have little worry of theft and are guaranteed payment so long as they follow some basic rules.

Most Retail Transactions Can be Completed Electronically

Merchants and consumers can use payment cards for most retail purchases. Almost all retailers take payment cards today—the main exceptions are those that deal primarily in small-ticket items, like the corner newspaper stand.

Already pervasive in retailing, the use of electronic payment cards is now expanding into many other areas. The fact that 48 percent of all consumer expenditures, by volume, are still made with checks, and another 20 percent with cash indicates there is ample room for growth.[66]

Debit cards have led to payment card system gains in a number of merchant categories. From 1994 to 2001, payment card use increased by: 375 percent in supermarkets (from 8 percent share to 38 percent), with about three-fifths of the growth coming from debit cards; 92 percent in discount stores such as Wal-Mart (from 26 percent share to 50 percent), with about 85 percent of the growth coming from debit cards; and 76 percent in gas stations (from 33 percent share to 58 percent), with about two-thirds of the growth coming from debit cards.[67]

---

63 United States v. Visa, 163 F. Supp. 2d 322 (S.D.N.Y. 2001).

64 One study found that cardholders, on average, held $815 less in checking accounts than individuals without bankcards. Evans & Schmalensee, *supra* note 1, at 94.

65 There are limitations on these guarantees. For example, gross negligence (such as long delays in reporting unauthorized activity) or fraudulent actions by the cardholder may result in greater liability for the cardholder.

66 The Nilson Report, No. 777 (Dec. 2002). Data on the use of cash and checks to pay for consumer expenditures are not centrally collected. These estimates are broadly consistent with other available estimates.

67 Calculations based on data from the Visa Payment Systems Panel Study. Debit volume includes both PIN debit and signature debit.

Payment Cards Have Become Better and Cheaper Over Time

In 1966 merchants paid between 5 and 7 percent of each transaction to American Express. At 6 percent, and given annual per card charges of over $1,700, annual merchant payments per card were roughly $106 a year—compared to only $45 dollars paid by a typical American Express cardholder.[68] Visa's fee structure was more merchant-friendly, charging them only 3-5 percent.[69] Most cardholders didn't pay an annual fee; interest rates on credit balances were around 18 percent. That seems hefty, given an inflation rate of only 2-3 percent at the time. But operating costs were high during the start-up phase of the industry, and many issuers were still unprofitable.

Today, merchant discounts are down to an average of 2.6 percent for American Express, about 2.1 percent for Visa and MasterCard, and about 1.5 percent for Discover.[70] No-fee cards are the norm for all the major systems—even for many rewards cards. (You may have to pay a fee if you want miles from your favorite airline or Membership Rewards from American Express.) The average interest rate is down to around 14.4 percent (with an inflation rate comparable to that of the mid 1960s).[71]

Even as cardholder and merchant fees have declined, the bundle of services both parties typically receive with each card transaction has expanded dramatically. Table 4 tracks changes in cardholder and merchant benefits for Visa credit cards in 1982, 1992 and 2002.

---

68 Figures are in 2002 dollars. Card fee information from GROSSMAN, *supra* note 23, at 303. Charge volume data from *Credit Card Franchises Offered by Four Major Firms, supra* note 18.

69 *The Charge-it Plan that Really Took Off,* BUSINESS WEEK, Feb. 27, 1965.

70 American Express 2002 Annual Report; Data from Visa U.S.A.; Discover Wants to Triple its Share of Network Market, CardFAX, July 7, 2000 (midpoint of 1.5 to 1.6 percent cited).

71 Lavonne Kuykendall, *Despite Market, Card Issuers Still Profitable, Fed Reports*, AMERICAN BANKER, June 24, 2002.

Table 4. Changes in Visa Credit Card Holder and Merchant Benefits, 1982-2002

	1982	1992	2002
Cardholder	• 1.9 million merchants • $50 fraud liability limit • choice of about 1,900 issuers	• 2.7 million merchants • $50 fraud liability limit • choice of 6,142 issuers • gold card features • some rewards and affinity options	• 5.3 million merchants • zero-fraud liability • choice of 6,227 issuers • gold, platinum and signature card options • thousands of rewards and affinity options • on-line account access
Merchant	• 59 million card base	• 138 million card base • electronic terminals	• 258 million card base • electronic terminals • integration with cash register and accounts receivable

Merchants and Consumers Get Many Benefits Associated With Electronic Payment Cards

Merchants usually work with an "acquirer" or "processor" to handle their electronic payment card transactions.[72] These businesses provide a bundle of services that leverage the ability of payment cards to complete transactions with customers. For example, a smaller retailer typically gets the following services:[73]

- Assistance with acquiring and installing terminal equipment
- Authorization services when customers present their cards
- Maintenance of transactions records
- Daily funds transfers to cover card purchases
- Troubleshooting transaction processing problems
- Specialized reports, such as analyses of card purchasing patterns

72 For Visa, only a Visa member can enter into a contract with a merchant. However, Visa members can, and often do, contract with outside firms, third-party processors and independent sales organizations (ISOs) to provide most of the relevant services to the merchant.

73 Evans & Schmalensee, *supra* note 1, at 113-14.

Electronic Payment Cards Facilitate Financing For Consumers and Merchants

Merchants obtain another benefit that we now take for granted. Credit cards can provide both long-term and short-term financing, and some debit cards likewise enable consumers to access a line of credit at their bank. Before payment cards became popular, many consumers had to either save to buy durable goods such as appliances or use very high cost sources of credit, such as payday lenders and rent-to-own shops. The widespread availability of card-based credit has helped many businesses sell more goods and services—often because it has become cheaper for consumers to finance purchases.[74] It has also helped businesses avoid the cost of setting up their own loan programs. Larger retailers ran in-house credit programs—but many merchants lacked the size or sophistications to do this well. (Of course, some retailers, especially department stores, made considerable profits from financing purchases at high interest rates. In part for this reason, as late as 1987 over a quarter of the top 50 department stores with their own store card programs did not take Visa or MasterCard.[75]) Credit cards thus allow smaller merchants to compete on a more equal footing with larger ones.

Most consumers have at least one card that permits them to finance purchases. This enables people to pay over time for durable goods, such as TVs and computers, that provide benefits over many years. It also enables them to smooth spending decisions and the receipt of income. Most people receive regular paychecks but may need to buy more goods in one month than another. Financing enables them to spend in excess of their paychecks in one month and repay the loan in other months when they need to make fewer purchases.

Electronic Payment Cards Offer Important Features to Consumers

Consumers commonly receive a variety of ancillary services from card issuers. Consider, for example, the Plus Rewards Platinum MasterCard credit card from MBNA.[76] The cardholder receives the standard benefits that go with every MasterCard: the ability to charge purchases conveniently at 5.3 million

74 I do not want to overstate this. Payment cards can increase each merchant's sales individually but the aggregate effect across all merchants is a more complicated issue since merchants are competing to take sales away from each other. The aggregate effect on consumption and production comes from the general reduction in transactions costs for consumers and merchants, the introduction of a more efficient mechanism for financing purchases, and the easing of liquidity constraints for households.

75 The Nilson Report, No. 398 (Feb. 1987).

76 *See* MBNA Website (visited Jan. 7, 2003) <https://www.applyonlinenow.com/USapp/Ctl/redirect?CV_sourceCode=T3KX&CV_MC=A0000004UC>.

merchants in the United States and 29 million worldwide,[77] with zero liability for fraud and rights to dispute any fraudulent behavior by a merchant. The cardholder also receives the benefits associated with every Platinum MasterCard: insurance coverage on car rentals and travel, extended warranties and theft/loss insurance on purchases made with the card, and 24/7 card replacement and emergency cash.[78] Additionally, the cardholder receives the specific benefits offered by MBNA: merchandise and travel rewards, discounts at select on-line merchants, a toll-free number to call for customer service, and on-line account access. For all of this, the cardholder pays no annual fee, is offered a 1.7 percent introductory interest rate for the first six months, followed by a 12.99 percent rate.[79] If this doesn't appeal, there are hundreds of other cards available from MBNA's Website alone,[80] not to mention those from thousands of other issuers.

Electronic Payment Cards Help to Create New Products and Services

Some products and services thrive thanks to electronic payment cards. These can be divided roughly into four categories.

- First, travel. With a card, you can arrive in a foreign city with just enough cash for a cab and incidentals, using your card to cover virtually all other purchases. Global ATM networks even make it possible to wait until you arrive to obtain local currency.
- Second, transactions in which the consumer rents a durable good and the merchant needs assurance that it will be returned in good condition. Companies that rent cars, heavy equipment and videos are good examples. They require customers to leave a card number that can be charged if the customer returns the items late, damaged, or not at all. The alternative, demanding cash deposits, would be a serious hindrance to transactions in many rental businesses.
- Third, hotels and even some upscale restaurants use electronic payment cards as payment guarantees to protect themselves against customers who don't show up for reservations. These businesses take down a card number, which they only charge if the customer does not show or does not cancel with proper notice.

---

77 The Nilson Report, No. 784 (Mar. 2003); and The Nilson Report, No. 786 (Apr. 2003).

78 *See* Platinum MasterCard cardholder benefits (visited Jan. 7, 2003) <http://www.mastercard.com/findacard/credit/guide_credit_platinum.pdf>.

79 *See* MBNA Website (visited Jan. 7, 2003) <https://www.applyonlinenow.com/USapp/Ctl/redirect?CV_sourceCode=T3KX&CV_MC=A0000004UC>.

80 *See* MBNA Website (visited Jan. 7, 2003) <http://www.mbna.com/credit_index.html>.

- Fourth, Web-based companies. Electronically transmitted digits are the natural means of payment on the Internet. And electronic transactions are the means of payment for almost all consumer-to-business transactions. PayPal is one recent challenger to payment cards in this arena. But it, too, indirectly relies on payment cards since its customers often fund their PayPal accounts from their card accounts.

Credit Cards Have Provided Widespread Access to Credit

Credit cards provide consumers with a line of credit that requires no collateral or down payment and needs no special authorization to activate.[81] Within modest limitations, card credit can be paid back as quickly or as slowly as the consumer chooses. Credit cards, like all payment cards, free consumers from carrying lots of cash or a checkbook together with various forms of identification. Most come almost fully insured[82] and therefore reduce consumers' risk of loss due to theft or accident.

As noted earlier, credit cards help consumers break the rigid tie between consumption and income. Of course, not all consumers need or want to use credit lines. *Convenience users* write one check at the end of each month instead of many during the month, and they always pay their card bills in full. *Revolvers*, by contrast, use payment cards as an important source of credit, one permitting them to take out instant loans to cover purchases. In 2001, some 54 percent of households with active credit cards were revolvers in the sense that they had an outstanding balance on at least one of their credit cards.

Although credit cards are a preferred source of credit for many consumers, it is important to note that, for some, cards are the *only* available source of credit. It is relatively easy to obtain secured loans—loans for which the lending institution uses the borrower's automobile, house or other assets as collateral. It is much more difficult to obtain unsecured loans for which the lender has to rely entirely on predicting whether that borrower is able and willing to repay the loan from income or savings. Credit cards do not necessarily offer the lowest lending rates for all consumers—the lowest rates are generally offered for the lowest-risk loans, such as secured loans. However, due to the nature and structure of credit card issuance, cards make credit available to many consumers who lack access

81 This is not true for credit cards known as secured cards. Secured cards allow credit to be extended against a consumer's deposit held at his or her lending institution.

82 For most credit cards today, including Visa, MasterCard and Discover, the cardholder has zero liability if the card is lost or stolen. American Express offers zero liability for Internet transactions and a $50 liability limit on other transactions. Liability information available at Visa, MasterCard, Discover and American Express Websites (visited Nov. 8, 2002) <http://www.usa.visa.com/personal/cards/card_comparison_chart.html>; <http://www.mastercard.com/general/zero_liability.html>; <http://www.discovercard.com/discover/data/apply/fraudprotect.shtml>; <http://www.10.americanexpress.com/sif/cda/page/0,1641,5962,00.asp>.

to other types of secured or unsecured lending. Credit cards thus allow the vast majority of people to benefit from the convenience and greater consumption possibilities that buying on credit offers.

Some commentators have blamed the rise in bankruptcies on the increased availability of credit from card issuers.[83] An alternative explanation looks to the falling costs of default—the decline in social stigma associated with bankruptcy as well as the decline in legal penalties. One study found that "increases in credit limits and other changes in risk composition explain only a small part of the change in default rates over time," and instead attribute the bulk of the increase to changes in the willingness of people to declare bankruptcy.[84] This would suggest that if we, as a society, want to decrease bankruptcies, the solution may be to make declaring bankruptcy more costly—the approach embodied in the recent bankruptcy reform initiatives. Attempts to tighten the availability of credit cards may harm the people who have the fewest, and most costly, alternative sources of credit.

Over the years millions of Americans have found that credit cards have helped in a pinch—sometimes very important pinches.

- **Entrepreneurs—**Credit cards are an important source of financing for many small businesses. The 1998 Survey of Small Business Finances found that 68 percent of small businesses used credit cards (which provide short-term credit during the billing and grace periods) and 16 percent revolved balances (beyond the grace period).[85] Seventy-one percent of small businesses that faced serious credit market problems—those with the fewest and most expensive alternatives for credit—used credit cards, with 30 percent revolving.[86]
- **The Unemployed—**When a household's income suddenly vanishes, the need for credit to sustain consumption can be quite urgent. And because people can rarely anticipate unemployment, they may find it difficult to save for the proverbial rainy day. Credit cards, therefore, can be quite useful in helping the unemployed make the transition between jobs or careers. In 2001, for example, households headed by unemployed workers carried credit card balances that were, on average, more than one and a half times the size of those carried by households that were headed by the employed.[87]

---

83 *See* discussion in David B. Gross & Nicholas S. Souleles, *An Empirical Analysis of Personal Bankruptcy and Delinquency,* 15 The Review of Financial Studies 319 (2002).

84 *Id.* at 322.

85 Calculations based on data from the Survey of Small Business Finances.

86 *Id.*

87 Calculations based on data from the Survey of Consumer Finances.

- **Low-Income Households—**People in low-income households used to be trapped in a vicious cycle. Either they were unable to get credit, or they were forced to use high-cost sources like "rent-to-own" shops or payday lenders. In either case, these consumers had great difficulty in buying small durable goods—like television sets and household furniture—that they could afford through small monthly payments. The credit card industry has increasingly been able to provide "mainstream" credit to these individuals. This has not been a matter of altruism. The industry, through the development of sophisticated computer techniques for identifying lower income individuals who are likely to use credit responsibly, and through averaging risk over large numbers of these borrowers, has been able to lend profitably to this income group. This, in turn has enabled low-income households to borrow at relatively low rates and to build credit histories that eventually make it possible for many to qualify for house mortgages.

TYING IT ALL TOGETHER: THE CO-OPETITION MODEL AND THE DIFFUSION OF CARDS THROUGH THE AMERICAN ECONOMY

Several factors have facilitated the diffusion of cards throughout the American economy and accelerated the delivery of benefits to consumers and merchants. All of these factors have their genesis in the introduction of the cooperative-competition model upon which the Visa and MasterCard associations are based.

Industry standards have helped considerably. All cards work with the same card readers at retailers—that is true for American Express and Discover cards as well as Visa and MasterCards from any of the thousands of banks that issue those cards. Around 1980, as all the major card systems were trying to move toward electronic terminals at merchants, they all realized that merchants would never install 3 or 4 separate terminals. Even though they might have wanted to compete on this dimension, they realized the solution was to agree on a set of industry-wide standards and protocols.[88]

Industry norms have helped as well. Partly as a result of federal consumer protection regulations, card systems and members have adopted similar rules for cardholders and merchants. For example, cardholders generally have the right to question merchant charges. That reduces fraud. It also makes it harder for merchants to act in bad faith—for example, requesting that a customer leave a card number to hold an item, then not delivering the merchandise but charging the card anyway.

88 CHUTKOW, *supra* note 37, at 164.

Most card systems also forbid merchants from discriminating against customers with cards: they have "honor-all-cards" rules that require merchants choosing to accept their card brand to accept all cards bearing the brand. This helps consumers because it gives them assurance that if the merchant has a sign indicating that it takes a particular brand of card and the consumer carries that brand, that merchant will take the consumer's card. This provides consumers freedom in choosing how they want to pay. This also helps the card systems introduce new products. When American Express launched its Blue Card in 1999, it was able to tell consumers that they would be able to use the card at merchants that had signed up with American Express.[89] Wal-Mart and other retailers sued Visa and MasterCard, claiming this rule violated the antitrust laws. They wanted to be able to take credit cards without taking debit cards. As a result of a settlement, retailers will be able to do so starting in January 2004.[90]

Last, but hardly least, are advances in computers and communications technologies. Visa's processing system, VisaNet, can process up to 4,000 transactions per second—more than 40 billion transactions annually.[91] In one hour, Visa is capable of processing more transactions than all stock exchanges in the world handle in a day.[92] VisaNet has more than nine million miles of communication lines—that's enough fiber to circle the globe 400 times—and 30 terabytes of storage. Without the advances in computing and communications in the last quarter century, the growth of electronic payment cards would certainly have been far slower.

Computers have also helped make cards available to a much wider spectrum of the American public through the use of credit scoring programs. With sophisticated math and vast amounts of data, these complex models are the most nondiscriminatory method yet devised to evaluate consumer creditworthiness. In addition to determining initial credit extensions, credit scoring computer programs can now provide early warning signals of individuals who may be developing credit problems as well as of individuals who may be using cards fraudulently.

---

89 *American Express Launches Blue,* American Express News Release, Sept. 8, 1999 (visited Nov. 7, 2002) <http://home3.americanexpress.com/corp/latestnews/blue.asp>.

90 Philip Klein, "Visa, MasterCard to Pay $3 Bln in Debit Card Suit," *Reuters*, May 1, 2003.

91 *See* Visa U.S.A. Website (visited Nov. 7, 2002) <http://usa.visa.com/personal/about_visa/newsroom/visa_technology.html>.

92 *See* Visa U.S.A. Website (visited Nov. 7, 2002) <http://usa.visa.com/personal/about_visa/newsroom/visa_factoids.html>.

The early visionaries of the payment card industry saw the payment card systems as backbones for exchanging value electronically between consumers and merchants, and indeed, paying or being paid electronically with a plastic card has become a way of life for most consumers and merchants in the United States. As things have developed, the systems provide a platform that businesses can use to provide many different kinds of services to consumers and merchants that are related to value exchange. All payment cards have the same core functionality—the ability to consummate electronically an exchange of value between a consumer and a merchant. This vision of digital money exchanged over computer networks continues to shape the payment card industry, even moving into the virtual world with online transactions that involve no plastic card, just a fifteen or sixteen digit account number, as the industry enters its second half-century.

PAYMENT CARD INDUSTRY PRIMER

Howard H. Chang,
NERA Economic Consulting

I. INTRODUCTION

This primer covers some of the basic facts needed to understand the payment card industry. Some of these facts are well known. These days, we're all familiar with credit cards. Many of us, however, have probably not given much thought to prepaid cards and their potential significance. For lower-income individuals who have a regular job but don't have a checking account, getting their salary on prepaid cards can offer significant savings and convenience over having to cash a paper check.

Other important industry facts have to do with the structure of the different systems. American Express, for example, is a fairly typical company. It sells its products and makes money for itself much as almost all companies do. MasterCard, on the other hand, is a cooperative that operates for the benefits of its members, running some centralized operations while leaving the bulk of the work (including efforts to make a profit) in the hands of individual members. Members cooperate in agreeing on and funding MasterCard's activities but compete vigorously with each other in soliciting cardholders and merchants. MasterCard is not in the business of making money from being MasterCard—all those catchy "Priceless" advertisements help members sell cards but don't fill up MasterCard's coffers.

Another industry characteristic is the presence of consumers on two sides—cardholders and merchants. All card systems must attract enough consumers on each side to be successful. Systems such as Visa and MasterCard have to coordinate the banks that serve cardholders ("issuers") with the banks that serve merchants ("acquirers"). They do this via the "interchange fee"—a fee paid by the acquirer to the issuer on each transaction.

Finally, the structure on the issuer and acquirer sides of the payment card industry is important. Both sides are highly competitive. The issuer business closely fits the textbook economic model of a highly competitive industry—cardholders can choose from and switch among many competing issuers. The acquirer business is more concentrated, as the increased scale needed to serve merchants efficiently has driven smaller firms out of the business, but the remaining larger firms compete aggressively on price, especially for the business of major retailers.

II. CARDS

Before turning to the unusual aspects of the payment card industry, some basics are in order. First, what exactly are payment cards? Roughly speaking, payment cards fit into three broad categories—"pay later," "pay now," and "pay in advance"—depending on when the cardholder has to pay the issuer. This primer focuses on "general purpose" payment cards that can be used at many merchants, as opposed to store (e.g., Sears) and gasoline (e.g., Mobil) cards that can be used only for purchases from the merchant that issued the card.

A. Card Types

Charge cards and credit cards fit in the "pay later" category. There were 617 million credit and charge cards in the United States in 2002.[1] For a charge card, the cardholder can use the card to buy goods and services during the month without having to pay immediately for the purchases. When the bill arrives at the end of the month, the consumer typically has a grace period of two to three weeks to pay in full, after which she faces steep late fees and the risk of cancellation.

Credit cards are also in the "pay later" category, but they offer the additional option of financing purchases.[2] Cardholders can pay their credit card bill in full, writing one check at the end of the month instead of many checks during the month—those who do this regularly are called "transactors." Or cardholders can rely on their payment cards as a source of credit—those who do this regularly are called "revolvers." Revolvers pay only a portion of their monthly charges, and incur finance fees as a result. Of course, any given cardholder could be both a transactor and a revolver over time, choosing to finance purchases when money is tight and to pay off credit cards when it is not. Financing helps consumers coordinate the timing of consumption and income.

There are specific types of credit and charge cards targeted toward businesses: purchasing cards, corporate cards, and business cards. These are generally referred to collectively as commercial cards. Purchasing cards are used by corporations for high-volume, low-dollar transactions, such as purchases of office supplies. They provide a way to streamline purchasing operations by replacing paper invoices and purchase orders, and are potentially important for Internet-based business-to-business (B2B) transactions. Corporate cards give employees a convenient way to cover travel and entertainment expenses without cash advances. Business cards are targeted toward smaller businesses and can be used both for office purchases as well as travel and entertainment expenses. They can also come with a line of credit that the business can use as a source of financing. All commercial cards typically come with enhanced reporting that allows companies to track and analyze outlays.

Debit cards belong to the "pay now" category. With debit cards in the United States, cardholders pay by having the money taken directly out of the checking account when the purchase is made or within a day or so afterward, rather than at the end of the month. (In Europe, deferred debit cards, where there is a monthly aggregate deduction at the end of the month, are common.) Virtually all debit cards double as ATM cards, allowing the cardholder to withdraw cash from her bank account.

Debit cards work in two different ways. Signature debit cards, offered on the Visa and MasterCard systems, are authorized with a signed receipt. A MasterCard sig-

1 The Nilson Report, No. 784 (Mar. 2003).

2 Secured credit cards extend credit that is secured by a consumer's deposit, held by her bank. They fit somewhere in between pay later and pay now cards.

nature debit card, for example, can be used at any MasterCard merchant. If your ATM card has a Visa or MasterCard logo on the front, then it works as a signature debit card. PIN debit cards, offered by systems such as STAR and Pulse, are authorized by entering a PIN on a PIN pad. These PIN debit systems started as ATM systems but have added debit functionality at merchant locations that have been willing to install PIN pads. (These systems are often referred to as electronic funds transfer (EFT) systems.) Your ATM card can be used as a PIN debit card on those systems whose logos are shown on the back of your card. (Signature debit and PIN debit transactions are also referred to in the industry as "offline" and "online" debit, respectively, although both types of debit are electronic.) Even though people refer to signature debit *cards* and PIN debit *cards*, it is almost always the same physical card that contains both types of debit functionality. (Many cards only offer PIN debit functionality, but the number of cards that offer only signature debit functionality is negligible.) In 2002, there were 249 million debit cards with PIN debit functionality in the United States, of which 175 million also offered signature debit functionality.[3]

Prepaid cards (also called stored value cards) belong in the "pay in advance" category. They require funds to be deposited in advance for use later at merchants. This can be an efficient means for one party to transfer funds to a second party. For example, with payroll cards, prepaid cards targeted towards employees without a bank account, employees receive their salaries in the form of a payment card rather than a paper check. The payroll card allows employers to issue paychecks in a more efficient, less costly manner than paper checks. Un-banked employees, in turn, save the 2 to 3 percent processing fee commonly charged by check cashing services.[4] According to one estimate, the savings from avoiding the 3 percent service charge on each paycheck would cumulatively save an individual around $15,000 over his or her lifetime—a considerable sum for employees with modest income.[5] Prepaid cards are currently a very small part of the industry but represent a potential area of substantial growth. By some estimates, employers pay as much as $500 billion annually in paychecks to individuals without traditional checking accounts.[6]

B. Card Technology

Payment cards can also differ in the type of technology used on the card. In the United States, the majority of payment cards are "dumb" in that only limited

3 The Nilson Report, No. 784 (Mar. 2003); The Nilson Report, No. 785 (Apr. 2003).

4 *Fostering Mainstream Financial Access*, Chicago Fed Letter (February 2001) (visited Nov. 7 2002) <http://www.chicagofed.org/publications/fedletter/2001/>, at 2.

5 *Fostering Mainstream Financial Access*, Chicago Fed Letter (February 2001) (visited Nov. 7 2002) <http://www.chicagofed.org/publications/fedletter/2001/>, at 2.

6 Lavonne Kuykendall, *Users and Uses of Payroll Cards Proliferate*, Am. Banker, July 24, 2002.

information can be stored on the magnetic stripe on the card. The system's intelligence instead resides in a central database and is accessed via the network that is linked to the payment cards. In contrast, a smart card contains a microchip that stores most of the needed information on the chip, which may be updated periodically by connecting to the network.

In France, smart card acceptance is already well established. In the early to mid 1980s, France lacked the inexpensive, reliable phone network available in the United States. As a result, authorizing payment cards centrally over a dial-up network was costly, but foregoing authorization for some transactions was risky.[7] By moving the intelligence to the card in the late 1980s, and requiring consumers to enter a PIN that matches the one stored on the card before a transaction is authorized, the French system was able to reduce payment card fraud substantially.[8] Being an early adopter also had costs, however, for the French system as it has since had to upgrade its smart card infrastructure to accommodate newer standards. Moving to smart cards in the United States at that time did not make sense as most transactions were authorized over the central network. U.S. card systems focused instead on making the intelligence at the system end smarter by, for example, developing programs that would detect potentially fraudulent activity based on the types of transactions made on a card. Even though magnetic stripe cards may be "dumb," the overall system is quite "smart." The business case for smart cards is still uncertain in the United States, but some tentative steps have been taken.

Transit systems appear to be one area where changing to smart cards is a smart move. (These are not, however, general purpose payment cards.) For regular commuters, smart cards can be far more convenient than traditional fare cards. For city transit authorities, smart cards can standardize the fare system across several modes of travel and can reduce maintenance costs, as the readers are more reliable than those for magnetic-stripe cards.[9] Unlike payment card systems, which have both consumers and merchants to worry about, a transit system can decide unilaterally that it wants to switch to a new technology. Transit authorities in Baltimore, Chicago, Hong Kong, London, San Francisco, Seoul, and Washington, D.C., have or are about to introduce smart cards.[10] Partly because more and more cities are moving to smart transit cards, prices for cards

7 Jeffrey Kutler, *French-U.S. Consensus Could Advance Smart Card Dialogue*, AM. BANKER, June 29, 1998.

8 Jeffrey Kutler, *French-U.S. Consensus Could Advance Smart Card Dialogue*, AM. BANKER, June 29, 1998.

9 Donald Davis, *Shopping For Smart Cards*, CARD TECHNOLOGY, Apr. 01, 2001.

10 Burney Simpson, *Public Sector Takes the Lead in Adopting Chips*, CARD MARKETING, Mar. 1, 2002; *Transit Smart Card Test Planned for the Bay Area*, CARD MARKETING, Jan. 1, 2002; Donald Davis, *2003 Industry Outlook: Chip Cards Break New Ground*, CARD TECHNOLOGY, Dec. 1, 2002; and Donald Davis, *The Contactless Wave*, CARD TECHNOLOGY, Jan. 9, 2003.

and readers, which comprise the major costs of switching to smart cards for transit authorities, have dropped significantly in recent years as volumes of shipments have increased.[11]

American Express offered the first general purpose smart card in the United States in 1999—the Blue card.[12] Some Visa and MasterCard issuers now also offer smart cards. As of today, most of these cards do not provide additional features at brick-and-mortar stores, but do offer greater security and electronic wallet features for Internet shopping.[13] These issuers helped to solve the problem of getting merchants to install smart card readers for internet transactions by offering free card readers that cardholders attach to their computers and can then use at all internet merchants.[14]

Another potential push for smart cards in the United States could come from large retailers who are considering smart cards for sophisticated loyalty programs. For example, Target started issuing a Visa smart card in late 2001 and installed readers in almost all of its stores.[15] Such firms can benefit from these loyalty programs without facing the full chicken-and-egg problem of getting smart cards into the hands of consumers and at the same time convincing other merchants to install smart card equipment in their stores.

III. SYSTEMS

The major payment card systems in the United States are American Express, Discover, MasterCard, Visa, and PIN debit systems such as STAR and Pulse. American Express, MasterCard, and Visa are also the three major global card systems.

---

11 Donald Davis, *Shopping for Smart Cards*, CARD TECHNOLOGY, Apr. 1, 2001.

12 *American Express Launches Blue*, American Express New Release, Sept. 8, 1999 (visited Jan. 17, 2003) <http://home3.americanexpress.com/corp/latestnews/blue.asp>.

13 American Express website (visited Jan. 17, 2003) <http://home4.americanexpress.com/blue/about_chip_reader.asp?Entry=80>; Citibank website (visited Jan. 17, 2003) <http://www.citibank.com/us/cards/cardserv/smartcrd/?>, and First National Bank website (visited Jan. 17, 2003) <http://www.firstnational.com/fnb/personal/smartcards/benefits.asp>.

14 American Express website (visited Jan. 17, 2003) <http://home4.americanexpress.com/blue/card_reader_types.asp?entry=80>, Citibank website (visited Jan. 17, 2003) <http://www.citibank.com/us/cards/cardserv/smartcrd/?>, and First National Bank website (visited Jan. 17, 2003) <http://www.firstnational.com/fnb/personal/smartcards/benefits.asp>.

15 Lavonne Kuykendall, *Target Aims To Break Chip Card Impasse*, AM. BANKER, June 20, 2001.

A. System Competitors

American Express is the oldest firm and oldest system. The company itself was founded in 1841 to provide express delivery services; it entered the payment card business with its Green charge card in 1958. American Express added a credit card, Optima, in 1987 and a smart card, Blue, in 1999. Visa and MasterCard entered the industry in 1966, but Visa's roots extend farther back to a franchise system started by Bank of America in California in 1958.[16] Discover entered in 1985 when Sears Roebuck & Co. introduced the Discover Card, capitalizing on its tremendously successful store card. In 1993, Sears spun off its card operations to its Dean Witter subsidiary, which later merged with Morgan Stanley Group, Inc. in 1997.[17]

The largest of the PIN debit systems, STAR, was started as an ATM system in 1983 and added debit functionality a year later, although debit did not take off until well into the 1990s.[18] Through a wave of mergers and acquisitions in the late 1990s and early 2000s, a number of ATM systems (also known as electronic funds transfer, or EFT, systems) including STAR, Honor, MAC, and CashStation are now one system operating under the STAR brand and owned by Concord EFS, which provides a range of processing services to merchants and financial institutions in addition to operating STAR.[19]

In the United States, Visa has a 45 percent share of purchase volume on payment cards, followed by MasterCard with 26 percent, American Express with 14 percent, STAR with 5 percent, and Discover with 4 percent.[20] While Visa had become much larger than MasterCard in terms of credit volume up to the mid-1990s—Visa's share of association credit volume in 1996 was 64 percent versus 36 percent for MasterCard[21]—their relative prominence today differs substantially depending on the type of card—credit versus debit. Visa has 58 percent and MasterCard has 42 percent of credit volume across the two systems, while the numbers for debit volume are 78 percent for Visa and 22 percent for MasterCard.[22] (MasterCard's share of outstandings on credit cards is actually higher than Visa's, at 51 percent, because major MasterCard issuers tend to have

16 David Evans & Richard Schmalensee, Paying with Plastic: The Digital Revolution in Buying and Borrowing (1999), at 11.

17 David Evans & Richard Schmalensee, Paying with Plastic: The Digital Revolution in Buying and Borrowing (1999), at 10.

18 Faulkner & Gray, Debit Card Directory 2000, at 22, 30.

19 Ed Roberts, *Concord EFS Acquires Credit Union 24 Network As Part Of Expansion*, Credit Union Journal, Jan. 20, 2003.

20 The Nilson Report, No. 784 (Mar. 2003); and The Nilson Report, No. 785 (Apr. 2003).

21 The Nilson Report, No. 640 (Mar. 1997).

22 The Nilson Report, No. 784 (Mar. 2003).

higher levels of outstandings relative to purchases.) MasterCard's resurgence in credit has come as some major issuers such as Citigroup, traditionally a predominantly Visa issuer, have chosen to align with MasterCard, while Visa's success in debit is the result of its decision to make a major push for its signature debit card, Visa Check, starting in the mid-1990s.

B. System Differences

To fully explain payment card system operations would require a separate paper. For our purposes here, though, just two essential concepts are necessary. First, how are the systems organized? Second, who pays what to whom?

American Express and Discover are proprietary card systems that both issue their own cards to consumers and sign on merchants to accept those cards (at least within the United States and at least for now).[23] These two systems are referred to within the industry as "three-party systems" because they are comprised of three separate participants: the merchant, the cardholder, and the payment card system in between the two. American Express sets all of the fees that the various parties pay, including the annual fees that consumers pay for their cards and the fee that retailers pay on American Express transactions, known as the "merchant discount."

MasterCard and Visa add a couple more players to the mix. Both systems are organized as cooperatives made up of thousands of member banks. Thus MasterCard and Visa are sometimes referred to as "four-party systems," comprising the merchant, the cardholder, the merchant's bank (or "acquirer"), and the cardholder's bank (or "issuer"). (The card system is really a fifth party although the "four-party" terminology is standard.)

Each cooperative provides its members with a range of services. The cooperative runs the processing infrastructure, manages the brand, and engages in system-level research and development. It also provides a set of system rules that members must follow. The cooperative operates on a not-for-profit basis—member fees are set at a level that is expected to cover system costs (including funds for working capital and contingencies)[24]—and does not set prices to cardholders or merchants. It does not care about system-level profits, instead focusing on

23 This could change as a result of the U.S. v. Visa et al. litigation, where the U.S. Department of Justice is seeking to eliminate Visa and MasterCard's rules that prohibit their respective members from issuing for American Express or Discover.

24 United States v. Visa, 163 F. Supp. 2d 332 (2001). MasterCard completed its reorganization as a stock rather than membership corporation on July 1, 2002. It is unclear whether this will affect its operation on a not-for-profit basis. Visa continues to operate on a not-for-profit basis and sets its system fees at cost. It should also be noted that the systems may have operating profits in a given year, but, unlike American Express or Discover, they are not in the business of maximizing those profits on behalf of their shareholders.

building an attractive platform that its members can profit from individually. Individual members, in competition with each other, solicit cardholders and merchants, set prices and other terms and conditions, process transactions (sometimes with the assistance of third-party processors), advertise and establish the brand image for their specific cards, and develop and implement card features.[25] The association model is one of "co-opetition"—cooperation plus competition.[26] Members *cooperate* in a few key areas that generate efficiencies for consumers and merchants, and *compete* in every other dimension.

STAR fits in a separate category. It is a four-party system because it has issuers and acquirers that contract with cardholders and merchants. Unlike MasterCard and Visa, however, it is not run for the benefit of its members. It is a for-profit company and is in the business of making money from the STAR system for Concord EFS, its parent company. Concord gets to set the rules and pricing for STAR, although it needs to ensure the continued participation of its issuers and acquirers.

C. System "Duality" Versus Loyalty

In the early days of the payment card industry, the lines between the Visa and MasterCard co-opetitives were fairly stark. Banks belonged to one or the other association, but not both. Nonetheless, some banks wanted to belong to Visa *and* MasterCard, which initiated considerable discussion among members of the two associations. The issue of the effect on competition of duality (overlapping membership in the two associations) is not clear-cut and has been the subject of a good deal of debate for almost thirty years.

The tradeoff is between system-level competition and bank-level competition. In theory, with duality, members belonging to both the Visa and MasterCard networks could discourage ardent system-level competition—especially of the type that was designed purely to take business from the other system—to the detriment of consumers. While limiting advertising might not harm any consumers, reduced incentives to invest in research, development, and system innovations could. Even this is not entirely clear as members still want the associations to be as efficient as possible (because that lowers the members' cost) and because much of what the associations do is ultimately focused on gaining share at the expense of cash and checks.

Without duality, on the other hand, bank-level competition might have been diminished, especially in the early days of the industry. In the early 1970s, before the advent of nationwide competition, Visa and MasterCard were more dependent on local banks for signing up cardholders and merchants. If banks could have

25 David Evans & Richard Schmalensee, Paying with Plastic: The Digital Revolution in Buying and Borrowing (1999).

26 *See* Adam M. Brandenburger & Barry J. Nalebuff, Co-opetition (1997).

only belonged to one system or the other, local competition between banks might have been lessened.

Different times have brought different responses to the tradeoff between bank-level and system-level competition. In the early 1970s, Visa attempted to prohibit duality, arguing that the cost of reduced competition with MasterCard outweighed any benefits from inter-bank competition. This led to a lawsuit filed against Visa by one of its members. The case settled before going to trial, and in its wake, the U.S. Department of Justice refused to take a firm stand on duality. Visa, fearing additional lawsuits, therefore eliminated all restrictions on duality (in both issuance and acquiring) in 1976. With contractual constraints eliminated, dual membership increased dramatically almost overnight.

By the early 1990s, however, the trend towards duality began to reverse. Dual membership was an important freedom when the foremost need of the payment card industry was expanding its networks. Once both associations reached critical mass, though, the benefits of duality began to wane. Banks began to specialize in just one brand as the merits of loyalty came into focus. For example, by concentrating on one payment card system, large banks are able to wield greater bargaining power over the direction of the cooperative. The large banks had also become proportionally larger during the 1990s and their threats to shift business from one association to the other had started to pose the danger of destabilizing an association. Recognizing the shift, both MasterCard and Visa began to offer partnership programs to banks agreeing to center their card business on just one system.[27]

Visa and MasterCard also attempted to enhance member loyalty and system stability by prohibiting members from issuing for American Express or Discover. That is, members had to commit to being exclusive to the cooperatives as long as they wanted to remain members. They were free, however, to sell off portfolios to the proprietary systems or to leave the cooperative altogether. The U.S. Department of Justice challenged both duality (or what was left of it) and exclusivity as antitrust violations in a suit filed in October 1998.[28] The district court's decision in October 2001 found in favor of the government on the exclusivity claim and in favor of the associations on the duality claim. That decision has been stayed pending appeals by the associations. The appellate court rejected the associations' appeal in September 2003, and unless that is reversed on further

27 The entry of nonbank issuers and the divergent responses taken by Visa and MasterCard also reduced duality. In the early 1990s, several industrial companies decided to issue credit cards. Chief among these were AT&T (with its Universal card), General Motors, and General Electric. Visa opposed membership for these nonbanks and announced a moratorium on admitting nonbanks to its association in late 1990. In contrast, at the time MasterCard had more to gain from allowing additional issuers, as its network was smaller than Visa's. MasterCard thus welcomed AT&T and many other nonbank issuers. Even though Visa lifted its moratorium in early 1992, nonbanks continued to issue primarily MasterCard cards.

28 For a discussion of the issues in the case, *see* Howard H. Chang, David S. Evans, & Richard L. Schmalensee, *Has the Consumer Harm Standard Lost Its Teeth?*, AEI-Brookings Joint Center Related Publication (August 2002) (visited Mar. 10, 2003) <http://www.aei.brookings.org/publications/abstract.php?pid=263>, reprinted in this volume.

appeal, American Express and Discover will have the right to enlist Visa and MasterCard members as issuers.

IV. ISSUERS AND ACQUIRERS

The two sides of the card business, issuing and acquiring, have evolved quite differently over time. On the issuing side, the original issuers that started the business—such as American Express, Citigroup, and Bank of America—are still going strong but have faced waves of new entrants over the years. On the acquiring side, banks have become less important over the years as major processors such as First Data Corporation have gained increasing prominence in the business. One common characteristic is the vibrant competition in both the acquiring and issuing businesses.

A. Issuing

There are four major categories of issuers of payment cards: proprietary systems (which act as their own issuers), depository institutions, monoline banks, and nonbanks. Among the fifty largest issuers, proprietary systems (which act as their own issuers) accounted for 26 percent of the dollar value of transactions on credit and charge cards in the United States in 2002.[29] American Express was the largest issuer, with 18 percent, and Discover was the fifth largest with 7 percent.[30] (Unfortunately, much of the available detailed data, discussed in this section, include only credit and charge cards.[31])

Depository institutions—banks or near-banks such as credit unions that offer checking account and related services to consumers—account for the largest portion of payment card charge volume: 50 percent of the gross credit and charge card volume of the top fifty issuers in 2002. Of the top ten issuers in 2002, five were depository institutions. These included Citigroup, Bank One, J.P. Morgan Chase, Bank of America, and U.S. Bancorp.[32] Although most MasterCard and Visa cards are issued by banks that offer checking account and other consumer banking services, most of these cards are issued to consumers who do not purchase those services from the issuing bank. In fact, in 2001, only 17 percent of

29 The Nilson Report, No. 780 (Jan. 2003); The Nilson Report, No. 781 (Feb. 2003); The Nilson Report, No. 784 (Mar. 2003).

30 The Nilson Report, No. 780 (Jan. 2003); The Nilson Report, No. 781 (Feb. 2003); The Nilson Report, No. 784 (Mar. 2003).

31 For example, issuer-level data are available only for credit and charge card volume and do not include debit volume. Including debit in these figures would lower share and concentration measures, as debit is generally less concentrated. In addition, the Federal Reserve survey and study discussed below only cover credit cards.

32 The Nilson Report, No. 780 (Jan. 2003); The Nilson Report, No. 781 (Feb. 2003); The Nilson Report, No. 784 (Mar. 2003).

all MasterCard and Visa cards were issued to cardholders who had at least one other banking relationship with the issuing bank.[33] Depository institutions are also the main issuers of debit cards.

The term "monoline" is simply a name used to refer to an issuer that engages wholly or primarily in issuing payment cards.[34] Monolines played a major part in growing the industry in the 1990s, although some have sold their portfolios or been acquired. Among the fifty largest issuers, monoline banks accounted for approximately 17 percent of credit and charge gross volume in 2002. Of the top ten issuers in 2002, two were monolines: Capital One and MBNA.[35]

In 2002, one of the ten largest issuers was a nondepository institution affiliated with giant nonfinancial corporations that entered the payment card industry in the early 1990s.[36] Together, nonbank issuers accounted for 7 percent of the charge volume among the top fifty issuers in 2002.[37] Other nonfinancial companies are closely associated with payment cards—for example, American Airlines and United Airlines. While consumers may think of those cards as airline cards, the banks involved (Citigroup and Bank One, respectively) count as the issuers in the statistics.

The payment card industry approaches a textbook example of competition. The textbook case of competition is an industry in which (a) a large number of competing firms vie for the consumer's dollar; (b) no seller is large enough to affect price significantly by itself; (c) firms can enter and exit the industry easily; (d) consumers have good information about choices available to them; and (e) consumers can switch vendors when better offers are available.

There are a large number of competing card issuers. A 2003 Federal Reserve System survey of 127 of the largest credit card issuers in the United States found

33 Calculation based on the Survey of Consumer Finances, Federal Reserve Board of Governors (2003).

34 Although some monoline issuers are chartered as credit card banks (some with charters that do not allow them to accept consumer deposits), others are chartered as standard depository institutions. MBNA, for example, is a nationally chartered bank just like Citibank. However, MBNA is often referred to as a monoline, since issuing credit cards is its primary business.

35 The Nilson Report, No. 780 (Jan. 2003); The Nilson Report, No. 781 (Feb. 2003); and The Nilson Report, No. 784 (Mar. 2003).

36 This was Household Bank, through which the General Motors card is issued. Household is not a traditional depository institution, specializing in consumer finance in addition to payment card issuance. Household could also be classified as a monoline bank, but we have categorized it with nonbanks because the General Motors card portfolio has been a substantial portion of its business. The General Motors card could also be characterized as one co-branded with General Motors—that is, a card issued by Household that is affiliated with General Motors, as opposed to being issued by General Motors. The line between a co-branded program versus one operated by a nonbank is not always precise.

37 The Nilson Report, No. 756 (Jan. 2002); and The Nilson Report, No. 760 (Mar. 2002).

that 54 distributed their cards nationally.[38] The same survey reported that 28 additional issuers distribute cards regionally in areas encompassing more than one state. All told, well over 8,000 issuers offered payment cards to consumers in 2002.[39] Many of these issuers could expand regionally or nationally if there was a market opportunity.

Compared with other industries, the largest payment card issuers are small relative to the industry overall. The largest issuer is American Express, which had a 16 percent share of all general purpose credit and charge card gross volume in 2002.[40] Economists and antitrust experts use the Herfindhal-Hirschman Index (HHI) to measure the degree of structural competitiveness.[41] This index combines information on the number of competitors and their relative sizes. According to the Justice Department merger guidelines, an index of less than 1,000 indicates a competitive structure while an index of more than 1,800 is a cause for concern (a gray area lies in between). The HHI for general purpose credit and charge card issuers was 816 in 2002.[42] A 2002 Federal Reserve study of credit card profitability has also noted the existence of "aggressive competition" in the industry.[43] The 4.9 billion card solicitations in 2002 attest to that.[44] Lastly, we all know from personal experience that it is easy to obtain information on credit card rates and features and to switch cards.

B. Acquiring

Many different actors play a role in the merchant's decision to accept payment cards and his choices of how to handle payment card transactions. The payment card systems set the ground rules for signing up merchants, such as deciding who can enter into contracts with merchants and prescribing some terms of those

38 *Survey of Credit Card Plans*, Federal Reserve System, Jan. 31, 2003 (visited Sept. 10, 2003) <http://www.federalreserve.gov/pubs/shop/tablwb.pdf>.

39 There were over 8,700 issuers from Visa alone. While most MasterCard credit issuers also issue Visa credit cards, MasterCard issuers that only issue debit would not be included in the Visa issuer count. In addition, data on banks that issue only PIN debit cards—those belonging to the ATM systems (such as STAR or NYCE)—and do not issue Visa or MasterCard credit or debit cards are not available.

40 The Nilson Report, No. 756 (Jan. 2002); and The Nilson Report, No. 760 (Mar. 2002).

41 HHIs are sometimes used as measures of concentration when analyzing antitrust markets. The use here of the HHI as a concentration measure for credit and charge card issuance is merely illustrative and not intended to imply that credit and charge cards constitute a market in the technical antitrust sense.

42 The Nilson Report, No. 780 (Jan. 2003); The Nilson Report, No. 781 (Feb. 2003); The Nilson Report, No. 783 (Mar. 2003); and The Nilson Report, No. 784 (Mar. 2003).

43 *The Profitability of Credit Card Operations of Depository Institutions*, Federal Reserve System Board of Governors Annual Report (June 2002) (visited Mar. 10, 2003) <http://www.federalreserve.gov/board-docs/RptCongress/creditcard/2002/ccprofit.pdf>, at 4.

44 W.A. Lee, *Card Offers Bounced Back in 1st Quarter*, Am. Banker, July 11, 2003.

contracts, and provide the authorization and settlement systems on which the merchant relies. The systems' fee structures are important determinants of the prices that merchants pay for processing payment card transactions. Banks were initially the major acquirers for payment card transactions for MasterCard and Visa. Over time they have subcontracted more and more of their tasks to third-party firms that act as processors (third-party processors) and as acquirers (independent sales organizations).

American Express and Discover each have their own direct sales forces to solicit merchants to accept their payment cards. They contact merchants, conduct advertising and other marketing activities, distribute terminals, and process transactions. Starting in the early 1990s both systems began to use outside firms (independent sales organizations or ISOs) to sign up small and medium-sized merchants to accept their payment cards.

MasterCard and Visa perform four closely related functions. First, they set the ground rules for who can contract with merchants and what the merchants are obliged to do when handling Visa or MasterCard transactions. Second, they operate the authorization and settlement systems that acquirers and third-party processors must access to process payment card transactions. Third, they establish fees, including the interchange fee that acquirers pay to issuers for each transaction; the interchange fee places a floor on the prices that merchants pay to their acquirers for processing payment card transactions (the associations do not set prices charged to merchants). Fourth, they develop and encourage system-wide innovations in transaction processing.

In combination, a variety of businesses provide a range of merchant-side services:

- signing up merchants and managing the relationship with the merchant;
- installing terminal equipment;
- providing authorization services when customers present their cards;
- keeping track of transactions and providing reports to merchants based on these data;
- transferring funds to the merchant on a daily basis to cover card purchases (also known as clearing and settlement);
- responding to merchant problems with card processing; and
- providing specialized services such as analyses of purchasing patterns at the merchant.

Some acquiring banks conduct all aspects of merchant acquiring, from signing up the merchant to transaction processing and customer service. Other banks serve as the customer's point of contact but outsource the processing function to third-party processors. Still others serve solely as the depository institutions where clearing and settlement occur; this is especially likely when an ISO or third-party processor is the active party in the merchant relationship.

Only members of the Visa and MasterCard systems can enter into contracts with merchants for acquiring, although member banks can work with third-party firms to do so. In the early days of the bankcard systems, merchants had to go to a bank (and it was probably a local bank) to obtain acquiring services. However, the acquiring business evolved over time, especially after 1990. It was difficult for banks to stay in the business as technological requirements increased required capital expenditures on computer equipment. Acquiring had become more of a high-tech industry than a financial business by the mid-1990s. Scale economies had become so important in processing that large bank acquirers or large third-party firms did the bulk of the processing. Whereas some banks outsourced their processing requirements to these third-party firms, most eventually just left the business.

Two types of third-party firms are important in the merchant acquiring business. Many banks that were in the acquiring business subcontracted one of the major aspects of acquiring—actually processing the transactions—to third parties. An industry segment grew from this, populated by firms known as third-party processors. By processing transactions for many acquirers and their merchants, third-party processors capture significant scale economies. Third-party processors also process transactions on the issuing side of the business. In the early days of the industry there was a niche for third-party firms to acquire small merchants that were often not serviced by bank acquirers. Any such nonbank acquirer is known as an "independent sales organization" (ISO). Typically, a large third-party firm will act as both a third-party processor and as an ISO, depending on the bank for which it is working. These terms are used somewhat interchangeably, although some industry people tend to reserve the term "ISO" for the firms that continue to focus on smaller merchants.

Third-party firms now control most of the processing business. Many now do everything from signing up the merchant to installing and maintaining equipment to processing transactions. Many of the banks that stayed in the acquiring business are acquirers in name only: their name is on the contract with the merchant, and they handle settlement and clearing, but the merchant's important relation is with a third-party firm. Today, most ISOs work on behalf of multiple systems to sign merchants. The terminals they sell are capable of diverting transactions to any of the major payment card systems. Moreover, although a merchant still needs to sign separate agreements for each payment card system, she typically needs to deal with only one ISO for billing and settlement. By 2002, nonbanks and banks involved in joint ventures with nonbanks controlled 53 percent of the bankcard acquiring business based on volume.[45]

By far the biggest player in the acquiring business is First Data Corporation (FDC). FDC, either alone or as part of joint ventures with various banks, handled

45 Includes nonbank merchant acquirers and banks involved in joint ventures with FDC. THE NILSON REPORT, No. 783 (Mar. 2003).

36 percent of total merchant volume in 2002.[46] As of 2002, FDC had formed ventures with 24 banks, including two of the top ten acquirers for that year.[47] FDC's largest joint venture partner, Chase Merchant Services, was the largest merchant acquirer overall in 2002, and FDC (exclusive of its joint venture contracts) was itself the sixth-largest acquirer.[48] FDC is also the leading processor on the issuing side, processing 33 percent of all U.S. cardholder accounts and 41 percent of all Visa and MasterCard accounts.[49]

The degree of concentration in the acquiring business depends on how the FDC joint ventures are viewed. When they are regarded as separate competitive entities, concentration is quite low. The HHI measure described above is 709 for acquirers, within the competitive range.[50] When the FDC alliances are treated as a single competitive entity, and the same for alliances formed by other processors, the HHI is higher, at 1,702.[51] (Because the details of how the FDC alliances are run, such as the relative control of FDC over pricing and other competitive decisions, are not public, the degree to which the alliance partners are true competitors is unclear. It is nonetheless instructive to consider the two possible extremes.)

Although the importance of scale has led to the prominence of FDC, and the increased concentration when viewed at the processor level, the industry is still

---

46 The Nilson Report, No. 783 (Mar. 2003); The Nilson Report, No. 784 (Mar. 2003). Fleet Bank, Moneris Solutions, Commerce Bank, Bank of Hawaii volumes were added to FDC's merchant processing total since First Data Merchant Services lists them on its website as Bank and Acquiring Partners. See "First Data's Bank and Acquiring Partners," http://fdms.com/bankPartners.asp?section_id=74 (downloaded August 19, 2003). It should be noted that data on merchant acquiring and processing are typically less precise than data on the issuing side. In addition, many of the details of the various alliances in the business are not public and it is therefore not always possible to know how volume should be apportioned between alliance members.

47 First Data Corporation, 10-K for Fiscal Year Ended Dec. 31, 2003, at 5-6; The Nilson Report, No. 783 (Mar. 2003).

48 The Nilson Report, No. 783 (Mar. 2003). The available statistics on acquirer shares report the volume of processors such as FDC as though they were acquirers, even though technically the acquirer is the bank member of the card associations that signs up the merchant. In addition to the FDC joint ventures, FDC has its own merchant services division that, in combination with Visa and MasterCard banks, signs up merchants.

49 First Data Corporation, *2002 Annual Report* (visited Sept. 10, 2003) <http://ir.firstdata.com/downloads/fd_2002_ar.pdf>, at 19, 34; The Nilson Report, No. 784 (Mar. 2003); and The Nilson Report, No. 785 (Apr. 2003). FDC's reported figures on card accounts managed were adjusted to account for store card and non U.S. card accounts. Assuming the merger between FDC and Concord EFS is consummated, FDC will also own the STAR network.

50 The Nilson Report, No. 783 (Mar. 2003); The Nilson Report, No. 784 (Mar. 2003); and The Nilson Report, No. 785 (Apr. 2003).

51 This figure treats the FDC alliances and the Nova Information Systems partnership each as a single entity. The Nilson Report, No. 783 (Mar. 2003).

widely regarded as a highly competitive, low margin commodity business.[52] Merchant fees (net of interchange fees) have come down in recent years as the result of "brutal competition between acquirers and by the exercise of leverage by major merchants."[53] Smaller merchants have also benefited from competition: "heated competition among acquirers has led to a convergence in the fees they charge their small to midsize merchants."[54] Although some relationship-specific assets are developed between acquirers and issuers, and larger merchants sign longer-term contracts, merchants are still quite ready to shop around: "Merchants are notorious for jumping from one portfolio to another whenever a better price comes along…the attrition rate for acquirers' merchant portfolios averages about 15% to 20% annually."[55]

---

52 Charles Marc Abbey, *National Merchants Revisited*, Credit Card Management, Dec. 27, 2002; and Lavonne Kuykendall, *Merchant Acquirers and ISOs Mirroring Each Other in Fees*, Am. Banker, July, 16, 2001.

53 Charles Marc Abbey, *National Merchants Revisited*, Credit Card Management, Dec. 27, 2002.

54 Lavonne Kuykendall, *Merchant Acquirers and ISOs Mirroring Each Other in Fees*, Am. Banker, July, 16, 2001.

55 Linda Punch, *Predicting Attrition*, Credit Card Management, May 2001.

IT TAKES TWO TO TANGO: THE ECONOMICS OF TWO-SIDED MARKETS[1]

David S. Evans,
NERA Economic Consulting

Japan's dating clubs—typically bars or cafes—offer startling ways to meet the opposite sex.[2] At one club, men and women sit on opposite sides of a glass divide. If a man sees a woman he likes, he can ask a waiter to carry a "love note" to her.

But it takes two to tango: enough men must participate to attract women, and enough women must show up to engage the men. The club must thus figure out how much to charge each of the sexes to get the right mix of patrons while still generating profits for the owners. One bar charges men $100 for membership plus $20 a visit, and lets women in for free. A pricing structure that obtains a disproportionate share of the revenues from men is common in singles bars, discotheques and other enterprises that are effectively in the matchmaking business.

A. WHAT ARE TWO-SIDED MARKETS?

Dating clubs are one example of a "two-sided" market, in which there are two classes of customers, and each type of customer values the service only if the other also buys the service. Indeed, in such markets the product or service only has value when it is consumed jointly.

Two-sided markets generate positive "externalities" by bringing the other side on board (lots of guys to meet). For that matter, two-sided markets only exist because of the inability of the two sides to internalize these externalities without an intermediary. Firms generate benefits for themselves (in the form of profits) and for society in general by figuring ways to internalize these externalities.

Many high-profile industries, including some that are central to the technologically based new economy, are grounded on business models similar to those of dating clubs. Consider these examples:

- Computer operating systems provide features that software developers can use in creating applications, along with the platform on which computer users can run the applications. Both software developers and users are needed for the operating system to be a viable product: the success of the Palm OS for handheld devices, Microsoft Windows for the desktop, and Sun Solaris for server computers all depend on attracting large numbers of customers on each side of the market.
- Video games have a parallel symbiotic relationship with proprietary game consoles such as the Sony PlayStation. Game developers have strong financial incentives to write for consoles that attract lots of players, while game enthusiasts will only buy consoles with lots of

1 For a more detailed discussion of the material presented in this paper see David S. Evans, *The Antitrust Economics of Two-Sided Markets*, AEI Brookings Related Publication 02-13 (Sept. 2002) (visited Oct. 21, 2002) <http://aei.brookings.org/admin/pdffiles/phpMt.pdf>.

2 Howard W. French, *Osaka Journal; Japanese Date Clubs Take the Muss Out of Mating*, N.Y. TIMES, Feb. 13, 2000.

games to choose from. Thus, console manufacturers must lure both developers and users.

- Payment card systems—credit, debit and charge cards—are yet another example. Consumers use them to make payments, while retailers use them to take payments. Merchants are more willing to accept cards that are more widely held by shoppers, and shoppers are more willing to carry cards that are widely accepted by merchants.
- Industries that "make markets" by arranging for buyers and sellers to meet each other are also two-sided markets: Internet-based business-to-business exchanges, real estate brokers, and corporate bond exchanges are but a few examples.

To succeed, any business in a two-sided market must create a pricing structure that brings balanced numbers to each side of the table. And strategies differ along with the factors that affect each side of the market differently.

Most computer operating system vendors do not seek significant revenues from software developers, choosing instead to collect from users of the operating system or from the sale of complementary hardware (such as the Palm organizers and Sun server computers). Sellers of video game consoles, by contrast, do earn significant revenues from the game developers. Charge cards, such as American Express's, earn a disproportionate share of their revenue from merchants. For their part, print media such as magazines and newspapers typically give readers content for a fraction of the cost of the service, collecting the bulk of their revenue from advertisers.

Note the key distinction here: unlike firms in traditional industries, those in two-sided markets must worry about the price *structure* as well as the price *level*. In two-sided markets, the product may not exist at all if the business does not get the price structure right.

Most, if not all, industries characterized by "network effects"—where the value of a product to each user increases with the total number of users—are two-sided markets. Think of the fax machine: you only value the machine if there are a lot of people to whom you can send faxes and who can send faxes to you. Indeed, network effects usually arise because the product is two-sided – a point that is obvious when there are two distinct types of customers, such as men and women in the dating club example.

Both two-sided markets and markets characterized by network effects raise novel questions about the workings of competition, and thus have attracted the interest of American and foreign antitrust enforcement agencies. Indeed, businesses that compete in two-sided markets have figured prominently in a variety of high-profile cases in the last decade:

- the AOL-Time Warner merger, where U.S. and European authorities investigated the impact on two-sided markets including Internet portals, magazines and free television;

- the credit card association investigations, where Australian and European authorities examined two-sided markets involving merchants and card users;
- the American, European and private antitrust cases against Intel, which competes in a two-sided computer hardware platform market;
- the Microsoft competition cases, where U.S. and European authorities investigated two-sided markets involving operating systems and software that might emerge as alternative computer platforms; and
- the probes into online securities broker-dealers, where six separate U.S. regulatory investigations and one European investigation are investigating possible anticompetitive behavior.

In some cases, the two-sided nature of the market is central to allegations of anticompetitive behavior. For example, the credit card investigations focused on the pricing structure used to balance two-sided demand, while *U.S. v. Microsoft* included the claim that Microsoft's strength on one side of the market (applications software) was the source of a barrier to entry to the operating system business. In other cases, the two-sided nature of the market provided an important backdrop for understanding the workings of the industry.

B. THE ECONOMICS OF TWO-SIDED MARKETS

A market is two-sided if at any moment (a) there are two distinct groups of customers, (b) the value obtained by one kind of customers increases with the number of the other kind of customers, and (c) an intermediary is needed to internalize the externalities created by one group for the other group. Two-sided markets are typically served by businesses that supply both sides and that adopt pricing and investment strategies tailored to getting—and keeping—both sides on board.

Jean-Charles Rochet and Jean Tirole have shown that firms in two-sided markets have to choose a *pricing structure* as well as a *pricing level* to maximize profits.[3] The pricing structure determines the *relative* prices charged on the two sides of the market—that is what men pay relative to women, software developers relative to software users, cardholders versus merchants. The optimal structure depends on the elasticities of demand and the marginal cost of providing services on both sides of the market. When properly set, the pricing structure marshals enough demand from both sides to make each side value the product.

None of the formal conditions for determining the price level or the price structure in models of two-sided markets corresponds to equating marginal revenue with marginal cost on either side of the market. In fact, such conditions have no meaning in two-sided markets, because there is no conceptual way to allocate the

3 Jean-Charles Rochet & Jean Tirole, *Platform Competition in Two-Sided Markets,* J. EUR. ECON. ASS'N (forthcoming).

increases in revenues from changes in prices to one side or the other. Changes in prices result in more "transactions" from which both sides benefit. Nor is there any useful way to allocate the costs. Often costs are jointly incurred, and any means of allocating them is arbitrary. These results are broadly similar whether the seller is a monopolist, or one of many competing firms selling to both sides of the market.

In practice, consumers in two-sided markets tend to engage in *multihoming*—that is, consumers on at least one side of the market rely on more than one seller of services. For example, game developers write for several consoles, merchants accept several brands of credit cards, and homebuyers often use the services of several real-estate agents. Here competing two-sided firms still must choose a price level and a pricing structure. However, the elasticities of demand on both sides of the market are increased by a factor that reflects the extent to which consumers multihome, and therefore have substitutes readily available.

C. BUSINESS MODELS IN TWO-SIDED MARKETS

Although the economics presented above is by necessity simplified, it illuminates the rationale for the business models that have been adopted in two-sided markets. Consider several issues that occur repeatedly in two-sided markets.

1. Getting Both Sides on Board

In two-sided markets, demand on one side vanishes if there is no demand on the other, regardless of how prices are set. Heterosexual men will not go to dating clubs if women do not attend. Merchants will not accept a payment card if none of their customers carry the card. Computer users will not use an operating system if applications software is not available. Sellers of corporate bonds will not use a trading mechanism if buyers won't bid.

One way to get both sides on board is to create a critical mass of users on one side of the market by giving them the service for free, or even by paying them to take it. Diners Club initially gave its charge card away—there was no annual fee, and users got the benefit of the float. Netscape gave away its browser to many users; after Microsoft raised the ante by giving away its browser to all users, Netscape followed suit. By the same token, Microsoft is reportedly selling its Xbox hardware below cost in order to build a base for game sales.[4]

Another way to solve the chicken-and-egg problem is to invest in one side of the market to lower costs. Microsoft gives away costly tools that help developers to write applications software for Microsoft platforms. Bond dealers take positions in their personal accounts if a bond is thinly traded and the long time delays between buys and sells would hinder the market's pricing and/or liquidity.

4 David Becker, *Xbox Drags on Microsoft Profit*, CNET.COM, Jan. 18, 2002 (visited Aug. 21, 2002) <http://news.com.com/2100-1040-818798.html>.

Subsidies or transfers to one side of the market helps the platform solve the chicken-and-egg problem by encouraging one group's participation—which in turn encourages the other group's participation. Bernard Caillaud and Bruno Jullien refer to this strategy as "divide-and-conquer."[5] From the perspective of the individual firm, such transfers can yield the added benefit of discouraging patronage of competitors. For example, when Palm provides free tools and support to PDA applications software developers to encourage them to write programs for the Palm operating system platform, it also gives them incentives to invest less in applications for other operating systems.

2. Pricing to Balance Interests

Firms in mature two-sided markets—i.e., those that have already gone through the entry phase in which the focus is on solving the chicken-and-egg problem—still must devise and maintain an optimal pricing structure. Generally, companies settle on pricing structures that are heavily skewed towards one side of the market. For example, in 2001, American Express earned 82 percent of its revenues (excluding finance charge income) from merchants.[6] Microsoft earns the bulk of its revenue from Windows by licensing the operating system to computer manufacturers and retail customers. Real estate brokers in the United States typically earn most or all of their revenues from the sellers.

Sometimes all the platforms converge on the same pricing strategy. Microsoft, Apple, IBM, Palm and other operating system companies could have charged more to applications developers and less to computer users. But they all independently decided that it made sense to charge little or nothing for developers' tools.

With debit cards, by contrast, pricing choices have varied widely. In the late 1980s, the ATM networks had a base of customers who used their cards to withdraw cash or to obtain other services at ATMs; no merchants honored these cards. To add merchant debit services, the ATM networks decided to charge a very modest fee (8 cents on a typical $30 transaction) to merchants. The goal was to convince retailers to install pin-pads that could read the ATM cards consumers already had, and to accept the personal identification numbers they already used to gain access to ATM machines.[7] It worked: the number of pin-pads increased from 53,000 in 1990 to about 3.6 million in 2001.[8]

---

5 *See* Bernard Caillaud & Bruno Jullien, *Chicken & Egg: Competing Matchmakers*, CEPR Working Paper #2885 (Apr. 24, 2001), at 16. *See also* Bruno Jullien, *Competing in Network Industries: Divide and Conquer*, IDEI Working Paper (Jul. 2001), at 1.

6 If finance charge revenues are included, American Express earned 62 percent of its revenues from merchants in 2001. *See* American Express Company Annual Report 2001 (visited Aug. 15, 2002) <http://www.onlineproxy.com/amex/2002/ar/pdf/axp_ar_2001.pdf>, at 35.

7 *See* David S. Evans & Richard Schmalensee, Paying with Plastic: The Digital Revolution in Buying and Borrowing 300 (1999).

8 *Id.* at 308-309; and The Nilson Report No. 759 (Mar. 2002), at 6.

For their part, the credit card systems had a base of merchants who took their plastic, but they did not offer cards that could be used to debit consumers' checking accounts directly. They imposed much higher fees on merchants than the ATM networks—about 38 cents on a typical $30 transaction.[9] Here, the strategy was to persuade banks to issue debit cards and for cardholders to take these cards, thereby putting pressure on merchants to accept them. The number of Visa debit cards in circulation did, in fact, increase from 7.6 million in 1990 to about 117 million in 2001.[10]

Two other factors influence the pricing structure in two-sided markets. There may be a sub-group of customers on one side of the market—Rochet and Tirole refer to them as "marquee buyers"—who are extremely attractive to customers on the other side of the market. The existence of marquee buyers tends to reduce the price to all buyers and increases it to sellers. A similar phenomenon occurs when some customers are extremely loyal to the two-sided firm—perhaps because of long-term contracts or sunk-cost investments. For example, American Express has been able to charge a relatively high merchant discount as compared to other card brands—especially for their corporate card—because merchants viewed the American Express business clientele as extremely valuable.

Corporate expense clients were thus marquee customers who made it possible for American Express to raise its prices to the merchant side of the market. In the online debit card market, however, card issuers faced "captive" customers: ATM cards could be used as online debit cards, so consumers did not need to be courted to accept the new payment form. Therefore, it has been the merchants—who must install expensive machinery in order to process online debit transactions—who have been courted.

3. Multihoming

Most two-sided markets accommodate several competing two-sided firms, and at least one side usually multihomes. Consider, for example, personal computers, where the two sides consist of PC users and developers of applications. End-users rarely multihome: they employ a single operating system. But developers do multihome. According to Josh Lerner of the Harvard Business School, 68 percent of software firms in the year 2000 developed software for Windows operating systems, 19 percent for Apple operating systems, 48 percent for Unix operating systems (including Linux), and 36 percent and 34 percent for proprietary non-Unix operating systems running on minicomputers and proprietary

9 The ATM systems typically charged a flat interchange fee per transaction, while the interchange fee set by Visa and MasterCard varied with the size of the transaction. The reported interchange fee comparison is from 1998, around the time of substantial growth in debit for the ATM and credit card systems. Evans & Schmalensee, *supra* note 7, at 300.

10 *See* The Nilson Report No. 760 (Mar. 2002), at 7; The Nilson Report No. 500 (May 1991), at 6.

operating systems running on mainframes, respectively.[11] In fact, in recent years the percentage of software firms developing for non-Microsoft operating systems has increased. The fastest-growing category has been firms creating software Unix operating systems, notably Linux.

Multihoming affects both the price level and structure. Not surprisingly, prices tend to be lower in the presence of multihoming—the availability of substitutes puts pressure on two-sided firms to keep prices down. The seller has more options dealing with a multihomed buyer on the other side, and can steer toward its preferred platform. As buyer multihoming becomes more prevalent, prices to sellers tend to decrease since they have more substitution options.

Even when multihoming is not common, the potential for multihoming may have significant consequences for pricing. The possibility of multihoming may encourage firms to lower their prices on the side of the market in which multihoming could occur. This discourages customers on that side from affiliating with other two-sided firms.

Note, however, that this does not generate a free lunch for all consumers. A seller facing multihoming on one side can charge more to customers on the other side, for whom fewer substitutes are available.

D. TWO-SIDED MARKETS AND SOCIAL WELFARE

Two-sided markets rarely accommodate large numbers of competitors, both because these markets exhibit network economies, and because it is usually expensive to solve the initial chicken-and-egg problem. At least up to a point, larger firms have advantages over smaller firms, because their scale delivers more value in the form of a bigger network. In the case of two-sided markets, larger firms are able to deliver a larger network of customers on one side of the market to customers on the other side of the market. Note, however, that a heterogeneous market base makes it easier to build multiple two-sided firms, because the presence of a wide variety of customers tends to limit the importance of network effects.

Firms in concentrated two-sided markets, like firms in all concentrated markets, may have opportunities to earn supra-competitive profits—that is, profits exceeding the level needed to attract capital to the industry after accounting for risk. Several factors affect the extent to which this can happen.

1. *The degree of competition*. If the competition is sufficiently intense, the losses incurred during the "getting both sides on board" stage of the industry may offset the profits earned during the mature phase. For

11 *See* Josh Lerner, *Did Microsoft Deter Software Innovation?* WORKING PAPER (Jan. 2002) (downloaded Aug. 15, 2002) <http://gsbwww.uchicago.edu/research/workshops/elo/lerner2.pdf>; and CORPORATE TECHNOLOGY DIRECTORY, EDITIONS 1990-2000. The percentages add up to 205, indicating substantial multihoming on the part of developers.

example, firms entering the payment card industry have all incurred sizeable losses during their startup phases.

2. *First-mover advantages*. In some markets, being first is critical. In others, it may even prove a disadvantage.

3. *The degree of contestability*. Because many of the two-sided markets are fast moving, current leaders often face considerable competition in the form of potential entrants—other platforms striving to displace today's leader.

4. *The presence of non-profits*. Two-sided markets in which non-profit associations determine the pricing structure are not likely to permit the participants to earn supra-competitive profits. Payment card associations have put what amounts to a non-profit in charge of managing a physical network for members and for determining pricing policies. Pricing is determined by competition among members of the association.

The reality that most two-sided markets support relatively few sellers and exhibit strong network effects raise familiar issues regarding the viability of competition and the logic of government intervention. By the same token, the pricing and investment strategies that firms in two-sided markets use to get both sides on board and to balance demand raise novel ones. Interdependence of demand casts a long shadow over these markets.

Rochet and Tirole make a number of simplifying assumptions that allow comparisons between prices chosen to maximize private interests under a variety of market conditions and the prices that would maximize social welfare. Strikingly, they conclude that a monopoly, a firm with competition, and a benevolent social planner would adopt similar price structures. Relative prices would differ somewhat. However, they find that prices preferred by firms (monopoly or two-firm oligopoly) would not be biased towards one side of the market compared to the pricing structure that would be adopted by a benevolent social planner. Hence, there is no reason to believe that the direction or magnitude of the cross-subsidies in real-world markets is systematically different from what a wise social planner would choose.

E. CONCLUSIONS

Two-sided markets are becoming increasingly important to the global economy. Firms that provide platforms for multiple customer groups—notably Microsoft in operating systems and Intel in microprocessors—are a critical part of the computer industry. Individual firms and business cooperatives create platforms for merchants and customers to facilitate a large and growing fraction of financial transactions in high-income countries. The increased importance of the Internet for household-to-household, business-to-household and business-to-business transactions, along with the emergence of e-pay systems on the Internet will

certainly accelerate this trend. And while it is now plain that the reach of most dot-coms exceeded their grasp, Internet-based businesses are sure to flourish in the future—and many are likely to be based on a two-sided model.

But two-sided markets are not just present in high technology; they are dotted throughout the economy. We began with perhaps a trivial example of dating clubs—discotheques, church clubs for singles, and local village matchmakers could have served just as well. Others range from real estate to video games to media firms. Some of the most recognizable brands in the world operate in two-sided markets: think of Bloomberg, Century 21, Sony and Nasdaq.

Two-sided firms behave in ways that seem surprising to those used to analyzing traditional industries, but in ways that seem like common sense once one understands the business problems they must solve. Firms must adopt price structures and investment strategies tailored to balancing the demands of the customer groups they must attract to their platforms – and then must induce to stay. That is a different (and harder) problem than those commonly faced by one-sided firms. American Express bet on a price structure skewed against merchants; it worked for many years, but eventually created great conflict. Visa has since surpassed American Express, a firm that was once dominant and seemed unbeatable.

Meanwhile, companies whose success we now take for granted made their mark by adopting price structures that originally seemed quite radical. Microsoft chose to cater to software developers. Bloomberg bet on a simple formula for its data terminals—a flat fee for subscribers and very modest charges for content providers.

There is no reason for regulators to steer clear of these industries or to scrutinize them with greater zeal. But they do need to be aware that different economic principles drive pricing and investment decisions in these industries. Prices do not—cannot—follow marginal costs in each side of the market. And price and investment strategies must optimize output by harvesting the indirect network effects available on both sides. Government failure to recognize these imperatives would put some of the most innovative firms operating in markets with exceptional productivity growth at risk.

THE GROWTH AND DIFFUSION OF CREDIT CARDS IN SOCIETY

David S. Evans,
NERA Economic Consulting

I. INTRODUCTION

Over the last thirty years, credit cards have democratized credit, with card ownership growing not only in total numbers, but across virtually all demographic groups. Credit cards are now used by every segment of our society, from college students to retirees, from the unemployed to hopeful entrepreneurs, from some of the poorest households to the wealthiest, and across all race, sex, and ethnic groups.[1] Credit cards enable their users to pay for things conveniently at 24 million merchants worldwide[2] and allow consumers to finance these purchases, an extraordinary convenience that enables consumers to match consumption to their long-run incomes rather than their weekly paychecks.

Before the introduction of MasterCard and Visa (both started under different names in 1966), consumers had to rely principally on cash and checks to make payments. Cash was neither convenient nor particularly safe for purchasing large items, and checks were almost useless far from home. Financing purchases was not easy either. Some stores offered installment credit, but most stores demanded immediate payment.

In the early days of credit cards, the typical holder of a Visa or MasterCard was a college-educated, upper middle class, white male.[3] Today, the typical holder of a Visa or MasterCard is, well, typical. Credit cards have pervaded all segments of society and, in doing so, have especially helped those who would otherwise have had the hardest time accessing credit. It is this growth and diffusion of credit cards that is documented in this paper.

Section II of this paper provides some background information on credit cards and describes the role of credit cards in the economy. Section III examines the growth of credit cards from 1970 to 2001. Section IV documents how credit card ownership has become demographically democratized.

---

1 This paper focuses on "general purpose credit cards", which can be used at many individual merchants for payment and financing. General purpose credit cards are available from two associations of banks and two proprietary companies. The bank associations are Visa and MasterCard. Member banks of these associations issue cards under those brand names. The proprietary companies are Discover Financial Services and American Express. Discover issues the Discover and Private Issue credit cards. American Express issues the Blue and Optima credit cards. The term "bankcards" refers to general purpose credit cards issued by MasterCard and Visa. When we refer to credit cards, we do not include store cards like the Sears card or charge cards like the American Express Green card or the Diners Club Card. This paper does not discuss debit cards, which deduct purchases directly from the cardholder's checking account. Debit cards were not widely issued or used until the early 1990s, but have grown rapidly in recent years. Nevertheless, information on debit cards remains limited in the Survey of Consumer Finances (SCF).

2 *The Nilson Report*, No. 762, Apr. 2002. This figure refers to MasterCard and Visa locations. Other cards can be used at a smaller number of locations. Since some locations take American Express and Discover but not Visa and MasterCard, the total number of locations that take at least one credit card is at least 24 million.

3 In 1970, according to the Survey of Consumer Finances, college-educated, white males in the highest income quintile were most likely to own credit cards.

This paper is based on the Survey of Consumer Finances (SCF), a survey that the Federal Reserve Board has been conducting since the end of World War II. The SCF is a highly regarded and oft-published source of information on the saving, spending and financing habits of American households. The SCF started including detailed questions on credit card use in 1970. The last SCF for which data are available was conducted in 2001.[4] Appendix A provides a more detailed technical background of the surveys.

The SCF has strengths and weaknesses. It provides data on credit card use among a random sample of the population along with extensive detail on the socioeconomic characteristics of these households, but the data people report to survey takers often are not completely reliable. For example, people tend to understate the amount of debt they have. As a result, the SCF is not the best source of data, for example, on the total bankcard debt of the American public—Visa and MasterCard have more reliable information—but the SCF is the best source of data for making comparisons between different segments of the public.

II. PAYMENTS, CREDIT AND OTHER ATTRIBUTES

As an alternative to cash, checks, and money orders, credit cards are useful for countless types of consumer transactions. Credit cards can be used in place of secured loans from banks or installment loans from stores to finance household durable goods such as computers or refrigerators. Likewise, small business owners are finding credit cards to be a good alternative source of business financing.

About 73 percent of all households have at least one credit card.[5] In 2001, there were almost 515 million Visa and MasterCard accounts alone, and nearly 550 million credit cards in the hands of U.S. consumers.[6] Consumers used those cards to purchase almost $900 billion worth of goods and services in 2001.[7] Although there are many types of payment cards, the remainder of this paper focuses on

4 The SCF is conducted every three years.

5 Note that if we exclude households below the poverty line (as reported in the *Federal Register* by the Department of Health and Human Services (HHS)), nearly 80 percent of all households own at least one credit card.

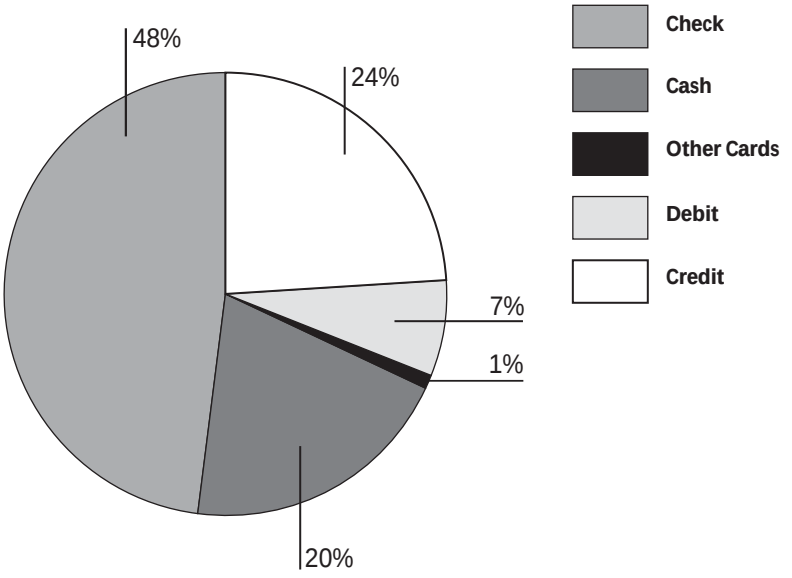
6 *The Nilson Report*, No. 760, Mar. 2002. This figure includes Visa, MasterCard, and Discover. To the extent that American Express also issues credit cards, this figure understates the total number of credit cards and total volume of spending on credit cards.

7 *Id.*

general purpose credit cards such as those issued under the Visa, MasterCard, Discover or Optima brands.[8]

Credit cards have become an important payment method. As Figure 1 illustrates, although checks still accounted for 48 percent of consumer expenditures in 2001, credit cards make up a significant and growing portion of payment transactions.[9] For example, 24 percent of the 2001 dollar volume of consumer expenditures were paid for with credit cards.[10]

Figure 1. Consumer Spending by Dollar Volume of Payment Methods, 2001



Note: Consumer spending does not include certain business-related expenditures reported by restaurants, airlines, auto-rental agencies, etc.

Source: *The Nilson Report*, December 2002, Number 777

8 The credit card industry has been developing and growing for the last thirty years. As a result, various credit card products have entered and exited. SCF questions are modified in each survey year to reflect the changes in credit card products over time. In 1970, for example, all general purpose credit cards were bankcards. The credit card questions from 1970 to 1983 therefore dealt solely with bankcards. For 1989 and 1992, credit card questions were broadened to include "bank-type cards", ostensibly to include Discover, which was started in 1985. By 2001, the credit card questions referenced solely Visa, MasterCard, Discover and American Express Optima cards. The SCF data do not (yet) include, for example, American Express's Blue Card, a credit card.

9 *The Nilson Report*, Dec. 2002, Number 777. Nilson estimates the share of consumer expenditures accounted for by each major payment method. Consumer expenditures as used by Nilson are, roughly speaking, equivalent to personal consumption expenditures less those consumption items that do not involve payment (such as the implicit rent "paid" on owner-occupied housing) as reported by the Bureau of Economic Analysis of the U.S. Department of Commerce.

10 *Id.*

The growth of credit cards has benefited consumers widely for several reasons. For consumers, credit cards provide a convenient method of completing transactions. Moreover, credit cards can help consumers coordinate the timing of consumption and the flow of income. Credit cards make people less tied to their periodic paychecks. If consumers see an item on sale today, they can buy it now and pay for it a few weeks later when their monthly statement arrives. And credit cards allow consumers to purchase items today based on their expected future earnings.

Credit cards are a convenient source of credit for both consumers and merchants. Consumers can use their cards at various merchants, yet make only one monthly payment. Merchants don't have to operate their own credit programs, allowing smaller retailers to compete more easily with national retail chains that have the resources and scale economies to offer consumers credit through store cards or installment loans.

Consumers who use their credit cards mainly as a convenient substitute for cash and checks, and write one check at the end of each month to pay their card bills in full, are called *transactors*. Consumers who use payment cards to finance purchases are called *revolvers*. In 2001, 54 percent of households with active credit cards were revolvers in the sense that they had an outstanding balance due on at least one of their credit cards. Of course, not all consumers can be neatly classified solely as either transactors or revolvers, but the designations are useful for our discussion.

For many consumers, credit cards may be the only available source of credit. It is relatively easy to obtain secured loans—loans for which the lending institution uses the borrower's automobile, house, or other asset as collateral. It is much more difficult to obtain unsecured loans—loans for which the lender has to rely entirely on the predicted ability of the borrower to pay from income or savings. Credit cards do not necessarily offer the lowest lending rates to all consumers—the lowest rates are generally offered for the lowest-risk loans, such as secured loans. However, due to the nature and structure of credit card issuance, credit cards provide unsecured credit to a far greater span of consumers than other types of secured or unsecured lending. Credit cards allow almost everyone but the impoverished to benefit from the convenience and greater consumption possibilities that buying on credit offers.

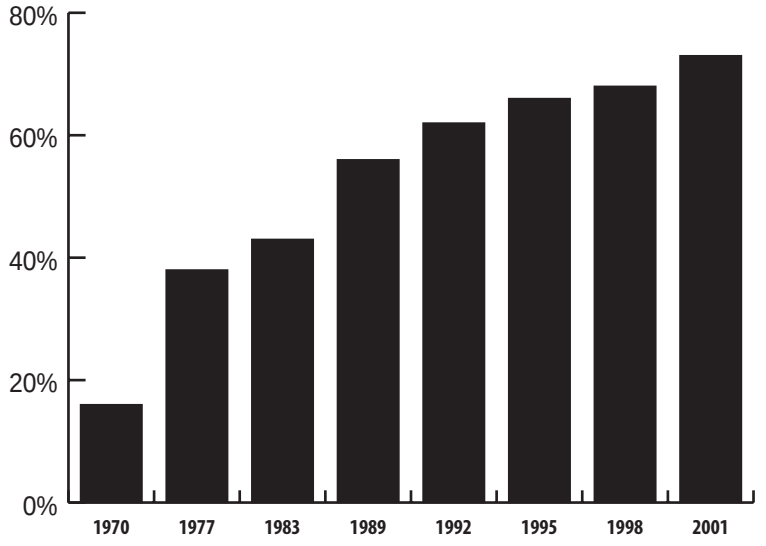
III. THE BROAD MASSES

A. Growth of Credit Cards Across the Entire Population

Figure 2 shows that between 1970 and 2001, the percent of households with at least one credit card grew almost five-fold: from only 16 percent to 73 percent. In 1970, households who had a credit card were generally the economic elite, but by 2001, people who did not have credit cards were on the economic fringes of society. In fact, approximately 70 percent of households without cards in 2001

had incomes under $30,300. About 35 percent of households without cards in 2001 fell below the poverty line.[11]

Figure 2. Percent of Households with at Least One Credit Card, 1970-2001



Source: Surveys of Consumer Finances, 1970-2001

B. Growth of Charge Volume

Credit card usage also increased between 1970 and 2001. In 1970 when general purpose credit cards were relatively new, they were used infrequently. For those households that had credit cards, the average monthly charge amount was about $136. (To make comparisons over time easier, all dollar amounts have been adjusted to 2002 dollars using the gross domestic product implicit price deflator.) By 2001, the average monthly household charges had more than quintupled to about $720.[12]

11 Note that we calculated the poverty line based on the poverty thresholds reported by the U.S. Census Bureau. The poverty line is determined both by household size and household income. The poverty line for two-person households in 2001, for example, was approximately $11,690, while the poverty line for four-person households in 2001 was approximately $18,290.

12 Survey respondents were asked how much they charged in the most recent month before the survey was taken. To arrive at these figures, we calculated the average response across all cardholding households.

In 1970, the average household with credit cards used their cards to make purchases that amounted to 4 percent of their total annual household income. By 1989, households on average were using their credit cards to make purchases that amounted to 11 percent of their total annual income. By 2001, that figure had risen to 18 percent.

C. Growth of Balances

In 1970, households on average carried a balance of about $279.[13] (Recall that all absolute dollar figures have been adjusted to 2002 dollars.) By 2001, the average monthly balance had grown to $2,095. These numbers, however, do not tell the entire story. Households have not only increased the size of their balances, the number of households carrying balances has also increased. In 1970, just less than 40 percent of all card-owning households held balances on their cards. By 2001, 54 percent were revolvers.

While total balances have grown over time because more households carry them, the size of the average balance itself has also grown. Concentrating for a moment only on revolvers and ignoring those households who do not carry balances, we can see to what extent the size of their balances has grown since 1970. The average household balance grew by more than five times, from $760 in 1970 to just over $3,900 in 2001.

D. Debt Composition Has Changed over Time

As households have increased their credit card borrowing over time, credit cards have displaced other forms of credit. Many households that used to rely on large department stores or consumer finance companies are now relying on their credit cards to take out loans. More households are substituting credit card debt for other forms of debt, and households are charging more on their credit cards now than they have in the past. Figure 3 demonstrates how the composition of household debt from consumer loans has changed over time.

The SCF defines consumer loans as loans for "household appliances, furniture, hobby or recreational equipment, medical bills, loans from friends or relatives or other loans." This category excludes mortgage loans, real estate loans or home equity lines of credit,[14] as well as loans for automobiles or mobile homes.

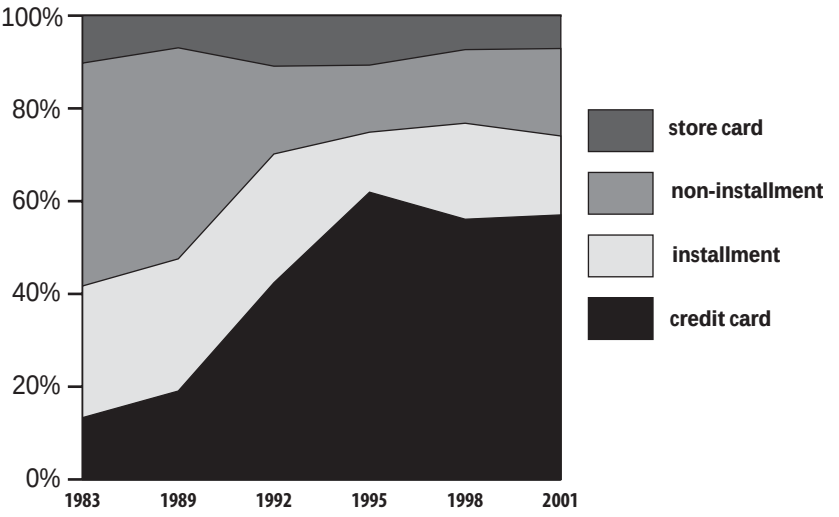
---

13 Survey respondents were asked how large a balance was left over after they made their most recent monthly credit card payment. To arrive at these figures, we calculated the average response across all cardholding households, including transactors. As we noted in the introduction, households do not report all of their debt. If our concern in this paper were to report the most accurate absolute figures available, we would have a problem. For this examination however, we are more concerned with presenting the growth of balances over time and across demographic groups. Since we have no reason to believe that people's underestimation habits have changed over the last thirty years, or that these habits vary across demographic groups, the figures in our discussion are useful for making comparisons.

14 Home equity loans became especially popular in the late 1980s as a result of the elimination of the tax-deductibility of credit card interest and the increasing equity belonging to homeowners.

Since 1983, credit card debt as a percent of total household debt from consumer loans has grown to account for approximately 60 percent of all outstanding household debt from consumer loans.

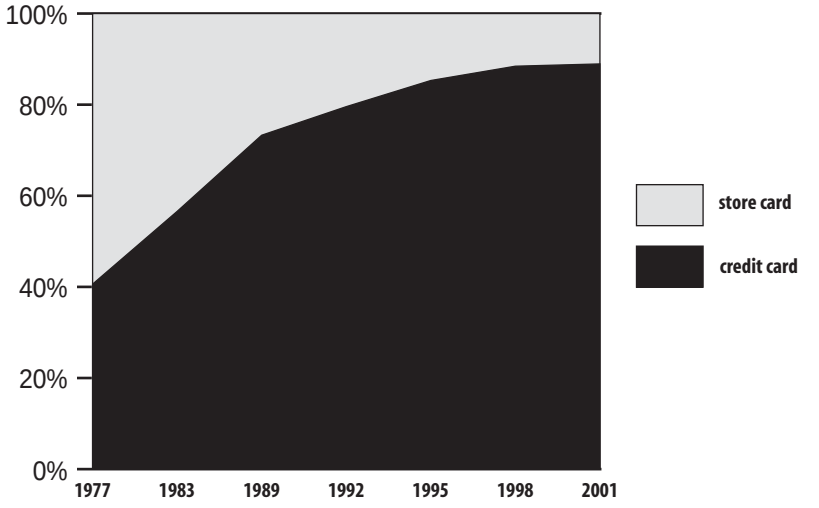
Figure 3. Substitution of Credit-Card Debt for Other Forms of Consumer Debt, 1983-2001



Note: Consumer debt excludes housing and motor-vehicle related loans.
Source: Surveys of Consumer Finances, 1983-2001

In the above figure it is not clear that store cards have lost share to credit cards. It appears as if store cards have maintained their small share of consumer debt. While store card debt has increased in absolute terms, growing from $18 trillion in 1983 to $21 trillion in 2001 (in 2002 dollars), its share of total consumer debt has, in fact declined. As Figure 4 shows, credit card debt rose much faster than store card debt and has therefore captured a larger portion of overall consumer debt.

Figure 4. Substitution of Credit-Card Debt for Store-Card Debt, 1977-2001



Source: Surveys of Consumer Finances, 1977-2001

In 1970, credit card debt comprised, on average, about 6 percent of households' total non-mortgage debt. This figure, a more inclusive measure of debt than the percentage of consumer loans shown in Figure 3,[15] gradually increased to 24 percent in 1989. And by 1995, households' credit card debt, on average, had risen to 32 percent of total non-mortgage debt, a level it has remained near through 2001. This growth indicates consumers' direct preference for credit card debt over other sorts of consumer loans.

IV. THE DIFFUSION OF CARDS ACROSS SOCIETY

One of the greatest drawbacks of credit is that it is not universally obtainable. From a lender's perspective, the only lucrative loans are those that will be paid back. And the households who are most likely to pay back loans are those households who are under the least financial stress. In other words, the households who are most likely to obtain a loan are those households who are least likely to be in need of one. Conversely, households who are most likely to need a loan often have the most trouble securing one. For Americans, a number of demographic groups have historically had a difficult time obtaining credit. These groups include racial minorities, households headed by women, and households with low levels of income.

15 Non-mortgage debt is calculated as total consumer debt from all sources minus mortgage debt. Consumer loans include only credit card debt, store card debt and installment debt excluding car loans.

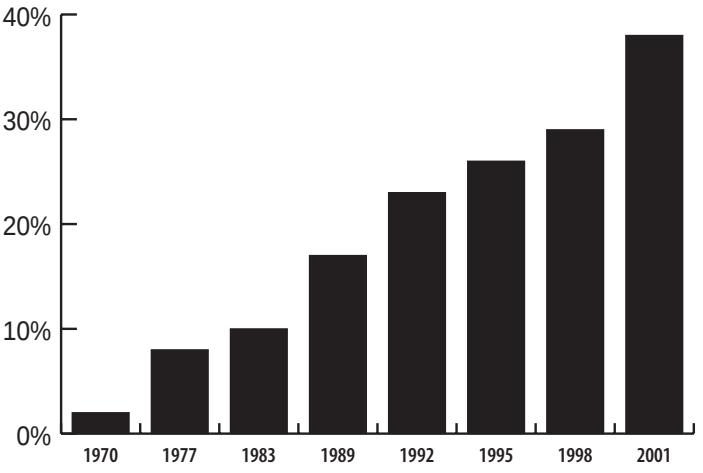
Credit cards have helped disadvantaged groups to obtain convenient, flexible credit from credit cards. Credit card ownership has undergone a diffusion that has spread card ownership among a wider demographic than just the "economic elite." In fact, card ownership among disadvantaged groups is catching up to the levels of the economic elite. Credit cards are helping to level a playing field that has long been tipped in the favor of the economic elite.

A. GROWTH ACROSS DEMOGRAPHIC GROUPS

1. Low-Income Households

In 1970, only about 2 percent of all low-income households had credit cards. By 1983, more than 10 percent had them. And by 2001, about 38 percent of all low-income households had at least one card.

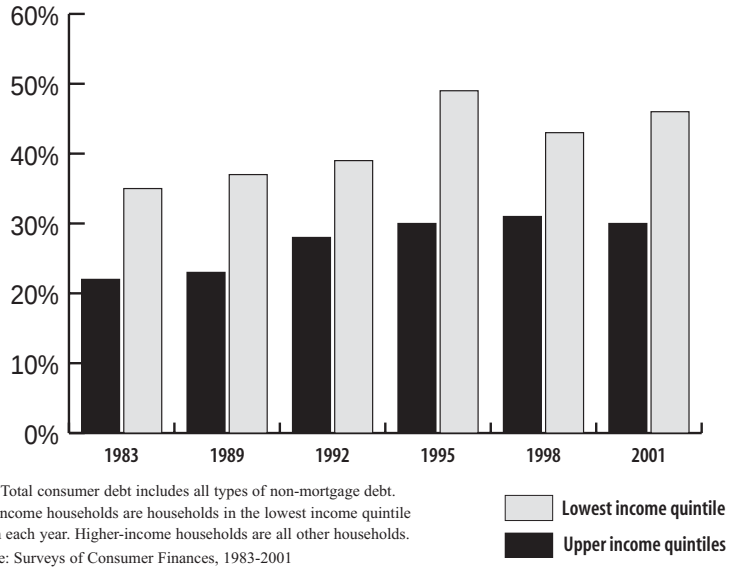
Figure 5. Percent of Low-Income Households Owning Credit Cards, 1970-2001



Note: Low-income households refer to households in the lowest income quintile within each year. In 2001, the lowest income quintile consisted of households with annual incomes of approximately $16,160 or less.
Source: Surveys of Consumer Finances, 1970-2001

Figure 6 shows how the composition of consumer debt has changed since 1983 for low-income households compared to the rest of the population. In 1983, credit cards accounted for 35 percent of low-income households' non-mortgage debt, compared to 22 percent for the rest of the population. By 2001, on average, credit card debt accounted for about 46 percent of low-income households' total consumer debt holdings, compared to 30 percent for all other households. This implies that credit cards play a particularly important role for low-income households looking to obtain credit.

Figure 6. Credit-Card Debt as a Percent of Total Consumer Debt, by Income Quintile, 1983-2001



Note: Total consumer debt includes all types of non-mortgage debt. Low-income households are households in the lowest income quintile within each year. Higher-income households are all other households.
Source: Surveys of Consumer Finances, 1983-2001

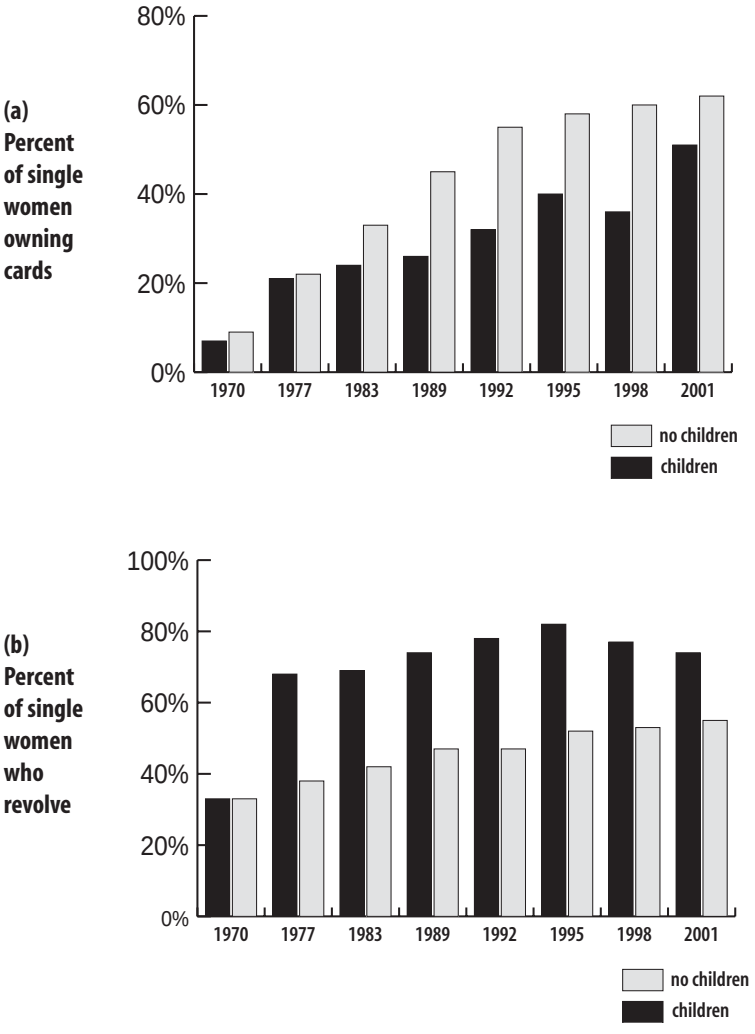
That credit card debt accounts for such a comparatively large portion of low-income households' debt holdings suggests low-income households favor credit card loans over other forms of loans. It is likely that low-income households have a difficult time obtaining unsecured loans, and they are unlikely to have the assets necessary for secured loans. Households that have been rejected in the past may also be reluctant to apply for loans and risk rejection again. The SCF sheds some light on this possibility. Respondents were asked, "Was there any time in the past five years that you thought of applying for credit at a particular place, but changed your mind because you thought you might be turned down?" Low-income households across time were 7 percent more likely to have been dissuaded from applying for a loan for this reason than all other households. Credit cards eliminate much of the fear and frustration associated with applying for loans—the application is relatively simple and does not require meeting with a lending officer. It is therefore no surprise that low-income households have embraced credit cards as a key means for obtaining loans.

2. Households Headed by Females

Credit cards are also democratizing credit for single women with children, another demographic group that sometimes has difficulty making ends meet. Single women without children are more likely to have cards. In 2001, 62 percent of single women without children had cards, compared to 51 percent of single women with children. Yet even though women without children are more likely to have cards, it is actually the single women with children that are more likely to make use of the credit available from their cards.

Figure 7. Credit-Card Ownership and Usage by Single Women, 1970-2001

Ever since 1977, single mothers have been far likelier to be credit revolvers than are single women without children. Single mothers are often under pressure to both work and raise their children. Many require loans that would be quite difficult to obtain without credit cards. Figure 7 is quite interesting for two reasons. First, it shows that single women without children are frequently transactors. Second, the figure shows that single mothers make frequent use of the credit available to them on their credit cards. Credit cards, in this sense, help bring a "dislocated" group of society back into the mainstream.



3. Entrepreneurs

Credit cards have played an important role in funding startup businesses. Recent evidence from the 1998 Survey of Small Business Finances suggests that 46 percent of small business owners used their personal credit cards to help finance business operations, and 34 percent of small business owners used business credit cards. The SCF suggests that households headed by the self-employed have become very loyal credit card customers. In 1970, more than one-fourth of all self-employed households owned credit cards, over 10 percent points higher than the national average at the time. That percentage has grown steadily over time: by 2001, 86 percent of all self-employed households owned credit cards (again, over 10 percentage points higher than average).

The importance of small businesses to the economy cannot be understated. In 2002, there were approximately 23 million small businesses in the United States, and small businesses accounted for about 75 percent of net new jobs created. The small business segment accounts for approximately 50 percent of the private gross domestic product. Small businesses provide most workers with their first jobs and initial on-the-job training in basic skills, employ more than half of the private non-farm work force, and contribute to approximately 45 percent of all sales in the country.[16] Perhaps most importantly, the dynamic small companies of today help to provide the large employers of tomorrow. To achieve growth, small businesses often need a source of capital, but from a lending institution's perspective, extending credit to new ventures is risky. As a result, obtaining capital from banks, credit unions, and savings institutions can be challenging, if not impossible.[17] Credit cards have proven to be a good alternative for entrepreneurs and the self-employed.

Self-employed households, more so than the rest of the population, have relied on credit cards. Moreover, the introduction of business credit cards in the late 1980s has provided an additional source of credit for small businesses owners. By 2002, for example, there were 11.7 million Visa business cards in the hands of small business owners.[18]

4. Unemployed Households

One of the most important functions of credit is that it helps to smooth consumers' consumption patterns over the course of their lives. Most of us, for example, anticipate far greater earnings in our maturity than when we first enter

16 Small Business Administration Office of Advocacy, *Small Business Economic Indicators for 2002,* June 2003 (visited November 20, 2003) <http://www.sba.gov/advo/stats/sbei01.pdf>.

17 Venture capitalists provide another source of funds. However, venture capital firms generally take a substantial equity stake in companies they provide funds to. Moreover, they typically only pursue a small fraction of the business plans that are presented to them.

18 Visa U.S.A.

the workforce. Unlike secured loans that require consumers to borrow against items in their possession, credit cards allow consumers to borrow against anticipated future earnings. Credit cards allow us to enjoy consumption goods earlier and pay for them later.

In addition to providing credit to workers making their way up the career ladder, credit cards are quite useful to workers temporarily out of work. According to the Current Population Surveys, between 1996 and 2000, displaced workers, on average, spent eighteen weeks in transition between jobs.[19] During times when income is temporarily suspended, the need for credit can be quite urgent. Because one can rarely anticipate unemployment, households may find it difficult to save and plan for a break in their income. Credit cards, therefore, can be quite useful in helping unemployed households make the transition between jobs or careers. Evidence from SCF confirms this claim. In 2001, for example, households headed by unemployed workers carried credit card balances on average that were more than one and a half times the size of those held by households headed by employed workers.

B. THE IMPACT OF CREDIT SCORING

Credit scoring revolutionized the credit card industry. For the first time ever, it allowed human scrutiny to be eliminated from loan selection procedures. In doing so, credit scoring models ushered in a new era of lending—one with an unmistakable trend favoring the democratization of credit in society. Credit scoring models allowed banks to profitably send their credit card solicitations across wider segments of the population and the country.

Credit scoring is a scientific method of assessing the credit risk associated with new credit applications. Scores are calculated using statistical models that assign points to factors indicative of satisfactory repayment. Factors can include income regularity, job stability, credit history, and payment history, to name a few. Once a borrower is approved for a loan, credit scoring also helps card issuers determine how much credit to extend and at what price.

Because credit scoring is fundamentally impersonal, it does not discriminate against people on the basis of personal characteristics such as race or religion. Because of its ability to predict and control credit card losses, credit scoring allows card issuers to offer cards to consumer segments previously deemed unprofitable. The new technology allows banks to dig deeper into the pool of potential customers and extend credit to higher-risk borrowers than ever before. Credit scoring has contributed greatly to the growth and diffusion of credit cards across the entire population.

19 U.S. Bureau of Labor Statistics, *Current Population Surveys: Displaced Worker Supplements.*

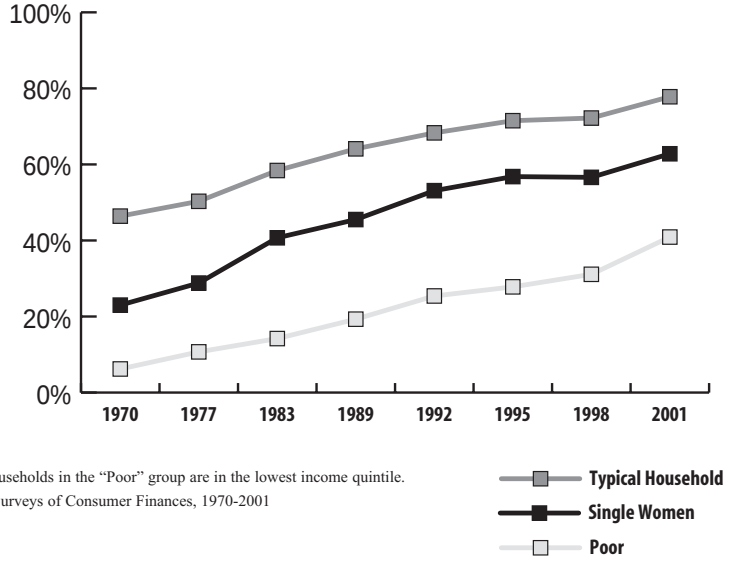
C. DIFFUSION OF CARDS FROM THE ELITE DOWN THROUGH THE MASSES

The person most likely to own a credit card is still a wealthy, white, well-educated man, though his demographic domination of card ownership has eroded sharply over the last thirty years. Although female households and those with low-income started with far fewer credit cards than the "elite" group just defined, the growth in card ownership across these two groups has outpaced the growth in card ownership of the elite group. That is due in part to card ownership saturation among the elite group, and in part to credit scoring, which is enabling diffusion of credit cards to more diverse and riskier households.

The method for demonstrating diffusion is as follows. A control group, "the social elite," is identified. Next, a ratio is created in each year for each demographic group in question, which compares card ownership of the disadvantaged group to card ownership of the elite group. When these ratios are compared over time, if they rise, then card ownership for the disadvantaged groups are approaching the levels of ownership of the elite group, and hence, that diffusion exists.

Figure 8. Comparison of Card Ownership Between Disadvantaged Groups, the "Typical Household" and the "Economic Elite", 1970-2001

Figure 8 shows the trend in card ownership for the typical American household and two disadvantaged demographic groups compared to the "economic elite." In each case, the ratio of card ownership of the disadvantaged group to card ownership of the elite-group increases over time. The steady increases indicate that the availability of credit via credit cards to all segments of the population is converging.



Note: Households in the "Poor" group are in the lowest income quintile.
Source: Surveys of Consumer Finances, 1970-2001

V. CONCLUSION

Over the last thirty years, credit card ownership has grown not only in total numbers, but across virtually all demographic groups. Credit cards have helped households to obtain credit that, certainly for the less wealthy, would not have been available otherwise. Credit card loans enable households to smooth consumption over their lifecycles—a benefit that is important for households and for the economy at large.

APPENDIX A: TECHNICAL DETAILS OF THE SURVEY OF CONSUMER FINANCE

The Federal Reserve sponsored the initial Survey of Consumer Finances (SCF) just after World War II. The first such survey was conducted in 1946 for the Federal Reserve by the Bureau of Agricultural Economics of the United States Department of Agriculture. The SCF was conducted by the Survey Research Center of the University of Michigan annually from 1947 through 1970, but was then discontinued. In 1977, balance-sheet data were collected as part of a survey of consumer credit sponsored by the federal banking agencies. In addition, the Federal Reserve Board sponsored the one-time Survey of Financial Characteristics of Consumers in 1962, which obtained consumer balance-sheet data that were more detailed than those available from the surveys of consumer finances. The 1983 SCF updated balance-sheet information from the 1977 survey. The latest surveys provide much new information that can be used to identify important trends in income and wealth distribution, asset ownership, and household borrowing patterns, and they afford a comprehensive understanding of the financial state of households. The recent survey provides a unique opportunity to link data on consumer assets and liabilities, income, and financial behavior.

The SCF is a triennial survey of the balance sheet, pension, income, and other demographic characteristics of U.S. families. The survey also gathers information on use of financial institutions. The SCF is conducted to provide detailed information on the finances of U.S. families. Data from the SCF are widely used, from analysis at the Federal Reserve and other branches of government to scholarly work at the major economic research centers. The study is sponsored by the Federal Reserve Board in cooperation with the Department of the Treasury. Since 1992, data have been collected by the National Opinion Research Center (NORC) at the University of Chicago.

To ensure the study is representative, respondents are selected randomly using procedures described in the technical working papers on the Federal Reserve Board website <http://www.federalreserve.gov/pubs/oss/oss2/2001/scf2001-home.html>. A strong attempt is made to select families from all economic strata. Participation in the study is strictly voluntary. However, because only about 4,450 families are interviewed in the main study, every family selected is very

important to the results. To retain the scientific validity of the study, interviewers are not allowed to substitute respondents for families that do not participate. Thus, if a family declines to participate, it means that families like theirs may not be represented clearly in national discussions.

The survey begins by collecting basic demographic information on all household members, including their age, gender, and marital status. The respondent is then asked to list the financial institutions at which household members have accounts or loans, including the type of institution, the way of doing business with the institution, and the distance between the institution and the home or workplace of the person who uses it most. As respondents describe particular accounts or loans during the course of the survey, this "institution roster" is used to identify the institution at which each item is held.

The survey then goes on to collect detailed information on the household's financial assets, nonfinancial assets and liabilities. The section on financial assets includes checking, saving, money market, and call accounts; certificates of deposit; IRA and Keogh accounts; stocks; bonds; mutual funds; savings bonds; cash value life insurance; and trusts, annuities, and other managed assets. For each item the respondent mentions, he or she is asked about its value and the institution at which it is held. Nonfinancial assets include the household's principal residence, investment real estate, vehicles, business interests, and other valuable assets like art and precious metals. Liabilities specifically mentioned in the survey include mortgages, home equity loans and lines of credit, loans for investment real estate, vehicle loans, student loans, consumer installment loans, and debt on credit cards. For each loan, the respondent is asked about the balance outstanding and other aspects of the loan's terms, including its duration, the interest rate, the typical payment, and the institution.

In addition to the core questions on assets and liabilities, the survey also collects information on other topics relevant to understanding households' financial situations, including the employment and pension coverage of the respondent and spouse; household income and tax filing status; coverage by health, life, and disability insurance; the educational attainment of the respondent and spouse; the health status of the respondent and spouse; experience in applying for loans in the past five years; recent problems making payments on loans; and attitudinal data on risk, borrowing and saving.

THE ROLE OF CREDIT CARDS IN PROVIDING FINANCING FOR SMALL BUSINESSES

David G. Blanchflower,
Dartmouth College

David S. Evans,
NERA Economic Consulting

1. INTRODUCTION

When Mark Fasciano and Ari Kahn started their software company, FatWire, in 1996, each of them contributed $20,000 from their credit cards to pay for the equipment and services that the company needed. In 2001, the company was named to Deloitte and Touche's Fast 50 list of rapidly growing technology firms in New York. Today the company generates $10 million in annual sales, and its newest clients include Crown Media, Hallmark Channel, Bank of America, Andersen Windows and Aventis Behring.[1] Business successes like these have helped the U.S. economy grow. Small businesses provide most workers with their first jobs and initial on-the-job training in basic skills and employ more than half of the private work force.[2]

Stories like FatWire's abound.[3] Financing a business is difficult, and entrepreneurs tend to resort to credit cards for financing when other loan sources are scarce. Personal credit cards provide an increasingly large pool of capital for small business startups. Credit cards did not even exist in their current form before 1966. They have grown explosively since the end of the 1981-1983 recession. According to data from the *Survey of Consumer Finances* (SCF), which is discussed in more detail below, the amount of credit card financing available to the American public was $1.5 trillion in 2001.[4] That pool of credit was just as available to people to start their own businesses as it was to buy stereo equipment. Indeed, $298 billion of credit card financing was available to households headed by someone who had their own business in 2001. And, of course, credit cards have continued to grow since 2001 so that the amount of credit card financing available to consumers in general and small business owners in particular is even larger today.

Of course, stories of credit cards helping people to start successful businesses do not show that credit cards are an important source of financing any more than stories of successful businesses started in garages show that having a garage is key to business prosperity. This paper examines the role of credit cards in financing small businesses using two sources of data. The SCF provides general

1 Bridget McCrea, *Masters of Survival,* Fortune Small Business, December 21, 2002.

2 *Id*.

3 *See id. See also* John Tucker, *More Businesses Start Up on Plastic Entrepreneurs Use Credit Cards to Get Set Up,* The Idaho Statesman, December 28, 1997, at 1e.; and John Pletz, *Need Capital? Just Charge It*, Indianapolis Business Journal, October 27, 1997, at 39.

4 The SCF survey has strengths and weaknesses. It provides data on the use of credit cards from a random sample of the population along with extensive detail on the socioeconomic characteristics of these households, but the data people report to survey takers often are not completely reliable. For example, people tend to understate the amount of debt they have. So the SCF is not the best source of data, for example, on the total bankcard debt of the American public—Visa and MasterCard have more reliable information—but the SCF is the best source of data for making comparisons between different segments of the public. Other estimates place the amount of credit available at over $4 trillion.

information on the use of credit cards by small business owners from 1970-2001. The *1998 Survey of Small Business Finance* (SSBF) provides detailed information on the use of credit cards by small businesses in that year. Together, these data sources provide a broad and deep understanding of how small businesses use credit cards.[5]

II. CREDIT CARDS AND SMALL BUSINESSES

Before we get into our main story, it is useful to say a few words about our two protagonists. We begin with credit cards and then turn to small businesses.

A. Credit Cards

Credit cards are available from four systems—two associations of banks and two proprietary companies.[6] The bank associations are Visa and MasterCard. Member banks of these associations issue cards under those brand names.[7] Discover Financial Services is a proprietary company that issues the Discover and Private Issue credit cards.[8] American Express is a proprietary company that issues the Optima and Blue credit cards.[9] In addition to personal credit cards, American Express, MasterCard and Visa have developed credit card products that are targeted towards small businesses, as we discuss in part B below.

B. Small Businesses

There are many different ways of defining small businesses.[10] The U.S. Small Business Administration defines small businesses as those with fewer than 500

5 This paper focuses only on payment cards that provide lines of credit. Certain cards, such as the American Express Corporate Card and the Visa Purchasing Card enable businesses to charge purchases but not to finance these purchases (except for the interest-free loan between the date of purchase and the due date for the monthly bill).

6 *See* David S. Evans, "The Growth and Diffusion of Credit Card Society," The Payment Card Economic Review: *The Industry and Its Legal Challenges*, Volume 2, Winter 2003. *See also* David S. Evans and Richard L. Schmalensee, *Paying with Plastic, The Digital Revolution in Buying and Borrowing* (MIT Press, 1999) for more details on credit cards and their role in the economy.

7 The term "bank cards" refers to credit cards issued by MasterCard and Visa.

8 Lisa Fickenscher, *Dean Witter Discovered That New Card Strategy Required the Old Name,* American Banker, October 16, 1998. *See also* Discover website (last visited February 24, 2003) <http://www.discovercard.com/discover/data/>, and Private Issue website (last visited February 24, 2003) <http://www.privateissue.com/>.

9 See American Express website (last visited February 24, 2003) <http://www66.americanexpress.com/cards/apply/jsp/fmac/i_know_which.jsp?csi=0/20/b/2/0/05511073979/20/n&from=0>.

10 For general background on small businesses, *see* William A. Brock and David S. Evans, *The Economics of Small Businesses: Their Role and Regulation in the U.S. Economy* (New York: Holmes and Meier, 1986).

employees. According to that definition, there were roughly 26 million non-farm small businesses in the United States in 2001.[11] Small businesses, those with less than 500 employees, accounted for 99 percent of all businesses that year.[12]

Another way of defining small businesses is by type of business organization. There are four major types of business organizations for tax purposes. C corporations file 1120-C tax returns with the Internal Revenue Service and pay taxes on corporate income. Sole proprietorships are unincorporated businesses that have a single owner, who reports his business earnings as part of his personal tax return. Partnerships have several owners, each of whom has a financial interest in the business and reports his business earnings as part of his personal tax return. S corporations do not pay tax on their income; instead, income and expenses are passed through to shareholders. Only businesses with fewer than 75 shareholders can obtain this often-preferred tax treatment. According to the SSBF, which contains data on businesses with less than 500 employees, approximately 20 percent are organized as C corporations, 49 percent as sole proprietorships, 7 percent as partnerships, and 24 percent as S corporations.[13]

Finally, people who say they are "self-employed" are small business owners. Many census surveys ask people whether they work for themselves (self-employed) or work for someone else (wage workers). The self-employed are generally people who own, sometimes with others, their own incorporated (C or S) or unincorporated (sole proprietor or partnership) business.[14] The number of small businesses has grown considerably over time. The number of sole proprietorships, partnerships and S corporations—which are comprised mostly of small businesses—rose from 6.9 million in 1970 to 22.2 million in 1999, while the number of C corporations rose from 1.4 million to 2.2 million. The number of self-employed individuals who work full-time for themselves grew from 8 million in 1970 to 10.6 million in 1995, then dipped to 9.7 million in 1999, and 9.6 in 2001.[15]

---

11 Small Business Administration Office of Advocacy, *Small Business Economic Indicators for 2001,* February 2003, at 3 (visited February 24, 2003) <http://www.sba.gov/advo/stats/sbei01.pdf>.

12 *Id*. at 11.

13 Although the large majority of non-S corporations are C corporations, the IRS recognizes several other types of businesses as corporations. Because the SSBF does not distinguish between these different types of corporations, whenever we mention "C corporations," this refers to "C and other corporations."

14 The IRS recognizes many types of businesses as corporations, including joint-stock companies, S corporations, insurance companies, and unincorporated associations such as business trusts.

15 These figures are based on Current Population Survey (CPS) data.

III. FINANCING SMALL FIRMS

A budding entrepreneur has various resources for obtaining financing, ranging from personal savings to securing a loan from friends, family, a local bank, or a bank loan guaranteed by the Small Business Administration.[16] Venture capital may be another source. Venture capital firms and other investors provided $18.2 billion of venture capital to American businesses in 2002.[17]

Friends and family do not necessarily require a high rate of return on their loans, but are often not able to provide the large sums of money needed to get a business off the ground. Banks and venture capital firms do not provide loans to every dreamer off the street. Candidates for such funding must be able to prove they are a good risk, providing several years of financial statements, information on existing debts and accounts receivable and payable, lease details, projected future income streams and signed personal financial statements. SBA-backed loans require borrowers to prove their good character and their expertise and commitment to business success—and to put up a large portion of their own funds.

Obtaining funds from venture capital firms is likewise challenging. Venture capital firms fund approximately one out of every 100 or 200 proposals they receive.[18] And venture capital usually comes with strings attached: the entrepreneur has to give the venture capital firm a significant stake in her business and allow the firm some managerial oversight.

A. The Economics of Lending

A number of factors make it difficult for potential entrepreneurs to secure funds to start their businesses and for existing entrepreneurs to get funds to finance business expansion. Lending is inherently risky, but lending to small businesses is especially so. Most small businesses fail within a short span of time. In fact, less than half of new firms remain in operation five years after their birth.[19]

Banks typically charge higher interest rates to small business borrowers than to large business borrowers, however charging higher interest rates does not free lenders from risk. People tend to be less prudent with other people's money than with their own, a lender's problem economists refer to as "moral hazard." And

16 Although SBA provides no grants on their own, they currently have a portfolio of loan guarantees worth more than $45 billion. *See* SBA, *Learn About SBA* (last visited March 3, 2003) <http://www.sba.gov/aboutsba/>.

17 *See* VentureOne, *Industry Information, Statistics* (visited November 6, 2003) <http://www.ventureone.com/index.html>.

18 Josh Lerner, "The Returns to Investments in Innovative Activities: An Overview and An Analysis of Software Industry," in *Microsoft, Antitrust and the New Economy* (David Evans, ed., 2002).

19 *The State of Small Business A Report of the President*, United States Government Printing Office (Washington: 1997) at 29.

lenders that charge high interest rates tend to attract higher-risk borrowers, which economists refer to as "adverse selection." The only way to deal with these problems is to ration credit—to limit the amount that individuals can borrow.[20] In certain cases, the lender may decide that the most profitable loan is no loan at all.

Another uncertainty can exacerbate the problems of moral hazard and adverse selection and increase lenders' incentives to limit credit. Lenders generally have less information about a business venture's prospects than the borrowing entrepreneur does—this is what economists call "asymmetric information." It is difficult for lenders to identify those entrepreneurs likely to have successful businesses and those likely to fail.

Moral hazard, adverse selection and asymmetric information conspire to create liquidity constraints for small businesses, which can prevent some prospective entrepreneurs lacking personal assets from starting a business. A number of studies have documented the existence of liquidity constraints for small businesses. Evans and Jovanovic found that people with more assets were more likely to start businesses, and they showed that wealthier people were not more likely to start a business because they were better entrepreneurs.[21] According to their results, which were admittedly rough and meant for illustrative purposes, liquidity constraints deterred about 300,000 people from starting their own businesses in 1976 and reduced the amount of investment in small businesses by about $2.7 billion in 1976 dollars ($7.1 billion in 2002 dollars).

Subsequent studies have confirmed Evans and Jovanovic's findings. These studies showed that people who get purely exogenous increases in assets—manna from heaven, so to speak—are more likely to start businesses. Holtz-Eakin, Joulfaian, and Rosen found that people who received inheritances are more likely to continue their existing small businesses and own larger ones.[22] And Blanchflower and Oswald found that people in the U.K. who received inheritances of £5,000 "were approximately twice as likely to be self-employed in 1981 as those who had received nothing."[23] A recent study by Dunn and Holtz-Eakin also showed that individuals with personal financial assets are more

20 The classic theoretical treatment of credit rationing is Joseph Stiglitz and Andrew Weiss, *Credit Rationing in Markets with Imperfect Information*, The American Economic Review, Volume 71, Number 3, June 1981, pp. 393-411. A useful summary of the subsequent literature is provided by Xavier Freixas and Jean-Charles Rochet, *Microeconomics of Banking,* Ch. 5 (MIT Press, 1997).

21 David S. Evans and Boyan Jovanovic, "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints," *Journal of Political Economy*, Volume 97, Issue 4, 1989, pp. 808-827.

22 Holtz-Eakin, D. Joulfaian, and H. Rosen, "Entrepreneurial Decisions and Liquidity Constraints," *Journal of Political Economy*, Volume 102, 1994b, pp. 53-75.

23 D.G. Blanchflower and A.J. Oswald, "What Makes an Entrepreneur?" *Journal of Labor Economics*, Volume 16, 1998, pp. 26-60.

likely to become entrepreneurs.[24] This empirical evidence of liquidity constraints is buttressed by surveys indicating that obtaining financing is one of the major obstacles in establishing a small business.[25]

B. The Practicalities of Credit Card Lending

The credit card has proven to be a popular and effective vehicle for banks to extend unsecured credit to consumers and small businesses and a convenient way for consumers and small businesses to borrow money from banks. The proliferation of credit cards has also stimulated the formation of credit-scoring firms, which collect information on people's payment records and help banks to assess the risks of lending to particular individuals or businesses. It has also stimulated the development of securitization—a financial device that enables banks to sell the receivables from their credit card loans, diversify away some of the risks of credit card lending, and most importantly, to offer more credit card loans to deserving borrowers.[26]

IV. THE USE OF CREDIT CARDS BY THE SELF-EMPLOYED

The self-employed have benefited from credit cards in the same way other consumers have. Credit cards provide a convenient payment mechanism and a convenient and easily accessible method for borrowing funds to start or expand a business. They also enable the self-employed to choose among a larger group of lending banks than would be available for other types of loans.

A. Credit Card Use by the Self-Employed

In 1970, 26 percent of all households headed by a self-employed worker had at

---

24 Thomas Dunn and Douglas Holtz-Eakin, "Financial Capital, Human Capital, and the Transition to Self-Employment: Evidence from Intergenerational Links," *Journal of Labor Economics,* Volume 18, Issue 2, 2000.

25 Evidence from the 2001 SCF suggests that nearly one quarter of all self-employed respondents who applied for loans in the last five years were either denied credit, or not granted as much credit as they had applied for. *See* Board of Governors of the Federal Reserve System, *Survey of Consumer Finances*, 1995. Several programs have developed to provide loans to poor or unemployed individuals. In the United States, the Small Business Administration (SBA) was created to provide loan guarantees and management and technical assistance to America's entrepreneurs. Outside of the United States, the World Bank sponsors micro-finance programs in developing countries. For a discussion of such programs, *see* Marc Bendick, Jr. and Mary Lou Egan, "Transfer Payment Diversion for Small Business Development: British and French Experience," *Industrial and Labor Relations Review*, Vol. 40, No. 4 (July 1987).

26 With securitization a pool of loans is put into a special trust, which is used to back a certificate or note. Investors then buy the certificates or shares in the trust and receive interest and principal payments as the loans are repaid.

least one credit card.[27] By 2001, that figure had grown to 86 percent, representing approximately 10.7 million self-employed households.

By 2001, households headed by the self-employed reported having $298 billion of credit available on their cards, and having borrowed $25.6 billion against those credit lines.[28] The average credit card loans outstanding for households headed by a self-employed worker was $261 in 1970 and $2,412 in 2001—an increase of 9 times.[29] The diffusion of credit cards throughout the economy has resulted in a vast increase in the supply of credit available to small business owners.[30]

To put a face on these statistics, consider three different anecdotes that illustrate the importance of credit card lending for small business owners. When Scott Brennan was 19 and had no collateral and no business history, no single bank would loan him the $100,000 he needed to get his Internet access company started. From the banks' perspective, his was too great a risk. So Brennan borrowed the money he needed from ten different banks via their credit card distribution channel. Today, his company Dreamscape Online is the largest Internet solutions provider in all of central New York State.[31]

Paul Porter needed about $80,000 to start a business making bath cleaning products. In 1995, he and his wife used 25 different credit cards to finance their company. Today, Porter is the chief operating officer, vice-president, and co-owner of Automation Inc. The company, which makes Clean Shower bath cleaner, averaged more than $2 million in sales each month by 1998.[32]

Charlene Connell relied on ten credit cards to finance the startup of her firm, Vital Resources. While waiting early on to get paid for her firm's services, she took out cash advances from her credit cards in order to make payroll. In a relatively short time, Connell accumulated nearly $25,000 in credit card debt. By the time Vital Resources had reached just under $1 million in sales, she was able to

---

27 Because of the manner in which the Federal Reserve Board constructed the 1970 sample, it is not possible to project the total number of individuals in the population that corresponds to this percentage.

28 The SCF understates credit card loans considerably. Depending upon the year, MasterCard and Visa members report between two and three times the credit card balances reported in the SCF. Therefore, the amount of loans outstanding to households headed by the self-employed is probably much larger than indicated in the text. For further details on the SCF, *see* Evans, *supra* note 6, Appendix A.

29 All dollar values are expressed in terms of 2002 dollars.

30 Of course, this increased supply provides a substitute for other forms of lending, including other types of bank loans, asset-based lending, factoring, trade credit, and other more sophisticated loans. It is difficult, if not impossible, to determine the net increase in the supply of credit resulting from the expansion of credit cards.

31 Tony Fong, *Entrepreneurs Flash Plastic for Financing*, The Post-Standard, Oct. 14, 1997, at D9; *see also* Dreamscape Online website (visited March 4, 2003) <http://www.dreamscape.com/webwork/profile.shtml>.

32 Phaedra Hise, *Don't Start a Business Without One*, Inc., Feb. 1, 1998, at 50.

obtain a more traditional loan from a commercial bank. The decision to award Connell a $25,000 credit line was based on her excellent record of credit card debt management. By 1996, Vital Resources, Inc., made the Inc. 500 list.[33]

B. Do the Self-Employed Use Their Cards More than Employees?

In 1970, over one fourth of all self-employed households owned credit cards. Only one fifth of wage workers at that time had a credit card. Growth of credit cards for both self-employed households and employees continued through the 1990s. In 2001, 86 percent of all self-employed households owned credit cards compared to 76 percent of all households headed by wage workers.

Up until 1992, the balances of self-employed and non-self-employed households grew virtually in lockstep. Every year up through 1989, non-self-employed households had, on average, slightly more credit card debt than self-employed households. In 1992, this changed dramatically. The balances of self-employed households were 22 percent greater than wage workers' balances in that year. By 1995 the gap grew even further, suggesting that through the mid-1990s self-employed individuals increasingly availed themselves of the credit available on credit cards. In 2001, the balances of wage worker households once again increased compared to self-employed household balances. However, when we control for demographic differences between the two groups—such as age, income level, and education—the self-employed still held much higher balances in 2001.

In 2001, the average self-employed worker in the SCF was eight years older than the average wage worker. The median income of self-employed households was about 32 percent higher than wage-earning households. Additionally, self-employed households were nine percentage points more likely to have a college degree, and fifteen percentage points more likely to own a home.[34] It is possible that differences in credit card ownership and use between the self-employed and the non-self-employed merely reflects these differences in demographic characteristics. To address this issue, we used regression analysis, a statistical technique that permits one to adjust for these sorts of differences.[35] The results allow us to isolate the characteristics associated with being self-employed. In 2001, compared to wage-working households, self-employed households were likely to have one-seventh of a card more and carry $2,667 more in balances. This was not always so. In 1970, for example, self-employed households were likely to have slightly fewer cards and carry somewhat smaller balances than similar wage-working households, although self-employed and wage-working households were statistically indistinguishable from each other in every other way that year.

33 *Id.*

34 This comparison is based on heads of households.

35 For a discussion on regression analysis and econometrics, see Damodar Guajarati, *Basic Econometrics*, McGraw-Hill, Inc., New York, 1995.

The additional cards held by self-employed relative to wage-worker households had declined in 2001 from the 1990s, possibly due to a greater reliance on small business cards.

V. BUSINESS CREDIT CARDS

MasterCard, Visa and American Express have offered commercial cards to businesses and corporations since the 1980s. The original commercial cards were focused mainly towards providing firms with convenient travel and entertainment services as well as auto leasing and insurance conveniences. Before 1990, American Express had the largest share of this market. Although some of the early card products offered credit lines attached to them, it was not until the 1990s that the card organizations began to actively pursue small businesses and to offer them credit and financing services.

A. Company Use

Between 1993 and 2002, the number of Visa Business cards, geared towards small companies with fewer than 100 employees and sales of up to $10 million per year, has grown from approximately 500,000 to over 11.6 million. During the same time, charges to these cards have increased from $2.2 billion to over $39 billion.[36]

Business cards provide certain services that allow companies to monitor and control business expenses. For instance, different credit limits and purchase restrictions can be set on individual cards to minimize exposure. And periodic (monthly, quarterly or yearly) management reports can provide various forms of data or expense analysis. Business cards also provide a grace period that may help a business by delaying payment obligations, giving the business more time to collect on their receivables. Business cards may therefore provide a substitute for the use of trade credit, and allow businesses to keep less cash on hand to deal with everyday operating expenses.

B. Issuing Banks

On the bankers' side, business credit cards have opened an entirely new market for lending that was previously unprofitable. Before these cards came along, banks wanting to loan to small businesses had to incur costly underwriting fees. Today, banks use scorecards to grant business credit cards, enabling them to realize significant cost savings. According to discussions we have had with various card-issuing banks, loans that previously could cost up to $1,000 to originate, now cost an issuing bank only about $25.

36 Visa USA, Inc. Comparable data for MasterCard and American Express are not available.

Scorecards weight various attributes of both the firm and its principal and allow issuing banks to make immediate lending decisions without the involvement of costly loan officers. The scorecards place a heavy weight not only on the personal credit history of the business owner, but also on the history of the firm, the age and size of the firm, its industry, sales and business strategy. Well-established businesses are more likely to obtain business credit cards than firms without a credit history, and many bank issuers will not even consider issuing a business credit card to a firm less than two years old. For young firms, this creates a classic "chicken-and-the-egg" problem. Oftentimes, young firms start out funding their businesses with personal credit cards. As they and their firm collectively establish a stronger credit history, business credit cards become more widely available.

It appears likely that MasterCard and Visa business cards reduce liquidity constraints for small businesses. In our research we learned that the issuance of business credit cards has resulted in a significant increase in the amount of money lent by banks to small businesses.[37]

VI. THE USE OF CREDIT CARDS BY SMALL BUSINESSES

We now turn to an analysis of the use of personal and business credit cards by businesses with less than 500 employees. As with the preceding analysis, this one focuses only on cards that provide a revolving credit line and does not include charge cards like the American Express Corporate Card or the Visa Purchasing Card.

Our analysis is based on data drawn from the 1998 Survey of Small Business Finances (SSBF), which was conducted during 1999-2000 for the Board of Governors of the Federal Reserve System. These data provide information on business financing and owner characteristics for a sample of U.S. employers. Data were collected for the 1998 fiscal year. The 1998 SSBF consists of a random sample of 3,561 firms, all of which have fewer than 500 employees.[38]

---

37 Although we were unable to quantify the total amount of additional funds loaned out on account of business credit cards, it is important to note that business credit cards have enabled banks not only to increase the quantity of loans they offer, but also to increase the size spectrum of these loans. Credit cards have enabled banks to offer small loans that were previously too costly to underwrite and hence were unprofitable.

38 The sample is what is known as a stratified random sample, meaning that some firms have a greater representation in the sample than they do in the population. In particular, minority-owned firms were oversampled. Of the firms surveyed, 7 percent are owned by blacks, 7 percent by Hispanics, and 6 percent by "other." When we report aggregate figures, we use sampling weights provided in the survey to generate nationally representative figures. Appendix A provides more information about the survey and also gives descriptions and means of the variables used in this paper.

The SSBF asks several questions about credit cards and distinguishes between personal and business cards, including whether the firm used an owner's personal credit card to pay business expenses, and whether the firm used a business or corporate credit card to pay business expenses during 1998.[39]

A. The Use of Personal and Business Cards

In the SSBF sample, 46 percent of firms' owners used their personal credit cards to help finance business operations. A smaller, but still large, 34 percent used business credit cards. And 12 percent used both sorts of cards. Overall, 68 percent of America's small firms used some kind of credit card in 1998 to pay for business expenses.[40] Credit cards provide a short-term loan, during the billing cycle and the grace period before payment is due. In addition, 16 percent revolved balances beyond the grace period. The SSBF data also shows that bigger firms are more likely to use business credit cards and less likely to use personal credit cards.

We used a statistical technique known as probit analysis to examine the relationship between various characteristics and the probability that a business will use a personal or business credit card to finance his or her business. This technique also enables us to examine the effect of a particular characteristic while "holding all other characteristics constant." The analysis, presented in Table 1, suggests credit cards are particularly important to businesses that have poor credit histories—businesses that are especially likely to have difficulty raising capital from traditional sources. Firms delinquent with payments at any time in the three years before the survey were five percentage points more likely to use the owner's personal credit card for business related activities. Firms who needed credit, but failed to apply for that credit for fear of rejection, were twelve percentage points more likely to use their personal card. Likewise, firms were seven percentage points more likely to use a personal credit card if they were denied credit in the three years prior to the survey.

---

39 Board of Governors of the Federal Reserve System, *1998 Survey of Small Business Finances, Annotated Survey Questionnaire*, at 60, 62.

40 The SSBF results are consistent with another survey. The most recent National Small Business United (NSBU)/Arthur Andersen Survey of Small and Mid-Sized Businesses found that 50 percent of businesses surveyed counted credit cards as a source for business financing in 2000. In 1998 the NSBU reports that the figure was 47 percent. Over the same period commercial bank loans decreased marginally in importance from 45 percent of companies with commercial loans in 1998 to 43 percent in 2000. Credit cards and commercial loans were the top two sources for small business finance according to this survey. *See Survey of Small and Mid-Sized Businesses, Trends for 2000,* National Small Business United /Arthur Andersen, November 8, 2002, at 20-21 (visited March 5, 2003) <http://www.nsbu.org/files/nsbu-aa_report_2000.pdf>.

Table 1. Effect of Firm Characteristics on Credit Card Use, 1998

Characteristic	Question	Type of Card	
		Personal	Business
Owner's age	By how much does the probability of card usage increase for each additional year of a firm owner's age?	-0.1%	-0.2%*
Owner's delinquent last 3 years	If a firm owner was delinquent in the past three years, by how much does this increase probability of card usage?	-0.9%	-1.2%
Firm delinquent last 3 years	If a firm was delinquent in the past three years, by how much does this increase probability of card usage?	5.0%*	6.5%*
Fear of rejection	In the 3 years prior to the survey, if the firm needed credit, but failed to apply for fear of rejection, by how much does this increase probability of card usage?	11.9%*	-3.8%
Denied credit in last 3 years	If a firm was denied credit in the 3 years prior to survey, by how much does this increase probability of card usage?	6.8%*	3.6%

Note: *means statistically significant at the 5% level of significance.
Source: 1998 Survey of Small Business Finances

These results suggest that personal and business credit cards help small businesses around liquidity constraints. Without access to both types of cards, it appears likely that many small business owners would have had trouble receiving bank credit.

B. Credit Cards and Liquidity Constraints

While there is striking evidence on the use of credit cards to pay for business expenses, it is important to know which firms actually carried credit card debt beyond an interest free grace period. The National Small Business United (NSBU) survey reported that, in 2000, 24 percent of companies that use credit cards usually carried a balance, while 36 percent of them reported always paying off their monthly balance in full.[41]

Table 2 shows the result of another probit analysis—striking evidence that being credit constrained has a large positive effect on the probability of a business carrying business-related expenses on credit cards. Firms that were denied credit in the last three years were about eight percent more likely to carry business-related credit card balances, while firms who did not apply for credit in the last three years for fear of rejection were twenty six percent more likely to carry balances. Sole proprietorships and partnerships are respectively six and twelve percent more likely to carry positive business-related balances than are corporations.

41 See *Survey of Small and Mid-Sized Businesses, Trends for 2000,* National Small Business United /Arthur Andersen, November 8, 2002, at 21 (visited March 5, 2003) <http://www.nsbu.org/files/nsbu-aa_report_2000.pdf>.

Using another statistical technique called tobit analysis to analyze the data, we found that companies denied credit in the past three years carried an average of about $2,750 more business-related credit card debt, while those who were denied their most recent request for credit carried $15,400 more. These results, in Table 3, show that credit cards provide an important source of credit for some entrepreneurs and relax liquidity constraints.

Table 2. Effect of Firm Characteristics on the Probability of Carrying Credit Card Balances, 1998

Characteristic	Question	Percent
Denied credit in last 3 years	If a firm was denied credit in the three years prior to the survey, how much more likely is that firm to carry credit-card balances?	7.5%*
Dissuaded from applying for credit	If in the three years prior to the survey a firm needed credit, but did not apply for fear of being turned down, how much more likely is that firm to carry credit-card balances?	26.3%*
Sole proprietor	If a firm is a sole proprietorship, how much more likely is it to carry credit-card balances than is a corporation?	5.6%*
Partnership	If a firm is a partnership, how much more likely is it to carry credit-card balances than is a corporation?	12.3%*
Firm Age	For every additional year a firm has been in existence, how much more likely is that firm to carry credit-card balances?	-0.2%

Note: *indicates statistical significance at the 95% confidence level.
Source: 1998 Survey of Small Business Finances

Table 3. The Effect of Firm Characteristics on Credit Card Balances, 1998

Characteristic	Question	Amount
Denied credit in last 3 years	If a firm was denied credit in the three years prior to the survey, how much greater are that firm's credit-card balances likely to be?	$2,746
Dissuaded from applying for credit	If in the three years prior to the survey a firm needed credit, but did not apply for fear of being turned down, how much greater are that firm's credit-card balances likely to be?	$15,400*
Sole proprietor	If a firm is a sole proprietorship, how much higher are its balances likely to be compared to a corporation?	$3,089*
Partnership	If a firm is a partnership, how much higher are its balances likely to be compared to a corporation?	$6,961*
Age	For every additional year a firm has been in existence, how much greater are its credit-card balances likely to be?	-$100

Note:*indicates statistical significance at the 95% confidence level.
Source: 1998 Survey of Small Business Finances

VII. CREDIT CARDS AND EMPLOYMENT GROWTH

Use of credit cards by business appears to have an effect on the growth of business employment.[42] Using data from a 1993 version of the SSBF—unfortunately, similar data are not available in the 1998 version[43]—we found a striking difference between firms with and without business credit cards. As reported below in Table 4, firms that used business credit cards grew at 10.5 percent while firms that used no credit cards grew at only 5.8 percent over a one-year period. Businesses that just used personal credit cards grew at 7.0 percent. Thus firms with business credit cards expanded much faster than those without any credit cards. These correlations do not establish a causal relationship, but are consistent with the idea that being able to borrow on a company credit card is good for growth.

Table 4. Effect of Firm Characteristics on Employment Growth

Characteristic	Question	One-year growth (%)	Three-year growth (%)
All firms	What is the average growth rate across all firms?	7.5	13.4
Used business card	What is the average growth rate among firms who used business cards?	10.5	18.3
Used personal card	What is the average growth rate among firms who used personal cards?	7.0	15.7
No cards	What is the average growth rate among firms who used no cards at all?	5.8	10.1

Source: 1993 National Survey of Small Business Finances

Three-year growth data also shows a strong correlation between employment growth and use of business credit cards, and to a smaller degree also with use of a personal credit card. Firms whose owners had no credit cards represent the lowest three-year employment increase. Businesses that have business credit cards grow substantially faster than either businesses with only personal credit cards or businesses with no credit cards—which is exactly what one would expect if businesses face liquidity constraints.

There are two explanations for this relationship. First, credit cards in general increase the supply of capital to businesses. But some business owners do not qualify for credit cards at all because they are deemed the most risky. Others qualify for personal cards, but their business does not qualify for a business card. Still other businesses obtain both personal cards and business cards. Liquidity constraints—which hamper the growth of a business—would be lower for businesses with business credit cards that it would be for businesses with personal

42 This discussion is based on Blanchflower, Evans, and Oswald. *See Supra* note 52.

43 Board of Governors of the Federal Reserve System, *1993 National Survey of Small Business Finances*.

cards, while businesses with no credit cards would face higher liquidity constraints. A second reason why firms with business credit cards grow faster than firms with only personal cards or with no cards at may be the following: Better businesses qualify for more credit, and better businesses grow more quickly. These two explanations are not mutually exclusive.

VIII. CONCLUSIONS

During the last quarter century, the growth of credit cards has reduced the liquidity constraints faced by prospective entrepreneurs. The percent of households that owned credit cards increased from 16 percent to 73 percent from 1970 to 2001, and the self-employed were particularly likely to get credit cards. In 1970, 26 percent of households headed by self-employed workers had credit cards compared with 20 percent of households headed by wage workers. By 2001, the figure for the self-employed had jumped to 86 percent while the figure for wage workers had jumped to 76 percent.

Credit cards have become a major source of financing for small businesses and have relaxed liquidity constraints faced by small firms:

- Self-employed workers had $298 billion of credit card loans available to them in 2001.
- The percentage of self-employed households with personal credit cards increased from 26 percent to 86 percent between 1970 and 2001.
- More than two-thirds of all small businesses in 1998 used either personal credit cards or business credit cards to finance their businesses.
- Businesses that were denied credit in the preceding three years were more likely to have personal and business credit cards and charged more on those cards than did businesses that were not denied credit.
- Businesses that had business credit cards grew almost twice as fast as businesses that had no credit cards and somewhat faster than businesses that just had personal credit cards. The theoretical and empirical evidence suggests that at least part of the faster growth is the result of business credit cards helping to relax liquidity constraints.

APPENDIX A: THE SURVEY OF SMALL BUSINESS FINANCES

The 1998 Survey of Small Business Finances provides information about a nationally representative sample of small businesses in the United States. The survey was conducted during 1999-2000 for the Board of Governors of the Federal Reserve. The target population is all for-profit, non-financial, non-farm business enterprises that had fewer than 500 employees and were in operation as

of year-end 1998. The sample was drawn from firms listed on the Dun's Market Identifier file as of May, 1998. The DMI list, containing nearly thirteen million businesses, is broadly representative of all businesses but does not include many of the newest startup firms or the self-employed individuals filing business tax returns. In contrast, the Internal Revenue Service reports that for 1999 about 24.5 million individuals filed business tax returns, including over 17.5 million sole proprietorships, of which about 4.3 million reported less than $2,500 in annual receipts. The public use dataset contains 3,561 firms. These firms represent 5.3 million small businesses.

The sample was a stratified random design with over sampling to ensure the ability to estimate separately the reporting domains by employment size groups, urban or rural location, and in census regions. The specific sampling strata were five employment-size groups (0-19, 20-49, 50-99, 100-499, unknown), nine Census regions (East North Central, East South Central, Middle Atlantic, Mountain, New England, Pacific, South Atlantic, West North Central and West South Central), and urban or rural location. In addition, three minority partitions of firms likely to be owned by Asians, African-Americans, and Hispanics were extracted from the Dun's frames prior to sampling to create samples of minority-owned businesses. Each of the minority partitions was proportionately stratified by urban or rural location. Because the larger and minority-owned firms are small percentages of the population of small businesses but are of special interest to researchers, the survey over sampled larger firms (20 to 499 employees), as well as African-American-owned, Asian-owned, and Hispanic-owned firms to ensure sufficient numbers for analyses of these groups.

Businesses were contacted in advance of the survey to determine eligibility, verify addresses, and identify a contact person. Not all businesses were eligible (i.e., met the target-population definition). Some businesses could not be contacted, some failed at least one of the eligibility criteria (e.g., not in business, for profit, etc.), and some had erroneous frame data.

The eligibility rate of sampled businesses averaged about 70 percent. The average duration of the telephone interviews was 42 minutes. The interviews were conducted by the National Opinion Research Center at the University of Chicago (NORC). The survey was voluntary. The response rate was about 33 percent. The survey collected the following types of information from each business:

- Demographic information on the owners and characteristics of the firm, such as the industry to which it belongs, age, and type of organization (sections A, B, C, and D of the questionnaire).
- An inventory of the firm's deposit and savings accounts, capital leases, credit lines, mortgages, motor vehicle loans, equipment loans, other loans, and selected other financial products. For each of these services, the supplier of the service was also identified (sections E, F, and G of the questionnaire, and financial service flags identified by variables beginning with 'T' and having a suffix of 1, 2, … 20).

- Information about the characteristics of the financial service suppliers: type (e.g., bank, individual), location vis-à-vis the firm, method of conducting business, number of years the firm has done business with the supplier, and reasons for choosing the source (sections H of the questionnaire and sections H and section I of the codebook).
- Experience in the past three years in applying for credit (section MLR of the questionnaire). Data from each firm's income statement and balance sheet (sections P, R, and S of the questionnaire).
- Information on the recent credit history of the firm and its owners (section U of the questionnaire).

Generally, the reference period for the survey data is 1998.

The SSBF does not use an equal-probability sample design, so that the weights play a critical role in interpreting the survey data. The weights included with the data set account for the sample design, eligibility and response rates. As is true of all surveys, there is some amount of missing data for nearly every SSBF question. An attempt has been made to impute most missing values. The general model used to perform imputations in the SSBF is a randomized regression model. The methodology employed is similar to that used in the first-stage procedures of the Survey of Consumer Finances.[44] Multiple-categorical response questions (e.g., check all responses that apply) were converted to a series of yes-no responses, and then each of these yes-no responses was estimated using a randomized linear-probability model (i.e., randomized regression where the dependent variable takes on one of two values). Not all variables lend themselves to estimation by regression. In particular, questions that evoked single discrete categorical responses (e.g., type of source) are typically imputed using a randomized hot-deck procedure.

Further details of the survey may be found in Marianne P. Bitler et al. (2001), Marianne P. Bitler (2000), and Catherine Haggerty et al. (2000). Additional documentation, codebooks and data are available for download on the website of the Federal Reserve Board of Governors at http://www.federalreserve.gov/pubs/oss/oss3/ssbf98/ssbf98home.html.

44 *See* Evans, *supra* note 6.

JOINT VENTURE MEMBERSHIP: VISA & DISCOVER CARD (1993)

David S. Evans,
NERA Economic Consulting

Richard Schmalensee,
MIT Sloan School of Management

Previously published in ***The Antitrust Revolution: Economics, Competition and Policy****, Oxford University Press, 1999.*

INTRODUCTION

Visa is a joint venture of financial institutions that persuade consumers to use credit cards with the Visa name (the issuing function), persuade merchants to accept those cards (the acquiring function), and process transactions involving those cards using a shared network. Two years after Dean Witter Financial Services Group (then owned by Sears, Roebuck and Co.)[1] successfully launched the Discover Card in 1986, it sought membership in Visa. Visa refused and then passed a rule—Bylaw 2.06—that expressly excluded issuers of Discover or American Express cards from Visa membership. In May 1990, Dean Witter bought a Visa membership as part of its purchase of the defunct MountainWest Savings and Loan from the Resolution Trust Corporation. When Dean Witter tried to issue a Visa card through its new bank, Visa invoked Bylaw 2.06 and refused to print the cards. DeanWitter sued in federal district court. It claimed, among other things, that Visa's Bylaw 2.06 was an unreasonable restraint of trade that violated Section 1 of the Sherman Act.

A jury agreed with Dean Witter. They would have required Visa to accept Dean Witter (and presumably American Express) as members. The Tenth Circuit Court of Appeals reversed the decision. It rejected Dean Witter's arguments that Visa had market power and that Visa's Bylaw could have a substantial effect on competition in the relevant market. It accepted Visa's arguments that Bylaw 2.06 was reasonably related to Visa USA's operation and no broader than necessary. After reviewing briefs written by Robert Bork (supporting Dean Witter) and Phillip Areeda (supporting Visa), among others, the Supreme Court declined to hear Dean Witter's appeal.

The *MountainWest* case added fuel to debates regarding standards fore valuating the conduct of joint ventures and on the proper roles of evidence on efficiencies and on consumer harm in that context. This case also illustrates how different approaches to the analysis of market power can lead to opposite results. Dean Witter argued, and the trial court and jury accepted, that Visa had market power because its members collectively had a large share of the relevant market. Visa argued, and the Tenth Circuit accepted, that Visa's exclusion of Dean Witter could not have an appreciable effect on prices or output because card issuing is an almost atomistically competitive market.

In this chapter we describe the payment card industry, describe the progression of *MountainWest* from the trial court to possible review by the Supreme Court, discuss the arguments presented by both sides at trial, and then examine the ultimate resolution of the case by the Tenth Circuit.

David S. Evans and Richard Schmalensee were retained by Visa U.S.A. in this litigation, and Richard Schmalensee offered expert testimony. They thank Stephen Bomse and Laurence Popofsky for numerous valuable conversations and Howard Chang and Daniel J. Hassan for effective assistance.

1 After the trial Sears spun off its Dean Witter subsidiary, which then merged with Morgan Stanley in 1997. Throughout this chapter, we refer to Dean Witter as the plaintiff for simplicity.

INDUSTRY BACKGROUND[2]

The parties stipulated that the relevant antitrust market consists of payment cards that could be used in a variety of merchant locations throughout the United States. From the standpoint of the consumer and merchant, payment cards provide a straightforward service. The consumer pays with the card and gets a bill some weeks later, which he or she pays in full or in part depending on the type of card (charge or credit) and preference for financing the transaction. The merchant runs the card through a terminal and receives payment into its depository account generally one to three days later.[3] Competition in the payment card industry takes place at two levels: the system level and the issuer level.[4]

Competition Between Systems

There are four major payment card systems in the United States: American Express (started in 1958), Visa (1966), MasterCard (1966), and Discover (1986).[5] Each system consists of a "brand" and a "network" for processing transactions between consumers using cards of that brand and merchants that accept those cards. "And they don't take American Express"—the well-known Visa ad—is an example of the competition that takes place at the system level. There are two types of systems: Open systems consist of many members issuing cards and acquiring transactions on a shared network; closed systems consist of a single entity that issues all cards and acquires all transactions on a proprietary network.

Visa and MasterCard are open systems. Visa is a joint venture of financial institutions that issue Visa cards to consumers and acquire transactions from merchants who accept Visa cards. It operates pursuant to a system of rules, adopted by its board of directors, that govern and facilitate operation of its interdependent financial exchange network. Aside from administering this system of rules, it also (1) maintains computer networks for processing transactions between cardholders, the bank whose name appears on the cardholder's card ("the issuing bank"), merchants, and the merchant's bank ("the acquiring bank"); (2) establishes brand image; and (3) conducts research and development for the benefit of members. Its members are individually responsible for setting prices and other terms and conditions for card holders and merchants.

There are several important differences between Visa and a typical firm. Visa earns no profits and pays no dividends. Visa provides services or its members,

2 For further details see Evans and Schmalensee (1993).

3 A small and decreasing fraction of transactions is still paper based.

4 There is also competition in the payment card industry for signing up merchants and processing merchant transactions. We do not discuss this competition further because it was not an issue in the case.

5 Two other card systems—Diner's Club and Carte Blanche—have a small share of cards issued in this country. Both of these systems were owned by Citibank during the period under discussion here.

and they in turn use those services as inputs into their own credit card businesses. The members elect the Board of Directors, which must approve major decisions at Visa. Visa members, including those who serve on the Board, compete with each other in issuing cards and acquiring transactions from merchants.

MasterCard is also a joint venture of financial institutions and operates much like Visa. Until the mid-1970s, Visa and MasterCard had different members. That changed in 1976 when the U.S. Department of Justice refused to support Visa's request to support its exclusion of MasterCard members.[6] Faced with significant antitrust exposure, Visa and MasterCard allowed dual membership and soon had almost completely overlapping membership. Although duality, as this pattern of membership is called, reduces incentives for system competition in advertising or product development, the organizations act differently because of different membership shares (and resulting influence on decisions), because members cannot have representatives on both boards, and because the managements of the two associations have incentives to compete with each other. Relatively poor performance by one of the associations is likely to lead issuers to emphasize the other's brand in their marketing.

Discover and American Express are closed systems and, unlike Visa and MasterCard, are organized as traditional businesses with shareholders, a board of directors elected by those shareholders, and management appointed by the board. Discover operates the computer systems and backroom operations necessary for completing the following essential steps of any card transaction: (a) verifying credit when the customer presents the card to a merchant; (b) crediting the value of the transaction less service charge (i.e., less the merchant discount) to the merchant's account; (c) debiting the value of the transaction to the consumer's card account; and (d) billing and subsequent collection of card balances. Discover shapes brand image through product development and advertising, and it engages in research and development to enhance card products and features as well as the system for processing transactions. Finally, Discover—unlike the Visa system but like the Visa members—issues cards to consumers, signs up merchants to take its cards, processes transactions from those merchants, and determines all prices and other terms and conditions affecting cardholders and merchants. American Express operates in a similar way.

The payment card systems compete by making their brands more appealing to consumers and merchants. For example, system decisions affect various aspects of card processing (e.g., the speed of approval and fraud detection) that in turn affect the value of the payment card brand to consumers and merchants. Similarly, by encouraging relatively low merchant discounts—the price merchants have to pay Visa banks for each transaction—Visa built a high rate of

6 *See* Baker and Brandel (1988, pp. 23ff) and *Worthen Bank and Trust Co. v. National Bank-Americard Inc.*, 185 F. 2d 119 (1973).

merchant acceptance.[7] American Express maintained relatively high merchant discounts and had a lower rate of merchant acceptance. Its charge card appealed to a segment of consumers that some merchants were willing to pay high merchant discounts to attract. In the mid-1980s, Visa began its hugely successful "And they don't take American Express" advertising campaign. It appears that this campaign curtailed the growth of American Express cards and encouraged American Express to lower its merchant discount to increase merchant acceptance.

In addition to the four main systems described above, there are two additional card brands in the United States: Diner's Club and Carte Blanche. Diner's Club was bought by Citibank in 1981, and Carte Blanche was bought by Citibank in 1978. Both have been niche products in the United States for some time.[8] A large portion of Diner's Club cards, for example, are simply corporate accounts at travel agencies.

Table 12-1. Market Share of Major Brands by Charge Volume, 1991

Visa	41.9%
MasterCard	25.8%
American Express	24.6%
Discover	5.4%
Diners/Carte Blanche	2.2%
HHI:	3060

Table 12-1 shows the shares of the payment card systems based on 1991 charge volume data that were presented at trial. Visa has the largest share, 41.9 percent, followed by MasterCard, American Express and Discover. The Herfindahl-Hirschman Index (HHI) at the system level is 3060 based on charge volume.

Competition at the Issuer Level

For brand positioning, research and development, and operation of the computer systems that, among other things, determine how long the consumer has to stand around waiting for his or her card to be approved, the system level is where

7 Visa itself does not determine the merchant discount. It does, however, determine the "interchange fee" that acquiring banks pay issuing banks as a percentage of each transaction, and the interchange fee places a floor on the merchant discount. The legality of collective determination of interchange fees was upheld in the *NaBanco* case: *National Bancard Corp. (NaBanco) v. VISA U.S.A.*, Inc., 596 F. Supp. 1231 (S.D. Fla. 1984), *aff'd.*, 779 F.2d 592 (11th Cir.), *cert. denied*, 479 U.S. 923 (1986).

8 Diner's Club is successful in some foreign markets. For example, it has the largest share of the Greek payment card market.

competition occurs. For the prices, card attributes, and other features that are directly relevant to the cardholder, competition occurs at the issuer level. That is because Visa and MasterCard have about 6000 members, each of whom independently sets prices and other card features. These issuers compete with each other and with cards issued by Discover and American Express.

Table 12-2 lists the largest twenty issuers of payment cards as of 1990 based on transaction volume. The largest single issuer of payment cards was American Express with a 24.6 percent share; Discover was the third largest issuer with a 5.4 percent share. The largest ten issuers accounted for approximately 58 percent of the payment card market in 1990.[9]

Entry and exit at the issuer level within MasterCard and Visa are relatively easy. The open membership policies of Visa and MasterCard permit entry by both traditional financial institutions and financial institutions that specialize in issuing credit cards, many of which are owned by or affiliated with nonbanks such as retailers, investment firms, insurance companies, and automobile manufacturers. As shown in Figure 12-1, substantial entry took place into the Visa system between 1981 and 1991. The existence of markets for card issuers' portfolios has made exit easy as well, since exiting issuers can sell their portfolios to entering or expanding issuers.

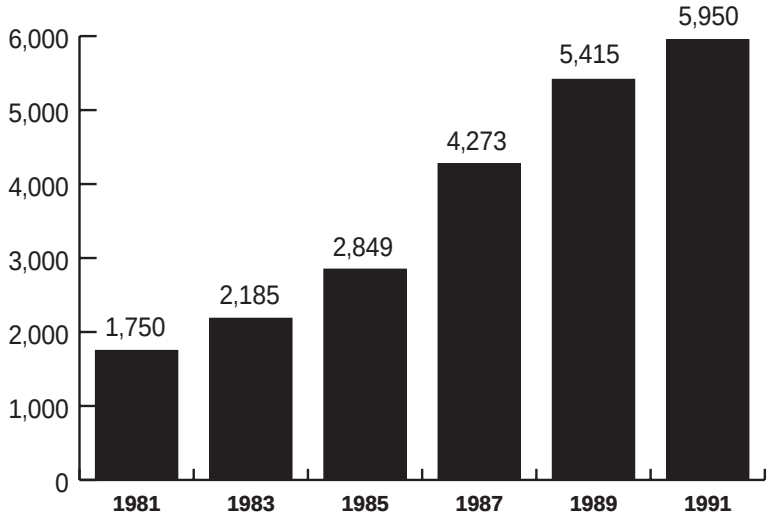
Table 12-2. Top Twenty Issuers of Payment Cards, 1990 (Based on Charge Volume)

	Issuer	Volume ($ billions)	Market Share (%)
1	American Express	$88.30	24.6
2	Citicorp	$40.30	11.2
3	Discover	$19.40	5.4
4	First Chicago	$12.95	3.6
5	Chase Manhattan	$11.36	3.2
6	MBNA Corp.	$11.04	3.1
7	Bankamerica Corp	$10.40	2.9
8	Wells Fargo	$4.80	1.3
9	AT&T Universal	$4.40	1.2
10	The Bank of New York	$4.01	1.1
11	USAA Fed. Savings	$3.95	1.1
12	Manufacturer's Hanover	$3.69	1.0
13	NCNB Corp.	$3.46	1.0
14	Security Pacific Corp.	$3.28	0.9
15	Chemical Banking Corp.	$2.90	0.8
16	First Deposit Bank	$2.75	0.8
17	Marine Midland Bank	$2.73	0.8
18	Seafirst Bank	$2.68	0.7
19	Household Intl	$2.55	0.7
20	Colonial National	$2.50	0.7

Source: *The Nilson Report*, March 1991, issues 495, 496.

9 The HHI based on transaction volume was approximately 850. The HHI based on outstanding balances was approximately 450.

Figure 12-1. Number of Visa Issuers.



Portfolio sales enable issuers to recover the capital value of having developed relationships with a set of creditworthy consumers.

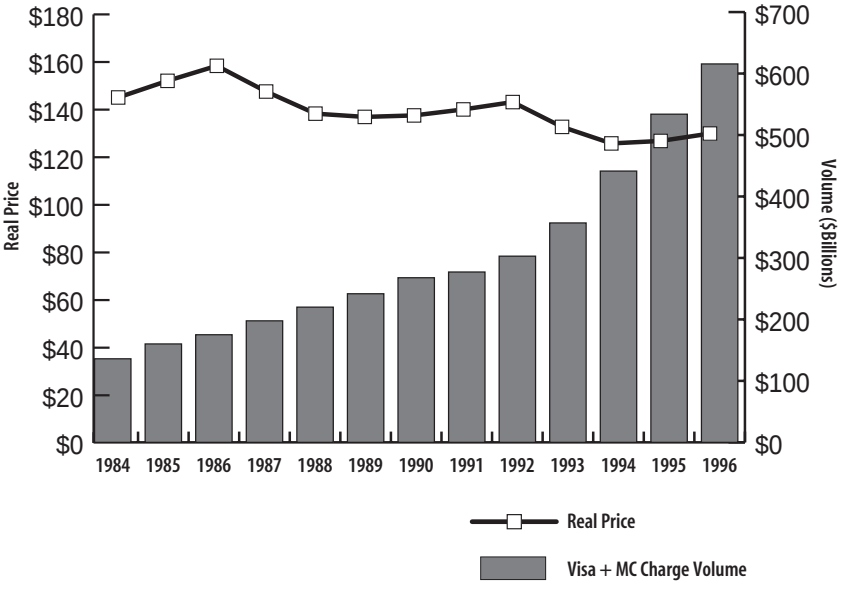
Through the expansion of payment card issuers and the entry of new ones, output of the payment card has grown rapidly over the years. Figure 12-2 shows the growth of output measured by transactions. Figure 12-2 also shows that real prices have not increased.[10] During this time, the quality of payment cards improved dramatically because they became more widely accepted by merchants, the waiting time at merchants for acceptance declined, and cards offered more features such as credits toward frequent flier programs.

Accounting profits have fluctuated over time with the state of the economy and other aspects of the industry evolution. Profits were relatively low in the late 1970s and early 1980s during inflation and a credit crunch and were relatively high in the late 1980s as interest rates (and thus a significant portion of the costs of financing consumer credit) declined and credit card usage expanded rapidly. Figure 12-3 shows the trend.

10 The real price is based on the real cost of annual fees, service fees, and finance charges. It is based on transactions for only the Visa and MasterCard systems. For a discussion of real prices, see Evans, Reddy, and Schmalensee (1997b).

More controversy surrounds the measurement and interpretation of economic profits. Lawrence Ausubel argues that the payment card industry has had relatively high economic profits that have persisted in the face of entry.[11] It is thus, he contends, a paradox—an almost atomistically competitive industry in which the firms earn supracompetitive profits. His explanation for this phenomenon is that consumers are irrational—they think they are going to pay off their credit card debts, but do not, thereby enabling payment card issuers to charge high interest rates despite the availability to the consumer of other alternatives. Stewart Myers and Carlos LaPuerta, who were experts for Visa, have noted that payment card credit is more risky than many other lines of credit because it is not secured.[12] They find that conservative adjustments for risk reduce estimated rates of return in the unusually prosperous period analyzed by Ausubel almost to competitive levels. Similarly, Myers and LaPuerta argue that Ausubel estimated extremely high rates of return on portfolio sales because he ignored the investment in identifying creditworthy customers—by buying a card portfolio the purchaser avoids the cost of having to prospect for creditworthy customers and the seller realizes a return for identifying customers and ascertaining their payment patterns. Finally, at the level of theory, Ausubel's model does not explain why competition in annual fees, which consumers are not likely to misperceive, does not suffice to eliminate excess profits.

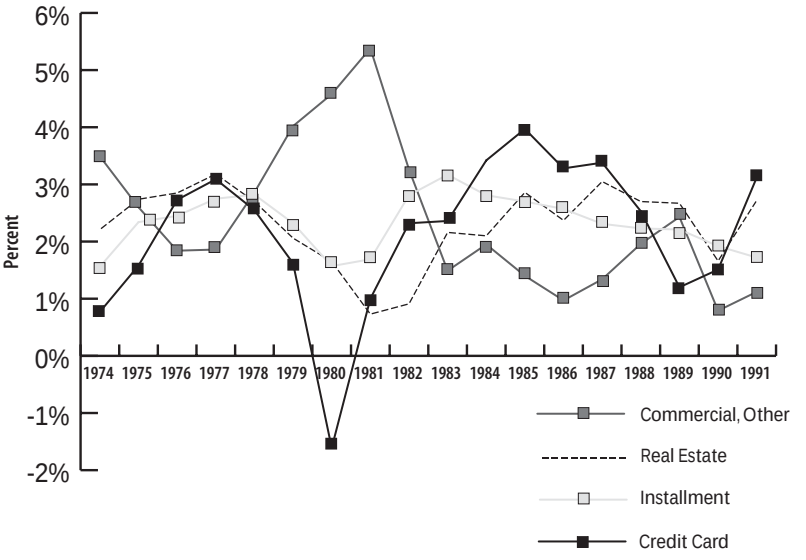
Figure 12-2. Real Price Index Versus Charge Volume for Visa and MasterCard Credit Cards (1992 Dollars).



11 Ausubel (1991).

12 LaPuerta and Myers (1997).

Figure 12-3. Net Before-Tax Earnings as a Percent of Outstanding Balances for Selected Types of Bank Credit 1974–1991.



Sources: Federal Reserve Banks (1991); and Canner and Luckett (1992).

Ausubel also pointed to "sticky" interest rates as evidence that the payment card industry does not function as competitively as economists would expect on the basis of its structure. It takes some time for card rates to respond fully to changes in market rates.[13] However, the cost of funds comprises only 41.5 percent of the variable cost of a payment card operation. [14] Other major costs are processing costs and the costs of fraud and bad debt. Given this, it is not surprising that card rates do not fluctuate in tandem with market rates.[15]

To summarize, there is no controversy that at the issuer level the payment card industry has a highly competitive structure. There is some controversy over whether this structure has resulted in the performance that one would expect from a highly competitive industry.

13 Stavins (1996).

14 Visa U.S.A., *Profit Analysis Report*, quarter ending June 30, 1992; includes both issuing and acquiring.

15 See, for example, Raskovich and Froeb (1992). For a discussion to the contrary, see Calem and Mester (1995).

LEGAL AND PROCEDURAL BACKGROUND

Sears and its Dean Witter subsidiary considered entering the payment card industry in the early 1980s.[16] Sears was the largest payment card issuer as a result of its store card—$11.6 billion outstanding in 1984 (the second largest issuer, Citibank, had only $4.4 billion)[17]—and had extensive experience in evaluating the creditworthiness of prospective cardholders and processing transactions. Dean Witter considered two different methods of entering: joining the open payment card systems or starting its own system. After detailed internal review, it decided to start its own: the Discover Card, which it first issued nationally in 1986. While this strategy was widely derided by observers, it proved remarkably successful. Dean Witter incurred substantial initial losses as it spent money prospecting for cardholders and increasing merchant acceptance. But the Discover Card soon turned into a highly profitable product and garnered 6.6 percent of all credit card outstandings less than five years after its start.

In the face of the first new system entry in a decade, Visa responded in a number of ways. For example, it encouraged its members banks not to let their merchant terminals take Discover Cards, which forced Dean Witter to develop its own terminals.

Dean Witter, in turn, applied for Visa membership in late 1988. Visa's board rejected this application. At the same time, the Visa board adopted Bylaw 2.06 that denied membership to

> any applicant which is issuing, directly or indirectly, Discover cards or American Express cards, or any other cards deemed competitive by the Board of Directors; an applicant shall be deemed to be issuing such cards if its parent, subsidiary or affiliate issues such cards.[18]

Dean Witter complained but did not sue.

A year later Dean Witter purchased the assets of an insolvent thrift institution, MountainWest Savings and Loan in Utah, from the Resolution Trust Corporation (RTC). Those assets included a Visa membership and a small payment card portfolio. Dean Witter intended to use this membership to launch Prime Option, a Visa card to be issued nationally. MountainWest requested the printing of 1.5 million Prime Option Visa cards without letting Visa know that it was now owned by Dean Witter. A small Utah thrift preparing a major national launch piqued Visa's curiosity. When its investigation revealed Dean Witter's ownership, Visa refused to print the cards. In January 1991, Dean Witter filed a lawsuit in the Federal District Court for the District of Utah, complaining that Visa had violated Section 1 of the Sherman Act among other things, and sought damages and a permanent injunction ordering Visa to admit MountainWest as a member.

---

16 See *SCFC ILC, Inc. v. VISA U.S.A.*, Inc., 819 F. Supp. 956 (D. Utah 1993), pp. 5ff for more details.

17 DeMuth (1986), p. 223.

18 See Visa U.S.A., Inc., "By-Laws/Operating Regulations," May 1, 1992, p. 7.

Several skirmishes took place before a trial on the merits of the case commenced. Dean Witter moved for a preliminary injunction to allow it to launch Prime Option. The District Court agreed, but the Tenth Circuit reversed. Congress then appeared to come to Dean Witter's rescue, passing a law requiring the continuation of contracts with thrifts after their subsequent takeover and sale by the RTC. Dean Witter sought summary judgment under the new statute, but the District Court refused because Dean Witter did not comply with all the terms and conditions of the original contract—Bylaw 2.06 in particular—as required by the statute. Visa, for its part, sued Dean Witter for fraud, violation of Section 7 of the Clayton Act, and other miscellaneous claims.

After the judge denied both parties' motions for summary judgment, the trial began in October 1992. Dean Witter's Sherman Act claim was tried by a jury, and Visa's Clayton Act counterclaim was tried by the judge only. The nonantitrust claims and damages were to be tried later.

After a three and one-half week trial, the jury found for Dean Witter. Visa asked the judge to overturn the jury verdict and had some hope for optimism. In oral arguments after the verdict, the trial court judge had said, "I would have hung the jury before I would have come back with that verdict" (transcript, p. 1592).

Nonetheless, on April 1, 1993, the judge denied Visa's motions for a decision in its favor or for a new trial. He rejected Visa's proposed legal standard and concluded that under the correct standard the jury did have a reasonable basis, given the evidence, for reaching their conclusion. He also ruled against Visa on its Clayton Act claim, finding that the harm from reduced intersystem competition was not sufficient to outweigh the bene- fits from increased intrasystem competition through Dean Witter becoming a Visa issuer.

Visa appealed. In September 1994, a three-judge panel of the Tenth Circuit decided in Visa's favor. The Tenth Circuit refused Dean Witter's motion for a rehearing, and the Supreme Court declined to hear Dean Witter's appeal.

THE PARTIES' ARGUMENTS

When do the antitrust laws compel a joint venture (e.g., Visa) to admit a direct competitor? That was the key question raised in the legal proceedings described above. Dean Witter thought the answer was:

> A joint venture that (a) has a large share of the relevant market and (b) cannot show that the exclusion is necessary for the efficient operation of the joint venture must admit any applicant for membership. Moreover, admission into an open joint venture or network joint venture is presumptively efficient.[19]

19 See Responding Brief of Appellee MountainWest, 10th Circuit Court of Appeals, October 15, 1993; also see Carlton and Frankel (1995a) and Pratt et. al. (1997).

Dean Witter argued that Visa had a large share of the relevant market and that Visa's efficiency justifications were mere pretexts for an anticompetitive exclusion.

Visa thought the answer was:

> A joint venture may have to admit a direct competitor only if its participation in the joint venture is essential for competition in the relevant market. Moreover, forced admission is presumptively bad because it is tantamount to the forced sharing of property with a competitor—a policy that would reduce the long-term incentives for the creation of property through investment and innovation.[20]

Visa argued that Dean Witter had demonstrated its ability to compete in the relevant market through its successful Discover Card and that it should not get to use Visa's property just because it could compete better that way. It also argued that letting Dean Witter into the tent would allow Discover to gain competitive intelligence on its system competitor, to freeride on Visa investments and innovations, and to disrupt competitive decision making.

In addition to these polar opposite legal views, the two parties had quite opposing views of the economic effects of exclusion on intrasystem and intersystem competition. Dean Witter claimed that its Prime Option Card would expand output and would cause lower prices as a result of increased intrasystem competition and that its presence in Visa would not have any significant effect on intersystem competition. Visa argued that Prime Option would have a negligible effect on intrasystem competition because of the highly unconcentrated structure at that level but that Dean Witter's presence in Visa would hinder intersystem competition. We now consider Dean Witter's and Visa's arguments in more detail.

Dean Witter's Case

Background

According to Dean Witter, Visa's members collectively control over 70 percent of the relevant antitrust market—general purpose payment cards in the United States. The Visa joint venture has two important characteristics. First, it is a network in which firms work interdependently to provide a service. As with many networks, the value of the network service increases with the number of network participants; economists say there are "positive network externalities." Payment cards are more valuable to merchants if more consumers hold those cards and are more valuable to consumers if more merchants accept those cards. Second, it has been an open joint venture. Historically, virtually any financial institution could join the Visa system. It made sense that Visa was open because it was more "efficient" with more members—more members, more positive network externalities.

20 See Opening Brief of Appellant Visa U.S.A., Inc., 10th Circuit Court of Appeals, and Evans and Schmalensee (1995).

Before passing Bylaw 2.06, Visa did not demand exclusivity. It allowed members to issue MasterCards beginning in 1976. Citibank, which issues Visa cards, owns two competing payment card systems—Diners Club and Carte Blanche. Visa's exclusion of Dean Witter was therefore not only historically unprecedented, it was discriminatory and unfair. Existing members could issue competing cards (MasterCard in the case of all members and additionally Diners Club and Carte Blanche in the case of Citicorp). As Dean Witter's trial attorney put it in his closing arguments,

> based on the rules that the Visa member banks have decided to set for themselves you're not disqualified from Visa simply because you offer a competing card. . . . [T]hose are the rules that Visa members have chosen to play by. . . . Those should be the same rules that apply to everybody in the market in particular in this case the same rules that apply to Dean Witter and MountainWest. [Tr. 2673–2674]

Dean Witter executives testified that they had planned to enter the payment card industry by first introducing its proprietary Discover Card and then adding their own Visa and MasterCard.[21] Indeed, Dean Witter's president testified that it would not have launched the Discover Card had it known it could not later introduce a Visa card.

Market Power

When Dean Witter sought to become a Visa member, Visa exercised market power through its collective rule-making ability. According to Dean Witter, a proper measure of this market power is the aggregate share of the relevant market held by the members who adopt rules. Collectively, the members who adopted Visa Bylaw 2.06 had a 45.6-percent share of the payment card market through their membership in Visa and an additional 26.4-percent share of the payment card market through their dual membership in MasterCard, for a total market share of 72-percent, all based on transaction volume. Visa therefore had market power because its members who adopted the exclusionary rule collectively had a 72-percent market share. This high market share gave Visa's members significant incentives to keep interest rates and profits high.

Dean Witter's market power theory was explained by its economic expert:

> . . . we have a collective rule, By-Law 2.06, and that led me to look at then [sic] collective share. . . . I found that the collective share was very large, and as a consequence my conclusion was that the collective rule was an exercise of market power. It is an exercise of market power because the members of the Visa association acting collectively have both the incentive and the ability to exercise that market power. They have the incentive because this market share was large and they want to protect that market share. And they also have the

21 The claim that Dean Witter intended to add a Visa card was never mentioned in pretrial proceedings or discovery and was hotly disputed by Visa.

> incentive because since this is large, if they can keep prices up or from falling they can make a lot of money. . . . [T]here is nothing here that can prevent the exercise of market power. . . . (Tr. 1594–1595)

The economic proposition that apparently underlies this testimony is that the aggregate market share is a predictor of the effect of an exclusionary rule, adopted by a collective of firms, on output and prices in the relevant market. A joint venture with a large market share has an incentive to adopt an exclusionary rule because it can thereby prevent prices (and profits) from falling as a consequence of entry by new participants within the joint venture. Only competition outside the joint venture could prevent this effect from taking place. Dean Witter argued that competition from nonbank cards (e.g., Discover and American Express) was not sufficient because, for example, the Discover Card is considered a "second card" for most consumers, to be carried only after they have first obtained a Visa or MasterCard. It is this economic proposition that became the focus of the Tenth Circuit decision.

Aside from the high market share, Dean Witter's economic expert cited three other key pieces of evidence to support the claim that Visa has market power. First, Visa's members, especially its top-ten issuers, have enjoyed "high profits" for many years. For example, a Visa consulting study was cited that found: "The 'quick and dirty' analysis determined that [Visa] Members have received a high return on their historic investment, considering the extremely high profitability of Members' credit card businesses in recent years" (plaintiff's exhibit 761). For procedural reasons, Dean Witter's economic expert was precluded from testifying on whether payment card issuers earned "excess profits," that is, additional profits that exceed the level required for a normal rate of return.[22]

The second piece of evidence was that substantial entry had taken place in the payment card industry.

> And there was substantial entry but that substantial entry continued over a full decade. And what we know now is that there are still large firms that are announcing that they are coming into this market and that suggests to me that profits are remaining high in this market. (Tr. 1605)

Thus the fact of substantial entry was taken as evidence that Visa and MasterCard members had high profits that were not competed away through entry.

22 The Ausubel studies cited above were not discussed by Dean Witter's expert. However, the results of these studies were introduced by Dean Witter through their cross-examination of Visa's expert. Visa's expert noted that Ausubel had focused on a short period of time and that profits were lower before that period and were heading down at the end of that period. He also noted that if Ausubel were right, the payment card market exhibits supracompetitive profits with almost atomistic competition and entry. Adding another firm to the fray would be unlikely to remedy that problem.

The third piece of evidence was that payment card issuers engaged in price discrimination. Two examples of prices discrimination were offered: (1) prices have declined subsequent to entry by issuers but not to all cardholders and (2) issuers were willing to waive card fees for cardholders who called to close their accounts (Tr. 1658–1659).

Competitive Effect of Bylaw 2.06

Dean Witter argued that Bylaw 2.06 harms competition and consumers by providing an "enormous disincentive for firms that might enter the market by developing new proprietary cards" and excluding a "large low cost new Visa Card" (Tr. 1592). According to the "disincentive theory," Bylaw 2.06 reduced the incentives to start a new proprietary card because the entrant would not be able then to issue Visa cards. Existing Visa issuers were discouraged from starting their own proprietary systems because they would have to leave Visa (i.e., sell off their portfolios) to do so. Dean Witter argued that the fact that no proprietary system had been started since the enactment of Bylaw 2.06 was evidence of this disincentive.[23]

Dean Witter's economic expert argued that the top-ten issuers of Visa cards had been slow to change their prices in response to the substantial entry that had taken place during the 1980s. That fact, along with the existence of "high profits" and "price discrimination," led him to conclude that entry by Prime Option, as a "large, low cost Visa card" (TR. 1603), would reduce prices. Consumers would benefit from Prime Option's low-priced card, and this option would place pressure on other issuers to lower their prices as well.

Possible Benefits of Bylaw 2.06

Dean Witter also considered whether Bylaw 2.06 provided any economic benefits that could offset the economic harms described above. The expert found no basis for believing that Bylaw 2.06 would decrease costs to members. He then examined whether Bylaw 2.06 was necessary to prevent outsiders from "free-riding" on the joint venture. The fact that Visa had operated as an open joint venture was critical to his conclusion that free-riding was not a concern:

> Visa is an open association. It was completely open until the passage of the amendment to bylaw 2.06. It remains open except for those firms that are targeted in that bylaw. Firms come into this association all the time. The firms in the association remain profitable and output has increased in this market as firms have entered under this open rule. And for all those reasons I conclude that output has increased, it has not gone down, and there is not a free-riding problem in this market with entry. (Tr. 1669)

23 See Responding Brief of Appellee MountainWest, 10th Circuit Court of Appeals, October 15, 1993.

Summary of Dean Witter's Evidence

In rejecting Visa's motion for a directed verdict or a new trial, the judge provided a useful summary of Dean Witter's evidence.[24]

1. Testimony of Sears' [economist]. . . . on the appropriateness of calculating Visa USA's market power by aggregating the individual market shares of Visa USA and MasterCard; and his conclusion that Visa USA exercised market power through its collective power to make rules; and testimony about "the presence of high profits."[25]
2. Dean Witter's president, Phillip Purcell's, testimony that had Sears known that developing the Discover Card would disqualify it from Visa USA entry, it would not have placed a new proprietary card in the market.[26]
3. Testimony that no new proprietary card had been introduced in the relevant market since Bylaw 2.06 was enacted although memberships in Visa USA and MasterCard increased.[27]
4. Testimony that Prime Option "would be a low-cost card which would be supported by powerful marketing and advertising strategies on a national level."[28]
5. Testimony by Sears' executives that Discover Card, in the face of Prime Option's entry, would remain an aggressive competitor.[29]
6. Testimony that intersystem competition would not be harmed "because Prime Option Visa was designed to reach that part of the market that Discover does not reach."[30]
7. Testimony that "Sears would benefit significantly from issuing Prime Option Visa as opposed to Prime Option Discover or another proprietary card."[31]

---

24 For the Appeals Court summary *see SCFC ILC, Inc. v. Visa U.S.A., Inc.*, 36 F.3d 958, 962 (10th Cir. 1994).

25 *SCFC ILC, Inc. v. Visa U.S.A., Inc.*, 819 F. Supp. 956, 985 (D. Utah 1993).

26 Ibid., 986.

27 Ibid., 986.

28 Ibid., 986–987.

29 Ibid., 987.

30 Ibid., 987.

31 Ibid., 988.

Visa's Case

Background

While Visa responded to the arguments presented above, it placed a great deal of weight on the importance of property rights. As Visa saw it, their members had engaged in significant innovation and investment to develop the Visa system. The Visa brand name, and the rights to use this brand name and the other Visa property associated with it, belonged to Visa. Thus, unless Visa were declared an essential facility and sharing its property were deemed essential to competition, Visa alone had the right to decide who it was going to share its property with. Discover was a successful system competitor. Visa decided that it did not want a system competitor in the tent. Dean Witter, in Visa's view, was trying to trespass on its property.

Visa tied this property rights argument to what Philip Areeda (1990) has described as the "macro level" implications of antitrust policy. Forcing Visa to share its property with a competitor not only harmed Visa, it reduced the incentives for other firms to come together and engage in innovation and investment through the joint-venture form of organization. Joint-venture property would be less immune to encroachment by competitors and therefore less valuable to prospective investors and innovators.

According to Visa's legal argument—which, despite its rejection by the trial court, was the subtext for much of the Visa testimony and summations—the property of joint ventures should be treated no differently from that of a single firm. Single firms are required to share their property only under extreme circumstances—generally only when access to that property is "essential" for competition—and joint ventures should be required to do so only under those same extreme circumstances. Membership in Visa was not essential for Dean Witter to compete—it was already in the relevant antitrust market with its Discover Card. And, since the payment card market was highly competitive, granting Dean Witter membership was not essential to competition either.

Thus, Visa argued—explicitly to the court and implicitly to the jury—that it should not be required to admit Dean Witter even if it had market power and if the other facts alleged by Dean Witter were true. Visa should be no more required to admit Dean Witter than McDonald's should be required to admit a Burger King franchisee or than Microsoft should be forced to integrate a competitor's product in Windows. The courts generally do not second-guess decisions by businesses on what to do with their property—even if that business is a monopolist—except possibly when that property is "essential" for other firms to compete. The courts should not second-guess joint ventures like Visa either.

Market Power

Market power in antitrust analysis refers to the ability of a firm (or group of firms) to increase price (or reduce output) significantly above competitive levels.[32] Visa and its economic expert argued that the entry of another issuer into a highly unconcentrated and competitive market would not result in a significant increase in price or reduction in output. As discussed above, the payment card industry has over 6000 issuers, an HHI below 500, and easy entry at the issuer level. Dean Witter estimated that Prime Option would achieve a 5-percent share of the payment card market in seven years. As a relatively small firm in a highly competitive industry, its entry was unlikely to have any discernible effect on prices even if, as claimed by Dean Witter, it was a low-cost card.[33]

The aggregate market share of Visa issuers is not an appropriate measure of market power according to Visa. In and of itself, that share provides little economic information on whether the exclusion of a competitor would have a significant effect on price. For example, the exclusion of only a small quantum of output, no matter how large a share the excluding entity has, cannot possibly have any effect on price or output. Conversely, the exclusion of a large quantum of output could have a large effect on price or output even if the excluding entity does not have a dominant market share. Price effects depend on what is added to or subtracted from a market, not on the aggregate share of the firms making the decisions.

The aggregate market share would be an appropriate measure of market power if Visa had agreed to fix prices. But there was a fundamental mismatch between the measure of market power proposed by Dean Witter and the alleged anticompetitive practice being addressed. As Visa's economic expert testified,

> . . . if they had . . . done collective rule making that had fixed prices or fixed fees or fixed features, that would have been an exercise of market power. But they didn't. The case is not . . . about price fixing by Visa. They passed bylaw 2.06 and they presumably also agreed on the lunch menu at the annual meeting. The question is not might they have done something . . . , but did what they did actually affect competition or harm consumers. (Tr. 2285–2286)

Visa did not agree that other evidence cited by Dean Witter established the existence of market power. "High" accounting profits do not establish supracompetitive economic profits. Moreover, even supracompetitive economic profits over a short period of time do not necessarily establish that there is any market imperfection. High short-term profits can result from short-term market developments, such as a spurt of demand or a sudden reduction in input costs. There was rapid expansion of the use of payment cards following the end of the 1981–1983

32 Carlton and Perloff (1994, p.8).

33 Moreover, the actual effect of the exclusion is the difference between the quantity of output that would be added as a result of Dean Witter's issuing a Prime Option Visa card and the quantity of output that would be added as a result of Dean Witter's pursuing its next best alternative—perhaps another brand of Discover Card or further investment in Discover.

recession. Finally, Visa cited a Federal Reserve Bank study that found that credit card profitability was lower than other bank lending for the longer period 1974–1991.[34]

The fact of entry is ordinarily taken as the best evidence that entry barriers are low. Low entry barriers make markets more competitive, since entry reduces and may eliminate the ability of incumbent firms to exercise market power. So, Visa argued, it was odd that Dean Witter would point to entry as evidence of market power.[35]

Finally, while price discrimination is evidence that a market is not perfectly competitive in the textbook sense, economists recognize that price discrimination, like imperfect competition, is widespread in the economy. Price discrimination alone, without more, proves essentially nothing.[36]

Competitive Effects of Bylaw 2.06

Visa argued that the primary effect of repealing Bylaw 2.06 would be to reduce intersystem competition. The admission of Dean Witter into the Visa system would have resulted in a partial integration of Discover and Visa (and presumably MasterCard). If Dean Witter were a significant Visa issuer, it would have a seat on the Visa Board of Directors and as a result of that, and its projected size, would have influenced Visa decisions. In particular, it would be in a position to influence Visa decisions concerning competition with Discover.

Visa argued that there was no evidence that Bylaw 2.06 was a disincentive for the entry of proprietary systems. Dean Witter did not identify any prospective entrant who was deterred as a result of the Bylaw or any firm that indicated it might be deterred. There was no evidence that any member of Visa had contemplated starting a proprietary system. Between 1966 when Visa and MasterCard both started and 1989 when competing systems were excluded from membership, only one proprietary card system was started—Discover in 1986. The fact

34 Canner and Luckett (1992, p. 661); and Federal Reserve Banks (1991).

35 In pretrial motions, Dean Witter argued that prices fell after AT&T entered the payment card market with its own Visa and MasterCard program in early 1990. This claim was supported by trade press observations that AT&T's entry with a no-annual-fee card had forced other issuers to reduce or eliminate annual fees as well. Visa's economic expert prepared an econometric study of the effect of AT&T's entry on the average real cost to consumers of using credit cards and found no evidence that AT&T's entry was correlated with a reduction in that cost. Annual fees accounted for only about 10% of the average real cost at the time of AT&T's entry; they were trending downward before AT&T entered and continued to do so after AT&T entered. Dean Witter's economist did not mention AT&T in his testimony, and Visa therefore chose not to present the results of its own rebuttal study. The effect of AT&T's entry on payment card prices has taken on somewhat a life of its own after trial. The Visa study was summarized in Evans and Schmalensee (1993). Carlton and Frankel (1995b) then claimed that the entry of AT&T and GM resulted in a statistically significant reduction in annual fees. We have argued that the Carlton-Frankel work is flawed [Evans, Reddy, and Schmalensee (1997)].

36 For a discussion of price discrimination as a common practice see Carlton and Perloff (1994, ch. 11) or Scherer and Ross (1990, ch. 13).

that no proprietary system was started between 1989 and 1992, the time of trial, did not show that there was a disincentive. There was testimony that starting a proprietary system was a highly risky and expensive undertaking. Given that entry through Visa or MasterCard is much easier, it is not surprising that most entrants have chosen that course of action.

Finally, Visa argued that Dean Witter was not excluded from the relevant antitrust market at all. It could not issue Prime Option under the Visa "brand," but it could issue Prime Option under the Discover "brand." Both brands were in the market as defined by both sides. If Prime Option were a particularly innovative product desired by consumers, in principle it could be attractive if issued through the proprietary Discover system. Dean Witter presented no evidence that access to the Visa brand was necessary for the success of Prime Option, only that it would have been helpful.

Benefits of Bylaw 2.06

Visa witnesses identified several benefits of Bylaw 2.06. As discussed above, Bylaw 2.06 preserved intersystem competition by erecting a wall between system competitors. Visa executives testified at trial that duality had resulted in a reduction in competition between Visa and MasterCard and that Dean Witter's participation in Visa would tend to reduce competition between Visa/MasterCard and Discover. They also testified that Bylaw 2.06 prevented a system competitor from obtaining valuable information from Visa through its participation in Visa business decisions and through its receipt as a member of confidential data. Apparently, Dean Witter thought that by becoming a member it could curtail Visa competition with the Discover Card and learn more about a system competitor.[37]

Mismatches

According to Visa, the antitrust problem identified by Dean Witter and the remedy it proposed were inconsistent with each other. The essential antitrust problem was that Visa allegedly had market power derived from its ability to engage in collective rule-making. According to Dean Witter, the extent of that problem—the degree of market power—was properly measured by the aggregate shares of the members involved in that collective rule-making. Dean Witter's proposed remedy was the admission of Dean Witter and, if it wished, American Express to Visa. Under that remedy, Visa could be forced to raise the aggregate shares of its members to 100 percent of the market, thus increasing the system's market power. As Visa's economist put it, ". . . if [Dean Witter's] diagnosis is right, then [Dean Witter's] prescription would make things worse. It is like my doctor saying to me as he does every once in a while that I'm a little bit too heavy and so I should eat a lot more ice cream" (Tr. 2331).

37 See Opening Brief of Appellant Visa U.S.A., Inc., 10th Circuit Court of Appeals, p. 15.

There was also a fundamental mismatch between Dean Witter's argument that Bylaw 2.06 discourages the entry of proprietary systems and its argument that Bylaw 2.06 should be repealed so that proprietary systems could join Visa. If the market problem is that there are too few proprietary systems, the solution should be to close the door at Visa—not to open the door more as desired by Dean Witter. Closing the door would encourage companies like AT&T and GM to start their own proprietary systems (AT&T had considered doing so). Keeping the door largely open encourages firms to enter as Visa issuers, not as proprietary systems.

THE APPEAL TO THE TENTH CIRCUIT

After losing the jury verdict and failing to convince the District Court to declare a mistrial or overrule the jury, Visa appealed to the Tenth Circuit. Both parties sought to frame the appeal in terms of the proper legal rule toward joint ventures. Visa argued that it should not have to admit Dean Witter unless Dean Witter could prove that it could not compete successfully without access to Visa's property. Dean Witter argued that joint ventures should not be allowed to impose membership conditions that have the purpose and effect of restraining competition and that are not ancillary to any legitimate purposes of the association.

After summarizing the existing case law, the appellate court set the stage for a rule-of-reason analysis that ultimately imposed the burden on Dean Witter to show that the Bylaw would harm consumers:

> We do not read the Court's precedent involving joint ventures to imply any special treatment or differing antitrust analysis. Indeed, aside from clarifying the inappropriateness of automatically invoking per se scrutiny of a joint venture's alleged antitrust violation, the Court has not articulated a different rule of reason approach. . . . To be judged anticompetitive, the agreement must actually or potentially harm consumers. . . .That concept cannot be overemphasized and is especially essential when a successful competitor alleges injury at the hands of a rival.[38]

Dean Witter ultimately lost because the court rejected the collective rulemaking analysis proffered by Dean Witter. The court found that "it is not the rule-making per se that should be the focus of the market power analysis, but the effect of those rules—whether they increase price, decrease output, or otherwise capitalize on barriers to entry that potential rivals cannot overcome"[39] (APP. 24–25). The court noted that there was no evidence presented (other than the unconvincing aggregate market share analysis) that the Visa rule had any anticompetitive effects on consumers.

38 *SCFC ILC, Inc. v. Visa U.S.A.*, Inc., 36 F 3d 958, 964–965.

39 Ibid., 968.

The court went on to say

> Thus, without any eye on effect, the very exercise of rule-making became the factual basis for rule of reason condemnation of Bylaw 2.06. Consequently, rule-making was not only divorced from its functional analysis but also from the facts of the case. . . . We believe the evidence cited by the district court to conclude Visa USA possessed market power is insufficient as a matter of law. [That] conclusion set the path for its uncharted journey upon a landscape of speculation, conjecture, and theoretical harm. The consequence is the finding of liability based on tendentious and conclusory statements, none of which amounts to evidence of restraint of trade. [In a footnote the court remarked] Sears' disincentive argument [regarding Bylaw 2.06 and the entry of new systems] provides the widest array of speculation. . . .[40]

The court also rejected Dean Witter's view that, in effect, Visa had to show that the "selective exclusion imposed by Visa's Bylaw 2.06 is ancillary to Visa's legitimate purpose as an open industry association."[41] The appellate judges observed that the Bylaw does not bar Dean Witter access to the payment card market and pointed out that there was no evidence that the Bylaw precluded Dean Witter from introducing Prime Option through Discover or any other means. They did not believe that the Sherman Act required the admission of Dean Witter into Visa so that it could compete more effectively. But the court stopped short of an explicit endorsement of Visa's "essential facility" standard for forced admission to a joint venture.

CONCLUSION

Business A, which competes with Business B, decides that it could make more money if it could sell B's product line in addition to its own. Business B says no. Can Business A make a claim under Section 1 of the Sherman Act? The general answer is clearly no, and this answer does not depend on whether Business B has market power, whether it let Business C sell the product line three days before, or whether it says that it would like to drive Business A into the dirt. Businesses do not have to share their property with anyone, let alone direct competitors, except under highly restrictive circumstances.

How then did Dean Witter's claim—which has almost exactly this fact pattern—survive summary judgment? The answer lies in the courts' long-standing hostility to joint ventures. Joint ventures are typically agreements between competitors, and it is well known that such horizontal combinations can do bad things: cartels can fix prices; trade associations can set standards that can block entry; and colluding firms can sometimes exclude competition by locking up essential

40 Ibid., 968–969.

41 Ibid., 971.

inputs.[42] The courts therefore scrutinize joint ventures more closely than they do other forms of business organizations. Dean Witter could fashion an antitrust claim only because Visa was organized as a joint venture, and Dean Witter could therefore argue that Visa's exclusionary rule was enacted by a horizontal combination of competitors.

This higher level of scrutiny is somewhat paradoxical, since there is generally more competition when firms operate through a joint venture than when they merge. That is especially true for joint ventures that share input production and costs but then compete in output markets. If Visa and MasterCard had organized themselves as proprietary systems (e.g., with member banks having equity shares) in which members did not compete with each other, there would have been far less competition in the payment card industry than there is today. This is not to say that joint ventures cannot provide a vehicle for anticompetitive behavior, but so can trade associations, industry conferences, and Sunday golf outings.

Not content with just having gotten to court, Dean Witter wanted (and needed) an even higher standard of scrutiny to win its case: a joint venture with a large market share would have to admit all comers unless it could show that exclusion was necessary for efficiency. And if it was admitting other new members or had recently done so, the exclusion of any applicant was presumptively not efficient. According to this view, large, open joint ventures must admit all applicants even if they are direct competitors of the venture. That view was rejected by the Tenth Circuit. Had the Tenth Circuit instead accepted Dean Witter's arguments, it would have made joint ventures, especially joint ventures that had admitted members in the past because of network externalities, a second-class form of business organization with attenuated property rights. Such a ruling would discourage the formation of joint ventures and would encourage resorting to mergers to exploit gains from cooperation.

Although its imagery could use work, the Tenth Circuit reached a sensible conclusion concerning Dean Witter's proposed revision to joint venture antitrust law and the result it would have required:

> Given Visa USA's justification the bylaw is necessary to prevent free riding in a market in which there was no evidence that price was raised or output decreased or Sears needed Visa USA to develop the new card, we are left with a vast sea of commercial policy into which Sears would have us wade. To impose liability on Visa USA for refusing to admit Sears or revise the bylaw to open its membership to intersystem rivals, we think, sucks the judiciary into an economic riptide of contrived market forces.. . . The Sherman Act ultimately must protect competition, not a competitor, and were we tempted to collapse the distinction, we would distort its continuing viability to safeguard consumer welfare.[43]

42 See Kwoka (1994) for a discussion of the antitrust issues involved in the joint venture of GM and Toyota for manufacturing automobiles.

43 *SCFC ILC, Inc. v. Visa U.S.A., Inc.*, 36 F. 3d 958, 972.

REFERENCES

Areeda, Phillip E. "Essential Facilities: An Epithet in Need of Limiting Principles." *Antitrust Law Journal* 58 (1990): 841–853.

Ausubel, Lawrence M. "The Failure of Competition in the Credit Card Market." *The American Economic Review* 81 (March 1991): 50–81.

Baker, Donald I., and Roland E. Brandel. *The Law of Electronic Fund Transfer Systems*. New York: Warren, Gorham & Lamont, 1988.

Calem, Paul S., and Loretta J. Mester. "Consumer Behavior and the Stickiness of Credit-Card Interest Rates." *The American Economic Review* 85 (December 1995): 1327–1336.

Canner, Glenn, and Charles Luckett. "Developments in the Pricing of Credit Card Services." *Federal Reserve Bulletin* 28 (September 1992): 652–666.

Carlton, Dennis W., and Alan S. Frankel. "The Antitrust Economics of Credit Card Networks." *Antitrust Law Journal* 63 (1995a): 228–248.

Carlton, Dennis W., and Alan S. Frankel. "Antitrust and Payment Technologies." *Federal Reserve Bank of St. Louis Review* 77 (November/December 1995b): 41–54.

Carlton, Dennis, and Jeffrey Perloff. *Modern Industrial Organization*. 2nd ed. New York: HarperCollins, 1994.

DeMuth, Christopher C. "The Case Against Credit Card Interest Rate Regulation." *Yale Journal of Regulation* 3, no. 2 (Spring 1986): 201–247.

Evans, David S., Bernard J. Reddy, and Richard Schmalensee. "Did AT&T & GM Affect Credit Card Pricing?" N.E.R.A. Working Paper, 1997.

Evans, David S., and Richard Schmalensee. *The Economics of the Payment Card Industry*. Cambridge, Mass.: N.E.R.A, Inc., 1993.

Evans, David S., and Richard L. Schmalensee. "Economic Aspects of Payment Card Systems and Antitrust Policy Toward Joint Ventures." *Antitrust Law Journal* 63 (1995): 861–898.

Federal Reserve Banks. "Functional Cost Analysis: 1991 National Average Report."

Kwoka, John E., Jr. "International Joint Venture: General Motors and Toyota (1983)." In *The Antitrust Revolution: The Role of Economics*, edited by John E Kwoka, Jr., and Lawrence J. White, 46–75. 2d ed. New York: Oxford University Press, 1994.

LaPuerta, Carlos, and Stewart C. Myers. "Measuring Profitability in the Credit Card Business." Mimeo, January 7, 1997.

Pratt, William, James Sonda, and Mark Racanelli. "Refusals to Deal in the Context of Network Joint Ventures." *The Business Lawyer* 52 (1997): 531–557.

Raskovich, Alexander, and Luke Froeb. “Has Competition Failed in the Credit Card Market?” U.S. Department of Justice, Economic Analysis Group Discussion Paper, June 12, 1992.

Scherer, F. M., and David Ross. *Industrial Market Structure and Economic Performance,* Princeton, N.J.: Houghton Mifflin, 1990.

Stavins, Joanna. “Can Demand Elasticities Explain Sticky Credit Card Rates?” *New England Economic Review* (July/August 1996): 43–54.

Visa U.S.A. *Profit Analysis Report*, quarter ending June 30, 1992.

Visa U.S.A. Inc. “By-Laws/Operating Regulations,” May 1, 1992.

THE RETAILER CLASS ACTION ANTITRUST CASE AGAINST THE CARD ASSOCIATIONS

Howard H. Chang,
NERA Economic Consulting

David S. Evans,
NERA Economic Consulting

Richard Schmalensee,
MIT Sloan School of Management

On the eve of trial, MasterCard and Visa reached a settlement with 5 million merchants that had sued the card associations over competitive practices related to their debit cards.[1] This paper describes the issues raised in this lawsuit and how the agreement reached between the card systems and the retailers may affect the payment card business in the United States.

BACKGROUND

The debit card is an unusual product. The same size and shape as a credit card, most have a MasterCard or Visa logo on the front; most of those also have a line that says "check card" or something else that indicates that the card is associated with the holder's checking account. Nearly all also have the logos of STAR, NYCE, or other electronic funds transfer (EFT) networks on the back. (EFT networks started out as ATM networks, later adding debit functionality for retail purchases.) You can use this card to take money out of a cash machine that is affiliated with one of the EFT networks. You can also use the card to pay for things at merchants. If you key in a personal identification number (PIN), your transaction goes through one of the EFT networks listed on the back. Such transactions are often referred to as PIN debit. If you sign a slip as you would for a credit card, your transaction goes through the card system whose logo is on the front—either MasterCard or Visa. Such transactions are often referred to as signature debit. (It would also go through MasterCard or Visa if you gave your card number over the phone or over the internet; we ignore this possibility in the rest of this paper.)

Until recently, if you had a debit card with a MasterCard or Visa logo on the front, you could use that card at any merchant that accepted cards issued by members of these associations. MasterCard and Visa required that merchants that accepted any of their cards take for payment all cards that carried their logo on the front. This "honor-all-cards" rule meant that merchants that wanted to take credit cards also had to take debit cards.

Wal-Mart and some other retailers objected to this requirement. They claimed that customers with signature debit cards would be willing to pay instead using cash, check, or PIN debit (assuming the merchant had installed the PIN pads needed to accept such transactions). And they claimed that these alternatives would be cheaper for them than signature debit. When MasterCard and Visa refused to allow them to accept credit but decline signature debit, Wal-Mart and other retailers filed an antitrust case against the card associations in 1996. They claimed that MasterCard and Visa had unlawfully tied the purchase of debit card transaction services to the purchase of credit card transaction services; specifically they claimed that the associations had violated Section 1 of the Sherman Act.

1 W.A. Lee, "Settlements in Hand, Lawyers in Debit Suit Lighten Up in Court," *American Banker,* May 5, 2003.

Wal-Mart and the other retailers sought to represent all retailers who had entered into agreements to accept the MasterCard and Visa cards. A federal district court agreed and certified a class of about 4 million merchants. (The count of merchants was an estimate and grew over time—an estimated 4 million were in the class when certified, with over 5 million estimated to be in the class by the time of settlement.) The class sued to enjoin the application of the honor-all-cards rule to debit cards and for treble damages of about $100 billion.[2] On the eve of trial, the merchants and card associations agreed to a settlement. MasterCard and Visa agreed to stop requiring merchants to take both debit and credit cards on January 1, 2004 and to pay the retailers $3.05 billion over the next ten years (about $2.2 billion to $2.6 billion in present value).[3]

To understand the issues in the case it is helpful to start by explaining how PIN and signature debit went from accounting for $17 billion of transactions in 1992 to $480 billion in 2002.[4] (All dollar figures in this paper are adjusted to 2002 dollars using the GDP implicit price deflator.)

THE GROWTH OF DEBIT CARDS

For many years, signature debit cards were a dormant product in the United States. Banks could issue them from the early days of the card systems, though few did. ATM cards, used for cash withdrawals, were relatively common by the early 1980s, but it was not generally possible to use them for making payments at merchants. Both products came to life in the 1990s. How they did so requires an introduction to two-sided markets.

Two-Sided Platforms

Many significant though diverse businesses are based on "platforms" that serve two or more groups of customers who need each other in some way. The shopping mall provides a platform where retailers and shoppers can meet each other. Shoppers value a mall that has more stores they want to shop at, while retailers value a mall that attracts more shoppers. Video games are a more complex example. The operating system software that runs on the game console is the platform. It provides a set of services that game developers can use to write games that run on the console, and a set of services that game users can then use to run those games. Developers like consoles that have more players and players like consoles with more developers. Other software ranging from Adobe Acrobat to

2 *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc., 280 F.3d 124, 148 (2001). Using discount rates of 4 to 8 percent produce present-discounted values around $2.2 billion to $2.6 billion. The bank prime loan rate was around 4 percent. "Selected Interest Rates," Federal Reserve Statistical Release, Oct. 17, 2003 (visited Oct. 18, 2003) <http://www.federalreserve.gov/releases/h15/update/>.

3 *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc., "Memorandum and Order," December 19, 2003, at 6.

4 *The Nilson Report*, No. 545 (Apr. 1993); *The Nilson Report*, No. 579 (Sept. 1994); *The Nilson Report*, No. 784 (Mar. 2003); and *The Nilson Report*, No. 785 (Apr. 2003).

Microsoft Windows are also two-sided platforms. Dating venues are a frivolous although illuminating example. They provide a platform where men and women can meet. Within bounds, men would like to be able to meet more women, and women more men. In all these cases, the platform provides a valuable service ***only*** if both types of customers use it and provides a more valuable service to each type of customer if there are more of the other type of customers.

Economic research on two-sided platform businesses has found that pricing decisions face complexities not found in ordinary businesses. Charging one type of customer a higher price reduces the number of those customers that use the platform. That in turn reduces the value of the platform to the other type of customer and the amount that she is willing to pay. Businesses have to take these interdependencies—what economists call "indirect network externalities"—into account in determining the profit-maximizing prices. Economic theory shows that the profit-maximizing prices for each platform side depends on demand and cost characteristics for both sides. The profit-maximizing price for a side does not vary directly with side-specific marginal cost or inversely with the side-specific elasticity of demand as it does in one-sided markets. Indeed, the profit-maximizing price for a particular side may be less than the marginal cost of serving that side and may be negative.

That is true in practice, as well. Many businesses that operate two-sided platforms charge prices that result in their earning profits disproportionately from one side. Adobe, for example, gives away the Acrobat software for reading and charges for the Acrobat software that does the writing. Video game console makers tend to earn most of their profits from royalties to game developers; they sell the consoles to game users at a price that just recovers the manufacturing cost. Shopping malls typically charge merchants but let patrons in for free; sometimes they even provide inducements for patrons to come, such as free parking. Computer operating system sellers from Apple to Microsoft to Palm tend to earn more of their profits from users rather than developers. Other two-sided platforms don't go quite so far: although some nightclubs let women in for free it appears more common for women to get a break on price (or cheap drinks).

The economic theory of two-sided platforms finds that profit-maximizing businesses must simultaneously determine "pricing levels"—the prices charged each market side—and a "pricing structure" that determines the relative prices (and relative contributions to profit) for each side. Pricing levels in two-sided platform businesses go up and down as a result of changes in demand and cost characteristics on both sides. However, pricing structures tend to be quite robust. The two-sided examples noted above have almost always had pricing structures weighted towards a particular side. That suggests that these pricing structures are the result of fundamental demand and technological relationships in these industries that do not change much over time or across market conditions.

Pricing Structures and Levels for Payment Cards

Like other platforms, payment cards serve two sets of customers who need each other. They provide transaction services to individuals and merchants. These transaction services are only useful when an individual who has a card patronizes a merchant who accepts cards. Moreover, these services are more valuable to each individual when there are more merchants (because she can be confident she can use her card in more places) and more valuable to each merchant when there are more cardholders (because more customers will want to use cards there).

The pricing structure for payment cards has remained robust over time, different card types, and varying degrees of competition. Diners Club, the first general purpose payment card system, was established in Manhattan in 1950. It charged restaurants 7 percent of the tab and cardholders an annual fee of $18 (2002 dollars).[5] During the 1950s, it earned about 70 percent of its revenues from merchants.[6] American Express was started in 1958. Exclusive of finance charges, it earned about 62 percent of its revenues from merchants in 1969, 66 percent in 1991, and 82 percent today.[7] The calculations are more complicated for credit cards that bundle a financing service with a transaction service. But putting financing revenues aside, 84 percent of the revenue earned by members of the Visa association come from the merchant side.[8] (We discuss debit below.)

The integrated systems can adjust their merchant and cardholder fees to achieve the right balance and to respond to competition from other systems. American Express provides a good example. When it challenged Diners Club in the late 1950s it set a merchant discount a couple of percentage points below Diners Club and a cardholder fee that was slightly higher.[9] It quickly established itself in the marketplace but wasn't profitable until 1962.[10] It found the "bliss" point by raising its card fee and keeping the merchant discount at about 5 percent—this was bliss because it made American Express profitable and, if anything, made it a stronger competitor compared with Diners Club. American Express stumbled with the introduction of Optima in 1987, but made its comeback in the 1990s in part by using the merchant discount and cardholder fees strategically. It continued to get the bulk of its revenue from the merchant side, but it lowered the merchant discount selectively to particular categories of merchants to increase

5 "Charge It, Please," *Time*, Apr. 9, 1951.

6 "On-the-Cuff Travel Speeds Up," *Business Week*, Aug. 16, 1958.

7 "The Trick is Managing Money," *Business Week*, June 6, 1970; American Express 10-K for Year Ended Dec. 31, 1993; and American Express 10-K for Year Ended Dec. 31, 2002.

8 This number is for 2001 and excludes service charges. Visa U.S.A.

9 "On-the-Cuff Travel Speeds Up," *Business Week*, Aug. 16, 1958; and Peter Z. Grossman, *American Express: The Unofficial History of the People Who Built the Great Empire* (1987), at 285.

10 Peter Z. Grossman, *American Express: The Unofficial History of the People Who Built the Great Empire* (1987), at 303.

acceptance. High-end stores like Tiffany's pay considerably more than mass-market stores like Costco.[11]

The MasterCard and Visa cooperative systems cannot act so nimbly. The cardholder and merchant prices are set through competition among banks that solicit cardholders ("issuers") and among banks that sign up merchants ("acquirers"). That competition determines the pricing levels for the system. The only way the cooperative systems can determine the pricing structure is by way of the interchange fee—a percentage of each transaction that the acquirer gives to the issuer. A higher interchange fee, for example, lowers issuers' costs and raises acquirers' costs, which will be reflected in lower prices to cardholders and higher prices to merchants. There does not appear to be any significant cooperative payment card system that operates without interchange fees.[12] The fees vary mainly based on the type of card. But again, this suggests that interchange fees like merchant discounts result from basic demand and technological conditions.

Getting Both Sides on Board

By the mid-1980s many households had two kinds of cards. They had ATM cards issued to them by the bank where they had their checking account. They could use these cards to withdraw money at ATM machines that were either operated by the bank or by one or more EFT (then ATM) networks with which the bank was affiliated. They could not use these cards to pay for things at retailers. Many households also had credit cards issued by one of the several thousand banks that belonged to the national card associations. They could use these cards to pay for things at the millions of retailers that accepted these cards for payment. Although some credit cards made it possible to get a cash advance from an ATM machine, you could not use these cards to take money directly out of your checking account.

The EFT and credit card systems saw the promise of debit cards. They faced different problems, however, in creating a debit card platform and getting both cardholders and merchants on board. The EFT systems had an existing base of households who had cards that were tied to their checking accounts. Most EFT systems required their issuers to allow their cardholders to use the cards for retail transactions as well as for taking cash from ATMs. There were 128 million ATM cards in 1991.[13] But few merchants accepted these cards.[14] They needed to get

11 "AmEx One-Ups the Bank Cards in Warehouse Stores," *Credit Card News*, Aug. 15, 1999.

12 Commission Decision of 24 July 2002 Relating to a Proceeding Under Article 81 of the EC Treaty and Article 53 of the EEA Agreement, Case COMP/29.373—Visa International (2002/914/EC), European Commission website (Nov. 22, 2002) (visited Nov. 13, 2003) <http://europa.eu.int/eur-lex/pri/en/oj/dat/2002/l_3-18/l_31820021122en00170036.pdf>, at §8.2.1.

13 *The Nilson Report*, No. 525 (June 1992).

14 Charles Marc Abbey, "The Case for PIN-Based Debit Acquiring," *Credit Card Management*, July 2001.

merchants on board, and that meant persuading merchants to install PIN pads to accept this new method of payment. MasterCard and Visa, in contrast, had an existing base of 2.8 million merchants that accepted their cards as of 1991.[15] They also had technology that would enable their members to issue debit cards that could be accepted at these merchants. But their members had not done so in significant numbers—there were 11.2 million signature MasterCard and Visa debit cards in 1991 compared with 220.9 million MasterCard and Visa credit cards.[16]

Visa approached the two-sided problem by persuading members that issuing debit cards was profitable[17] (MasterCard took a different tack at first but followed Visa's approach a few years later.[18]) Interchange fee revenue was a significant part of the story. Around 1993, Visa undertook a major campaign to convince banks to issue its debit cards. It developed financial analyses that showed banks the benefits from higher interchange fees on signature debit versus PIN debit transactions.[19] Visa's interchange fee on debit was much higher than the EFT networks' interchange fees. Visa argued that with such fees, signature debit cards could be issued profitably. Another part of the story was convincing people to use debit cards. That had been part of the problem with the debit cards that banks had issued in the past. Visa mounted a substantial advertising campaign to let people know about their new card. The Visa Check card was positioned as a convenient substitute for a check; many of the ads featured well-known people who couldn't get merchants to accept a paper check, because they didn't have the proper identification.[20]

The EFT systems attacked the two-sided market problem by encouraging merchants to install PIN pads. A very strong incentive for merchants to install PIN pads was the flipside of the incentive for banks to issue signature debit—the interchange fee. Since the interchange fee on PIN debit was much lower than on signature debit, merchant discounts for PIN debit were also much lower. Every

15 *The Nilson Report*, No. 522 (Apr. 1992).

16 *The Nilson Report*, No. 522 (Apr. 1992).

17 David Evans & Richard Schmalensee, *Paying with Plastic: The Digital Revolution in Buying and Borrowing* (1999), at 298.

18 MasterCard initially focused its debit efforts on PIN debit, but after seeing Visa's success with the Visa Check Card, it started to focus more on its signature debit card, MasterMoney, in the late 1990s. Phil Roosevelt, "MasterCard to Roll Out Debit Program Next Year," *American Banker*, Oct. 4, 1991; Stephen Kleege, "MasterCard, Visa Turn Up the Volume in Debit Marketing," *American Banker*, Aug. 23, 1993; Stephen Kleege, "Debit Card War Forces Tough Choices," *American Banker*, Feb. 7, 1994; Cathy Bowen, "A Tale of Two Strategies," *American Banker*, July 1999.

19 Visa U.S.A.

20 Charles Keenan, "Ads Promote Debit Without Mentioning the D-Word," *American Banker*, July 8, 1997.

$30 transaction a merchant could switch from signature to PIN debit meant, on average, a savings of something like 30 cents.[21] Just one such switch a day would pay for the $100 cost of a PIN pad in less than a year. The fact that PIN pads were becoming cheaper and debit was becoming more popular, in part because of the Visa Check advertising campaign, also helped make the case. The EFT systems also engaged in some local promotional efforts for PIN debit—such as billboard and radio ads and in-store promotions—to encourage consumer use, but they paled in comparison to signature debit advertising.[22]

Both strategies worked. Between 1995 and 2002 the number of PIN pads increased from 658,000 to 4.05 million (an annual growth rate of 30 percent).[23] Merchants with checkout lanes and low margins were particularly likely to install PIN pads.[24] For that same period, the number of debit cards that could be used with a signature increased from 39 million to 175 million (an annual growth rate of 24 percent).[25] Figure 1 shows the change in charges made on debit cards through the use of a PIN or a signature. Signature debit is substantially more important than PIN debit, in part because most merchants in the United States haven't installed PIN pads.[26]

---

21 The EFT systems typically charged a flat interchange fee per transaction, while the interchange fee set by Visa and MasterCard varied with the size of the transaction. The reported interchange fee comparison is from 1998, around the time of substantial growth in debit for the EFT and credit card systems. *Interchange Fee Hikes Test Merchants' Muscle*, Debit Card News, June 28, 1998. This lists Visa Check interchange fee for 1998 at 1.04% plus 6 cents = .372 on a $30 transaction. Interchange fees for the EFT systems come from the *1999 Debit Card Directory*. The figures presented are for illustrative purposes. Actual merchant fees differed depending on a number of factors.

22 "Offline Debit, ATM Fees Give Online Networks a Promo Boost," *Debit Card News*, Mar. 16, 1999; Jeff Green, "Unlike Rivals, NYCE is Venturing into TV Ads," *Card Marketing*, Nov. 2001.

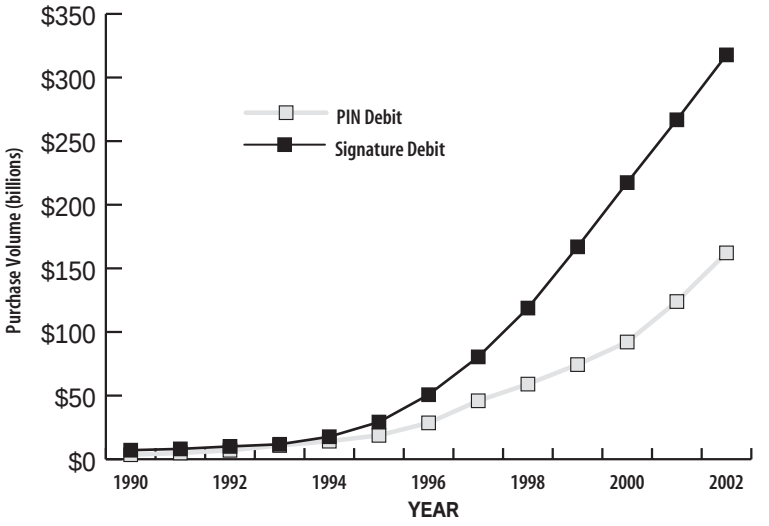
23 *The Nilson Report*, No. 615 (Mar. 1996); *The Nilson Report*, No. 785 (Apr. 2003).

24 Charles Marc Abbey, "The Case for PIN-Based Debit Acquiring," *Credit Card Management*, July 2001; Lavonne Kuykendall, "A Golden (Arches) Test Case for Micropayment Processing," *American Banker*, Dec. 16, 2002.

25 *The Nilson Report*, No. 617 (Apr. 1996); *The Nilson Report*, No. 784 (Mar. 2003).

26 W.A. Lee, "Case Watch: Wal-Mart," *American Banker*, Nov. 18, 2002.

Figure 1. Purchase Volume on Debit Cards: 1990-2002



Note: Purchase volumes were adjusted to 2002 dollars using the GDP implicit price deflator.
Sources: *The Nilson Report*, No. 500 (May 1991); *The Nilson Report*, No. 522 (Apr. 1992); *The Nilson Report*, No. 545 (Apr. 1993); *The Nilson Report*, No. 569 (Apr. 1994); *The Nilson Report*, No. 579 (Sept. 1994); *The Nilson Report*, No. 589 (Feb. 1995); *The Nilson Report*, No. 591 (Mar. 1995); *The Nilson Report*, No. 615 (Mar. 1996); *The Nilson Report*, No. 617 (Apr. 1996); *The Nilson Report*, No. 640 (Mar. 1997); *The Nilson Report*, No. 641 (Apr. 1997); *The Nilson Report*, No. 664 (Mar. 1998); *The Nilson Report*, No. 665 (Apr. 1998); *The Nilson Report*, No. 687 (Mar. 1999); *The Nilson Report*, No. 689 (Apr. 1999); *The Nilson Report*, No. 711 (Mar. 2000); *The Nilson Report*, No. 712 (Mar. 2000); *The Nilson Report*, No. 737 (Apr. 2001); *The Nilson Report*, No. 738 (Apr. 2001); *The Nilson Report*, No. 759 (Mar. 2002); *The Nilson Report*, No. 760 (Mar. 2002); *The Nilson Report*, No. 784 (Mar. 2003); and *The Nilson Report*, No. 785 (Apr. 2003).

We mention a few other institutional details before moving on to the *Wal-Mart* lawsuit. The EFT systems were originally cooperatives of banks that agreed to interconnect their ATM networks, several of which operated on a not-for-profit basis. Over time these EFT networks have been consolidated to create larger systems that have come to be run as for-profit enterprises. During the early efforts to introduce PIN pads, banks were members of the EFT networks as well as the credit card associations. MasterCard and Visa are membership associations that operate on a break-even basis. Interchange fees are transfers between issuing and acquiring members and do not affect the finances of the association itself.

THE VISA CHECK/MASTERMONEY LITIGATION

Two aspects of the business strategies adopted by the EFT and credit card systems precipitated the *Wal-Mart* lawsuit. First, there was a wide disparity in the interchange fees for the two systems. The plaintiffs argued that in 1996, when the case was brought, for a $40 non-supermarket retail transaction, the EFT systems' PIN debit interchange fees ranged from around 5 cents to 10 cents, compared to the card associations' signature debit interchange fee of about 50 cents.[27] Second, the honor-all-cards rule prevented merchants that took credit cards from refusing debit cards that carried the card association's logo. Wal-Mart wanted the associations to lower their interchange fees or to allow its stores to refuse signature debit while continuing to accept credit. (The parties disputed the extent to which the honor-all-cards rule prevented merchants from steering customers towards entering their pins.) The card associations refused. Wal-Mart, together with 13 other retailers, filed an antitrust case.[28]

The Complaint

Wal-Mart and the other retailers claimed that the associations had violated the antitrust laws by tying debit cards to credit cards.

Tying in antitrust involves the situation in which a company tells a customer that it has to buy one product in order to buy another product. It is a controversial aspect of antitrust law. For much of this century the courts viewed tying as a *per se* violation of the antitrust laws. Much like companies accused of price-fixing, the only question was whether they engaged in the practice: "Tying agreements serve hardly any purpose beyond the suppression of competition."[29] That is unlike many other business practices that the courts evaluate under the "rule of reason"—for those practices the courts look at issues such as the effects on competition and consumers, as well as whether the practice has redeeming procompetitive features.

The Supreme Court wrestled with tying most recently in a case involving Jefferson Parish Hospital in Louisiana.[30] The five-justice majority tempered the hostility towards tying with a modified *per se* rule. As interpreted by the district court in *Wal-Mart*, tying was illegal only when (a) the tying agreement affected a substantial amount of interstate commerce, (b) there were two separate

27 *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc., "Second Amended Consolidated Class Action Complaint and Jury Demand" (1999), ¶ 71.

28 "In A Battle of Titans, Debit Card Lawsuit May Reshape Financial Services Space $100 Billion In Antitrust Damages Possible," *Item Processing Report*, Jan. 30, 2003.

29 Standard Oil Co. of California *et al.* v. United States, 337 U.S. 293, 305 (1949).

30 Jefferson Parish Hospital Dist. No. 2 v. Hyde, 466 U.S. 2 (1984).

products; (c) two products were actually tied, and (d) the defendant had market power in the tying product that enabled it to force the purchase of the tied good.[31] Lower courts have differed in the application of the *Jefferson Parish* test in the extent to which anticompetitive effects are required. The other four justices in *Jefferson Parish* advocated replacing the *per se* prohibition with a rule of reason analysis. A number of commentators have made the same point—for example, Areeda noted that "[t]he courts should abandon their curious *per se* rule against tying, and assess each tie instead for the reasonability of its effects[.]"[32] In the most recent significant decision on tying, the D.C. Circuit Court of Appeals decided that the rule of reason approach should apply to evaluating tying issues involved in computer operating systems; although they reached a narrow decision for this industry, their reasoning applied generally.[33]

The *Wal-Mart* plaintiffs asserted that the honor-all-cards rule was illegal whether evaluated under the modified *per se* rule or under the rule of reason. (A related claim involved the no-surcharge rule that limited the ability of merchants to charge extra for taking particular types of payment cards relative to cash.)

Class Certification

Wal-Mart and the other retailers asked the court to certify a class of 4 million merchants. This was an important step in the litigation because a larger class meant that the card associations faced greater damage exposure and possibly financial ruin. (Wal-Mart and many of the other large retailers could have pursued the case on their own, unlike plaintiffs in class action cases involving harm to individuals from products such as tobacco and asbestos.) The courts have several requirements for certifying a class. At the risk of an oversimplification of a complex area of the law, the named plaintiffs have to be able to show that the class they have proposed consists of members who have been affected similarly by the claimed violation and that it is possible to determine the damages for these members by way of a similar formula or approach.[34]

Wal-Mart's Argument

The named plaintiffs argued that the honor-all-cards rule had caused all retailers to pay higher debit card interchange fees than they would have without the rule. Their economic expert for class certification argued that in the absence of the tie,

---

31 *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc., 2003 U.S. Dist. LEXIS 4965 (2003), at 6.

32 Philip E. Areeda, *Antitrust Law: An Analysis of Antitrust Principles and Their Application*, Vol. IX (1991), at ¶ 1730. See also, Richard A. Posner, *Antitrust Law* (2nd ed., 2001), at 197-207.

33 United States v. Microsoft Corp., 253 F.3d 34, 84 (2001).

34 Robert G. Bone & David S. Evans, "Class Certification and the Substantive Merits," *Duke Law Journal*, Vol. 51, pp. 1251-1332.

many merchants would have dropped Visa debit, which would then have led Visa to lower its interchange fee. Plaintiffs' expert argued that Visa would have lowered its Visa debit interchange fee by so much—to around the level charged by the EFT systems—that all merchants would have continued to accept Visa debit.[35]

Since under this theory all plaintiffs would still accept Visa debit in the untied world but at much lower prices, they would all have been harmed by the tie. Nothing else would have changed, so damages could be calculated by multiplying the known difference in interchange fees times the signature debit card volume at each merchant. For example, plaintiffs' expert argued that credit card interchange fees would not have increased in the absence of the tie.[36]

MasterCard/Visa's Argument

MasterCard and Visa argued that, without the honor-all-cards rules, much about the world of debit cards would have been very different. They argued that even taking the plaintiffs' assumptions about a dramatic decrease in signature debit interchange fees, there would have been a number of significant consequences that would have affected different merchants differently. The associations argued that some merchants had benefited, rather than been harmed, by the honor-all-cards rule. With such a sharp drop in interchange fees, banks would have issued far fewer signature debit cards and the associations would not have spent the hundreds of millions of dollars that they did in getting signature debit off the ground. A merchant that had not installed PIN pads could only take signature debit, not PIN debit, and might therefore have been harmed by this, especially if it were in competition with merchants that had installed PIN pads.

The associations also argued that if the associations had to charge separate rates for credit and debit and if, as the plaintiffs argued, debit card interchange fees would have been lower, then there would have been a corresponding increase in credit card interchange fees. If the plaintiffs were correct that all merchants were paying more for signature debit than they would have been willing to without the honor-all-cards rule, it would follow that merchants would have been willing to pay more for credit cards than they actually paid. Thus, credit card interchange fees could have been raised without harming merchant acceptance. Merchants with higher ratios of credit to signature debit volume would therefore have been

35 *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc., 192 F.R.D. 68, 74 (2000).

36 Plaintiff's expert pointed to Canada, which he asserted had lower interchange fees for credit than in the United States, despite the fact that signature debit is much less successful there.

harmed by eliminating the tie, since the increased payments on credit would have more than offset the decreased payments on debit.[37]

MasterCard and Visa also argued that even if the honor-all-cards rule were found unlawful, it would be impossible to calculate damages by a simple formula because the effects of the honor-all-cards rule varied so much across merchants.

District Court and Appeals Decisions

The law on class certification varies among the circuits. The disagreements center on whether the court can consider evidence on issues that relate to the ultimate liability question and on the amount of deference that the court needs to give to expert testimony from the plaintiff. The controversy stems from a 1982 Supreme Court decision in *Falcon*[38] that courts have interpreted in different ways. Some courts have found that this decision doesn't preclude them from considering anything that is relevant to deciding whether criteria for certifying a class. For example, in a recent decision, Judge Easterbrook opined:

> But nothing…prevents the district court from looking beneath the surface of a complaint to conduct the inquiries identified in that rule and exercise the discretion it confers. Plaintiffs cannot tie the judge's hands by making allegations relevant to both the merits and class certification.[39]

Other courts have decided that anything that is relevant to merits cannot be considered for class certification. The Second Circuit in which the *Wal-Mart* case was litigated is among this group. In *Caridad*, a decision that laid the basis for how the district court evaluated the request to certify a nationwide class of retailers, the Second Circuit found that the district judge improperly considered issues dealing with the merits of the case when he denied certification:[40]

> Though Metro-North's critique of the Class Plaintiffs' evidence may prove fatal at the merits stage, the Class Plaintiffs need not demonstrate at this stage that they will prevail on the merits. Accordingly,

37 The defendants argued that the plaintiffs' expert's reliance on the Canadian experience was unsound because he had not conducted analyses needed to conclude that Canada was an appropriate comparison to the United States—that is, that there might not have been other factors accounting for differences between credit card interchange fees in the two countries besides the relative success of signature debit. Transcript of the Hearing on Defendants-Appellants' Appeal of The Order Granting Class Certification at 54-56, *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc. (2nd Cir. 2001) (No. 00-7699) (visited Nov. 7, 2003) <http://www.cpny.com/htm/oralargument.htm>.

38 General Telephone Company of the Southwest v. Falcon, 457 U.S. 147 (1982).

39 Szabo v. Bridgeport Machines, 249 F. 3d 672, 677 (2001).

40 Caridad v. Metro-North Commuter Railroad, 191 F. 3d 283, 291-93 (1999).

> this sort of "statistical dueling" is not relevant to the certification determination....[41]

In addition, the Second Circuit set a low bar on the admissibility of testimony presented by an expert on behalf of the plaintiff:

> We conclude that the Class Plaintiffs' statistical evidence supports a finding of commonality on the issue of discipline.... In addition, the statistical evidence supports a finding of commonality on the promotion claim.... Here, the District Court credited Metro-North's expert evidence over that of the Class Plaintiffs. Such a weighing of the evidence is not appropriate at this stage in the litigation.[42]

The trial court in *Wal-Mart* decided class certification under the *Caridad* standard. It expressed some concerns about the reliability of the expert testimony on which the plaintiffs based their class certification arguments but said that this testimony did not fail what the appeals court characterized as the "fatally flawed" test.[43] It therefore certified the proposed class without weighing the defendants' claims that the honor-all-cards rules affected different merchants differently against the plaintiffs' theory of the case. Developments in the debit business post-settlement will provide some interesting real world evidence on the merits of the parties' positions.

The associations appealed. The decision was affirmed in a 2-1 ruling. The majority ruling found that the district court's "fatally flawed" standard for evaluating plaintiffs' expert testimony was appropriate, and upheld the district's court's reliance on that evidence in certifying the class.[44] The dissenting judge argued that the district court's decision erred in two significant respects. First, it had failed to consider the conflicts among class members. Merchants with low levels of credit to signature debit volume might prefer the theory advanced by the named plaintiffs. Merchants with higher levels of credit to signature debit, however, might not have any damages if defendants had prevailed in their argument that, taking the plaintiffs' assumptions, credit card interchange fees would have increased in the absence of the honor-all-cards rule.[45] Second, the dissenting judge argued that the district court had failed to identify a "practical means" of

41 Caridad v. Metro-North Commuter Railroad, 191 F. 3d 283, 292 (1999).

42 Caridad v. Metro-North Commuter Railroad, 191 F. 3d 283, 292-93 (1999).

43 *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc., 280 F.3d 124, 135 (2001).

44 *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc., 280 F.3d 124, 135 (2001).

45 *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc., 280 F.3d 124, 157 (2001).

trying the case.[46] He pointed out presciently that certification of such a large class put defendants in a "bet-your-company" situation where they would likely settle even if the plaintiffs had a weak case.[47] These "settlements induced by a small probability of an immense judgment in a class action" were akin to "blackmail settlements."[48] The full circuit court declined to reconsider this decision and the Supreme Court declined the associations' request for review.

Summary Judgment

The class action proceeded to trial. Both sides asked the trial court for summary judgment. Courts can grant summary judgment when it is clear that one side is right as a matter of law so that it isn't necessary to have a trial to get into expert and factual testimony. The debate on summary judgment concerned how the courts should treat the association's application of the honor-all-cards rule to credit and debit cards. The answer depends on whether the court views this rule as resulting in a tie between two separate products and, if so, whether that tie should be evaluated according to modified *per se* analysis described by the Supreme Court in *Jefferson Parish* or under the rule-of-reason analysis applied by, for example, the D.C. Circuit Court of Appeals in *U.S. v. Microsoft*. The retailers argued that the honor-all-cards rule resulted in a tie that was clearly *per se* illegal. The associations argued that the honor-all-cards rule did not result in a tie and that if it did it was clearly legal under the rule of reason. The trial court found for the plaintiffs on most elements of the four-part tying test described above, reserving some doubt regarding whether MasterCard individually had market power in the tying good.[49] The court noted that it was uncertain whether the appropriate test for tying in the Second Circuit required proof of a fifth element: "foreclosure of competition or anticompetitive effect in the tied product market" and reserved the legal and factual determination on that issue for trial.[50]

As has been pointed out by many observers, there is no economic basis for considering tying illegal *per se*.[51] The practice is so pervasive in business that one

---

46 *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc., 280 F.3d 124, 151 (2001).

47 *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc., 280 F.3d 124, 152 (2001).

48 *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc., 280 F.3d 124, 152 (2001).

49 *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc., 2003 U.S. Dist. LEXIS 4965 (2003), at 6-18.

50 *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc., 2003 U.S. Dist. LEXIS 4965 (2003), at 18.

51 Philip E. Areeda, *Antitrust Law: An Analysis of Antitrust Principles and Their Application*, Vol. IX (1991), at ¶ 1730. See also, Richard A. Posner, *Antitrust Law* (2nd ed., 2001), at 197-207.

hardly even notices it. It is usually efficient because it results in cost savings for the producer who passes these savings on to the consumer or it reduces transactions costs for consumers. That for example is why automobile companies don't sell automobiles and automobile air conditioners separately. Some economic theorists have argued that tying may have adverse effects on competition, but this conclusion typically rests on special assumptions that are difficult to verify in practice. Unlike price-fixing, there is no basis for a presumption that tying is harmful. No economist has stepped forward and suggested that the *Jefferson Parish* test provides a way to detect tying that reduces consumer welfare.

Settlement

MasterCard and Visa were in a difficult position. The trial judge had ruled against them on most elements of the *per se* tying claim. Facing a bet-the-company damages claim, as well as the uncertainty of a jury trial, neither association was ready to roll the dice. For the plaintiffs, the issue of harm to competition remained. Even if successful, they still had to prove a damage theory that the trial judge noted had been described by antitrust commentators as "elusive and seldom attempted,"[52] and to prove that the damage theory applied in the same way to all members of the class. MasterCard settled with the plaintiffs first, followed days later by Visa.[53] Under the settlements the associations agreed:

- To stop requiring merchants that had contracts to accept their credit cards to also accept their debit cards beginning January 1, 2004.[54]
- To reduce the debit card interchange fee by about a third between the time of the settlement and the time they ceased applying the honor-all-cards rule to debit cards.[55]
- To pay the retailers $3.05 billion over 10 years.[56] The present-discounted value of these payments for the two associations is about $2.2 billion to $2.6 billion.[57]

---

52 *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc., 192 F.R.D. 68, 85 (2000).

53 W.A. Lee, "Settlements in Hand, Lawyers in Debit Suit Lighten Up in Court," *American Banker*, May 5, 2003.

54 Philip Klein, "Visa, MasterCard to Pay $3 Bln in Debit Card Suit," *Reuters*, May 1, 2003.

55 Anuradha Raghunathan, "Settlement May Change Use of Debit, Credit Cards," *Seattle Times*, June 22, 2003.

56 *In re*: Visa Check/MasterMoney Antitrust Litigation; Wal-Mart Stores, Inc. et al. v. Visa U.S.A., Inc. and MasterCard International, Inc., "Memorandum and Order," December 19, 2003, at 6.

57 Using discount rates of 4 to 8 percent to produce present discounted values around $2.2 billion to $2.6 billion.

Under this agreement the retailers obtained the right to reject signature debit cards as they sought. However, they received a small fraction of the $100 billion of damages that they claimed.[58]

CONCLUSION

There is now general agreement that the critical question in any antitrust case is whether the business practice at issue interferes in the competitive process and ultimately reduces consumer welfare. The courts didn't have a chance to address that question in the debit card litigation because the parties chose to settle. And even if retailers and the associations hadn't reached an agreement, the courts might have avoided the consumer harm inquiry by relying on the *per se* approach to tying.

The retailers would have had a hard time showing that the honor-all-cards rule reduced consumer welfare, overall. The rule made individual consumers better off directly. They could use their debit cards at all merchants that took their credit cards. And the widespread adoption of debit cards reflects the fact that individuals like being able to pay with plastic and have the money taken right out of their checking accounts.

It is not clear that the rule made retailers, overall, worse off either. The associations bundled debit and credit card acceptance together. Unbundling might have resulted in lower debit interchange, but it could also have resulted in higher credit interchange. The associations in fact raised credit interchange fees after the settlement required them to lower debit interchange fees. It is also doubtful that signature debit cards would have become widespread so quickly without the honor-all-cards rule. The associations would have had to persuade their acquiring members to go through the process of signing up merchants for the debit card. Given how difficult it was historically to get banks to issue debit cards and to get cardholders to use them, having to get merchants on board as well might have kept the debit card dormant for many years more. The honor-all-cards rule neatly solved the chicken-and-egg problem for signature debit cards.

One might think that the EFT networks would have filled the void. But most signature debit card transactions (by dollar volume) take place at merchants that have not installed PIN pads, despite the savings the *Wal-Mart* plaintiffs stressed. It is also possible that PIN debit cards would have grown more slowly if the associations hadn't introduced signature debit cards—the associations' advertising did much to popularize debit card use. The difference between the merchant discounts for PIN and signature debit was the main selling point used to persuade merchants to accept PIN debit.

58 Stan Paur, "Who Really Won the Wal-Mart Suit? Follow the Money," *American Banker*, Sept. 4, 2003; W.A. Lee, "Visa Fires 65; Plaintiffs File Fee Objections," *American Banker*, Sept. 9, 2003.

The years to come will provide more evidence on whether the honor-all-cards rule was good or bad for consumers. The retailers suggested that the associations would lower debit card interchange fees to PIN debit levels without raising credit card interchange fees. We suspect it is quite possible that the EFT systems will continue their recent fee increases, as they compete for issuers and as they consolidate their gains in merchant acceptance. Whatever reduction takes place in the associations' debit card interchange fees may be offset by increases in credit card interchange fees and by cardholder fees. Debit cardholders may also have a less valuable product—one whose acceptance is less widespread and less certain.

HAS THE CONSUMER HARM STANDARD LOST ITS TEETH?

Howard H. Chang,
NERA Economic Consulting

David S. Evans,
NERA Economic Consulting

Richard Schmalensee,
MIT Sloan School of Management

*Previously published in **High Stakes Antitrust: The Last Hurrah**, AEI-Brookings Joint Center for Regulatory Studies, 2003.*

There appears to be universal agreement that antitrust policy should "protect competition, not competitors" and that consumer welfare is the fundamental standard for evaluating the effects of competition.[1] There is considerable debate, however, about how to put those principles into practice when evaluating rule-of-reason antitrust claims under the Sherman Act. Some commentators focus on the need to show that substantial consumer harm in the form of significantly higher prices or lower output either has occurred or plausibly could occur before condemning a practice as anticompetitive.[2] Other commentators contend that sufficient consumer harm to establish a violation can be inferred indirectly from harm to competition or what they characterize as "harm to the competitive process." Under some versions of this second standard the question of substantiality does not arise; it is only necessary to show some harm to actual or nascent competitors.[3] The crux of the debate is over the relative frequency and cost of false convictions versus false acquittals and the extent to which the courts can confidently predict the effects of challenged practices on consumer welfare given the evidence, including economic theory and empirical studies, available to them.

The Clinton administration invited the courts to rely on a relatively weak consumer harm standard for assessing liability in antitrust cases brought against Intel, Microsoft, and Visa and MasterCard.[4] The government adopted the view that it was enough to show that the challenged practices had harmed the

The authors thank Bryan Martin-Keating and Nese Nasif for research assistance and Visa for financial support. The authors have consulted for Microsoft and Visa—two of the defendants in cases discussed in this article. Robert Bork's chapter in the volume, *High-Stakes Antitrust: The Last Hurrah?* takes direct aim at a number of points we make here. We have responded to some of his comments in our footnotes.

1 *Brown Shoe Co. v. United States*, 370 U.S. 294, 320 (1962): "the legislative history illuminates congressional concern with the protection of competition, not competitors." *Reiter v. Sonotone Corp.*, 442 U.S. 330, 343 (1979): "Congress designed the Sherman Act as a 'consumer welfare prescription.'" Bork (1978): "The only legitimate goal of American antitrust law is the maximization of consumer welfare." Litan and Shapiro (2002): "For at least 20 years a broad, bipartisan consensus has prevailed regarding the goal of U.S. antitrust policy: to foster competitive markets and to control monopoly power, not to protect smaller firms from tough competition by larger corporations. The interests of consumers in lower prices and improved products are paramount." Social welfare, which would include producer surplus in addition to consumer surplus, and, perhaps equivalently, efficiency are also sometimes mentioned as goals for antitrust policy. Carlton and Perloff (2000); Bork (1978, pp. 91, 104–106, 409–10, 416, 427–29); Posner (2001). It is unclear whether the courts generally consider effects on producer surplus an important factor. In addition, the inquiry in merger cases as to whether cost savings are passed on to consumers instead of being retained by the merged firm reflects a clear preference for consumer gains over producer gains. Despite the consensus about protecting competition and consumers, the courts are far from consistent in applying this standard. See Fox (2002): "A number of contemporary cases on exclusionary practices tend to be noncommittal if not obfuscatory in their usage of 'anticompetitive.' Yet others openly aver that the antitrust laws protect competition, not efficiency, and that the absence of consumer harm is no obstacle to a judgment for the plaintiff."

2 See Evans (2001); Joffe (2001). We regard "significant" and "substantial" as synonyms and use them interchangeably.

3 Salop and Romaine (1999); Houck (2001).

4 During the Clinton years, antitrust enforcers displayed an increased "confidence that they could correct market failures in the realm of innovation." Litan and Shapiro (2000, p. 436). We refer to the Clinton administration's antitrust enforcers as the "government." The states and the District of Columbia were also plaintiffs in the Microsoft litigation. When necessary, we distinguish actions taken by the federal and state antitrust enforcers.

competitive process—we argue it did not even make that showing. The government also believed that direct evidence that the challenged practices, on balance, raised prices, lowered output, or reduced quality and thereby reduced consumer welfare was not needed.

In the two cases that went to trial and for which there is a complete record—*United States v. Microsoft* and *United States v. Visa*—the district court accepted this view.[5] And in the one case that has gone to an appeals court—*Microsoft*—the District of Columbia Circuit Court affirmed liability without reaching findings that the anticompetitive actions resulted in substantial harm to consumers.[6] It specifically found that the district court's findings do not demonstrate that there was a causal relationship between those actions and any significant changes in the competitive process that could lead to *substantial* harm and directed the lower court to address causation as part of the examination of remedies.[7] The court itself described the standard it employed as "edentulous"—toothless.[8] We argue in general and in the context of these two cases that this weaker standard represents economically unsound policy.

This chapter develops and explores two important differences between those who insist on direct proof of harm to consumers and those who are willing to infer consumer harm from harm to competitors.[9] First, and arguably technically,

5 *United States* v. *Microsoft*, 253 F.3d 34 (2001); *United States* v. *Visa U.S.A. et al.*, 163 F. Supp. 2d 322 (2001).

6 The court did assert that Microsoft's actions had "significant" and "substantial" effects, but it did so without support in its opinion or the trial record. More critically, the court said that it could not infer that Microsoft's actions had or were likely to have a significant effect on maintaining its monopoly. See Fox (2002, p. 390): "It was perhaps a misnomer for the court to say, at numerous points, 'this conduct had a substantial effect in protecting Microsoft's market power'—for, finally, we are told that the court did not know, and that it is fine to be agnostic about this unproved proposition."

7 *United States* v. *Microsoft*, 253 F.3d 34, 106–07 (2001). See also Memorandum Opinion, *State of New York, et al.* v. *Microsoft*, Civil Action No. 98-1233 (CKK) Nov. 1, 2002, 21: "In addition, the appellate court reiterated its concern over the quantum of proof provided to support a causal connection between the exclusionary conduct and Microsoft's persistence in the dominant market position."

8 *United States* v. *Microsoft*, 253 F.3d 34, 79 (2001).

9 Bork believes that we have offered a false choice and that the real choice is "between those who insist on direct proof of consumer harm and those who think that consumer harm can be inferred from certain forms of exclusionary market behavior that cannot be shown to create or maintain efficiency" (*High-Stakes Antitrust:* p. 60). He also criticizes us for failing to consider the efficiencies stage. Our focus in this chapter is on the consumer harm stage of the analysis, which, as we have argued elsewhere, should precede the efficiencies stage because we have well established methods for analyzing competitive effects, whereas the evaluation of efficiencies is more difficult. Chang and others (1998, pp. 276–78). In his previous writings, Bork has noted he believes the difficulty of showing cost efficiencies in the merger context is so great as to be unworkable. Bork (1978, pp. 123–29). It is likely that demonstrating efficiencies from organizational rules, such as those at issue in *Visa*, is likely even more difficult.

Where we differ from Bork is regarding whether one needs to do any analysis of consumer harm before getting to the second (efficiencies) stage or whether one can just do a "quick look." Except for practices that are per se illegal or close—practices for which past analysis or case law is enough to predict effects reliably—analysis is necessary to show that the practice is indeed "exclusionary" or "restricttive" in economic, as opposed to linguistic, terms. Bork appears to believe that being facially suspect should generally be enough to lose a rule-of-reason section 2 case when the defendants are unable to demonstrate efficiencies to the court's satisfaction. We disagree and would require a real showing of consumer harm.

what preconditions must hold for it to be valid to infer injury to consumers indirectly from injury to one or more competitors? In neither *Microsoft* nor *Visa* did the courts require antitrust enforcers to establish critical preconditions. The second difference is whether a showing of *substantial* harm to consumers should be required for liability. We argue here that such a requirement is necessary for sound policy. A finding of liability generally implies the imposition of structural or behavioral relief that, by design, reduces the competitive effectiveness of the defendant (generally a leading firm and, in section 2 cases, the market leader). It thus commonly imposes nontrivial costs on both that firm and, potentially, consumers. Without the likelihood of substantial offsetting benefits from strengthening competition from other sources, such relief, even if it does not go beyond an order to cease some facially suspect practices that pass a minimal consumer harm standard, is more likely than not to harm consumers on balance.

The remainder of this chapter discusses the general issues in more detail. It then uses an error-cost framework to explain why it is economically important to require plaintiffs to show (directly or indirectly) that a challenged practice actually imposes or is highly likely to impose significant consumer harm. Next, the *Microsoft* and *Visa* cases are used to illustrate how the Clinton Antitrust Division's failure to undertake analyses that could have ascertained whether there was significant harm to competitors and competition led the courts to mistake protecting competitor profits for protecting consumer welfare. A final section summarizes our major conclusions and considers whether the weak consumer harm standard successfully employed by the Clinton administration in the *Microsoft* and *Visa* cases will establish an enduring legacy of activist antitrust. We conclude that the Clinton standard is inconsistent with the thrust of antitrust jurisprudence over the last twenty years so that it will become a legacy only if the Supreme Court makes a sharp turn.

THE CONSUMER HARM STANDARD

Although the Supreme Court has not delineated a particular standard for assessing consumer harm in antitrust cases, it has touched on the principles for determining harm. The most detailed treatment involves determining the circumstances under which pricing low is anticompetitive. The Court has addressed this matter in two leading predatory pricing cases, *Matsushita v. Zenith* and *Brooke Group v. Brown & Williamson*. Together these decisions have resulted in what is known as the *Brooke Group* test, which emphasizes the need to show harm to consumers rather than harm to competitors.

The *Brooke Group* Test

There are two main elements to the *Brooke Group* test, which establishes the standard for a showing of predation (where the defendant is accused of setting low prices to drive competitors out of business). First, a plaintiff alleging

predation must show that the defendant's prices were "below an appropriate measure of …costs."[10] Thus pricing must be below cost to support a claim of predation, even though in theory there can be predatory prices that are above cost.[11] Second, the plaintiff must show that the defendant had "a reasonable prospect, or, under §2 of the Sherman Act, a dangerous probability, of recouping its investment in below-cost prices."[12] That is, finding that prices were low enough to inconvenience a competitor is not enough. Logically, for recoupment to be reasonably likely, low prices must eliminate substantial competition in a way that persists even after a postpredation price increase.

The *Brooke Group* test provides what we would consider to be a sound standard for assessing whether low prices are predatory. In *Brooke Group* and *Matsushita* the Court gave two reasons that fit into an error-cost framework.[13] First, "predatory pricing schemes are rarely tried, and even more rarely successful," whereas "cutting prices in order to increase business often is the very essence of competition." Because the Court believed predation to be uncommon, it was more concerned with judicial mistakes that would wrongly condemn procompetitive price cutting. Second, the Court noted that "mistaken inferences [in predation cases] are especially costly, because they chill the very conduct [vigorous price competition] the antitrust laws are designed to protect."[14] That is, the cost of mistakenly condemning procompetitive price cutting is particularly high. These two reasons suggest that the courts should be most concerned about lowering the error cost from false convictions (versus false acquittals) in predation cases. This is what the Court did in *Matsushita* and *Brooke Group* when it required evidence of below-cost pricing as well as evidence on likely reduction in competition and likely recoupment of losses suffered during the alleged predatory period.[15] It is worth noting that the second of these reasons—concern for the chilling effect on procompetitive behavior—applies to a variety of antitrust claims that involve, in essence, charges of competing too hard.

In other contexts the Supreme Court has also rebuffed attempts to infer consumer harm from theoretical musings. Its reasoning in the *California Dental* decision is

10 *Brooke Group Ltd.* v. *Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 222 (1993).

11 Denger and Herfort (1994, p. 541).

12 *Brooke Group v. Brown & Williamson*, 222.

13 Both decisions cite Easterbrook (1984), which discusses an error-cost approach to antitrust analysis. See *Matsushita* v. *Zenith*, 475 U.S. 574, 591 (1986); *Brooke Group* v. *Brown & Williamson*, 233.

14 *Matsushita* v. *Zenith*, 589, 594 , quoted in *Brooke Group* v. *Brown & Williamson*, 226.

15 *Matsushita* v. *Zenith,* 475 U.S. 574, 588 (1986). The recoupment standard was more explicitly developed in *Brooke Group Ltd*. v. *Brown & Williamson Tobacco Corp.*, 509 U.S. 209, 224 (1993).

instructive.[16] The Federal Trade Commission (FTC) had argued that certain advertising restrictions, including restrictions affecting price advertising, adopted by a dentists' association in California were anticompetitive. The FTC was sure enough of its case that it did not have an economist testify as to whether consumers had been harmed. In some literal sense, one could argue that the advertising restriction restrained competition, that competitors faced restrictions on the type of advertising they could employ. But in the absence of empirical evidence, that literal argument fails to show that consumers were actually harmed.

The Ninth Circuit Court of Appeals endorsed the FTC's argument. The Supreme Court, however, rejected the characterization of the advertising restrictions as naked restrictions on price and insisted on actual evidence, especially empirical evidence, of consumer harm:

> But these observations brush over the professional context and describe no anticompetitive effects. Assuming that the record in fact supports the conclusion that the CDA [California Dental Association] disclosure rules essentially bar advertisement of across-the-board discounts, it does not obviously follow that such a ban would have a net anticompetitive effect here. Whether advertisements that announced discounts for, say, first-time customers, would be less effective at conveying information relevant to competition if they listed the original and discounted prices for checkups, X-rays, and fillings, than they would be if they simply specified a percentage discount across the board, *seems to us a question susceptible to empirical but not a priori analysis*.
>
> [Justice Stephen Breyer] thinks that the Commission and the Court of Appeals "adequately answered that question," ibid., *but the absence of any empirical evidence on this point indicates that the question was not answered*, merely avoided by implicit burden-shifting of the kind accepted by Justice Breyer. The point is that before a theoretical claim of anticompetitive effects can justify shifting to a defendant the burden to show empirical evidence of procompetitive effects, as quick-look analysis in effect requires, there must be some indication that the court making the decision has properly identified the theoretical basis for the anticompetitive effects and considered whether the effects actually are anticompetitive. Where, as here, the circumstances of the restriction are somewhat complex, *assumption alone* will not do.[17]

16 *California Dental Association* v. *FTC*, 526 U.S. 756 (1999). See also *NYNEX Corp.* v. *Discon, Inc*., 525 U.S. 128, 135 (1998) ("the plaintiff here must allege and prove harm, not just to a single competitor, but to the competitive process, i.e., to competition itself.").

17 *California Dental Association* v. *FTC*, 526 U.S. 756, 775 (1999) (emphasis added).

On remand, the Ninth Circuit Court looked at the facts in the record and ruled against the FTC.[18] The Supreme Court has not, however, addressed the proper standard for assessing consumer harm generally in rule-of-reason cases (where the practice challenged is not found to be illegal per se) or for specific practices other than predatory pricing that often come under the rule-of-reason rubric. Nevertheless, the error-cost framework implicit in *Brooke Group* can be extended to these other practices. First, however, it is useful to describe the approach toward consumer harm advocated by the Clinton antitrust enforcers.

Clinton Administration Approach

A canonical view of the Clinton approach, based on a review of *Microsoft*, *Visa*, and *Intel* goes roughly as follows.[19] First, the government presented evidence to demonstrate that competitors were harmed. Second, it presented evidence to demonstrate that those harmed were important competitors (either actual or potential) in concentrated markets, so that harm to them constituted harm to competition or to the competitive process. The government believed this was sufficient for a finding of liability because harm to consumers could be inferred from harm to competition or to the competitive process.[20]

---

18 We are not suggesting—nor do we believe the court was—that the practices engaged in by the California Dental Association are not suspect. The point is that the plaintiff should bear the burden of showing that practices such as these are suspect. If they are clearly anticompetitive as Justice Breyer asserted, the plaintiff should have an easy time making such a showing.

19 Because *Intel* was settled before trial, the publicly available record does not permit us to discuss the case in as much detail as we do below for *Microsoft* and *Visa*, but the antitrust philosophy of the enforcement agencies during the Clinton administration can also be seen in *Intel*. In response to separate patent infringement suits from three of its customers, Intel withheld from those customers the right to use certain intellectual property. The Federal Trade Commission argued that Intel's behavior was a means of "coercing" licenses to their rival microprocessor technology, thereby maintaining and strengthening Intel's monopoly in the general-purpose microprocessor market. The available evidence provides little support for the existence of significant consumer harm. Of the three companies at issue, only one was even a competitor in the relevant market for general-purpose microprocessors, and that company's executives testified that its microprocessor research and development efforts were not harmed as a result of Intel's conduct: Intel Corporation's Trial Brief, Public Version, FTC Docket No. 9218 (Feb. 25, 1999), 12–13. The commission also failed to produce evidence of any likely significant harm to Intel customers' incentives to innovate or to the incentives of any other firms in the microprocessor industry. Although the FTC settled its case against Intel with a consent decree, the Court of Appeals for the Federal Circuit dismissed similar antitrust claims in a private lawsuit against Intel, saying, "Although Intergraph stresses the adverse effect on its business of Intel's proposed withdrawal of these special benefits, the record evidence contains no analysis of the effect of such action on competition among manufacturers of graphics subsystems or high-end workstations." *Intergraph Corp*. v. *Intel Corp*., 195F.3d 1346, 1355 (1999).

20 Bork says that this description is overly "simplified." He contends, with approval, that "the government was required to show behavior of the sort that was likely to harm competitors illegitimately and thus cause harm to the competitive process" (p. 61). Under his formulation "illegitimate" competitor harm equates with consumer harm. This requires no economic analysis, no showing of injury to anyone—it is trial by labeling. As the Chicago School of Economics made clear long ago, and as experience in complex cases like *Microsoft* and *Visa* illustrates, debates about labels are a poor substitute indeed for careful analysis of actual economic effects, particularly in complex organizations or rapidly changing markets. Note also that Bork explicitly equates harm to competitors (as long as it fits in an "illegitimate" category) with harm to the competitive process. This is either sloppy economics or a clear and surprising departure from basic antitrust principles.

It is important to distinguish analytically between three terms that are often used in this context: harm to competitors, *harm to competition or to the competitive process, and harm to consumers*.[21] There is little debate about what harm to competitors and harm to consumers mean. Harm to competitors occurs when a competitor is disadvantaged—for example, faces higher costs or lower demand as a result of the challenged action. Harm to consumers occurs when, for example, prices are higher or industry output lower as a result of the challenged action. There is, however, considerable debate about what constitutes harm to competition.

If harm to competition were synonymous with harm to consumers, which is the convention adopted by some commentators and is our preferred definition, there would be no dispute that significant harm to competition would be a sufficient basis for antitrust liability. During the Clinton administration, however, antitrust enforcers often seemed to emphasize that plaintiffs did not have to demonstrate consumer harm, thus implying a difference between these two concepts.

For example, the government's main economic witness in *Microsoft* stated: "The presumption of antitrust policy is that competition itself brings consumer benefits, and the lessening of competition brings consumer harm. Hence, *plaintiffs are required to show an injury to competition rather than immediate harm to consumers*."[22]

Similarly, the lead trial counsel to the state plaintiffs in *Microsoft* has written that there is "*no requirement of proof of actual harm to consumers—beyond that of injury to competition*. . . . Proof of actual consumer harm is not required because it is inferred from injury to competition."[23]

And in *Visa* the government argued, "To show consumer harm, it is not necessary to prove precisely what choices consumers would have made, precisely how individual firms would have tried to respond to consumers, or whether they would have won or lost the competitive battle; *it is sufficient to prove that the challenged restraint had a significant impact on the process by which competitive decisions were made*."[24]

From these statements, it is evident that the Clinton Justice Department's standard of harm to competition was intended to be distinct from, and less rigorous than, a showing of harm to consumers.

---

21 To add to the confusion about terminology, some commentators use harm to competition interchangeably with harm to consumers. As we discuss, the Clinton approach sometimes refers to harm to competition as harm to the competitive process and regards both as something short of harm to consumers.

22 Evans and others (2000, p. 88, emphasis added).

23 Houck (2001, p. 596, emphasis added).

24 Plaintiffs' Post-Trial Proposed Conclusions of Law, *United States* v. *Visa U.S.A.*, 98 CIV. 7076, Sept. 22, 2000, para. 10 (emphasis added).

To the extent that the Clinton standard relies on competitor harm, by itself, as a proxy for consumer harm, it is simply wrong as a matter of economics. Competitor harm must be insufficient for antitrust liability because the competitive process, by its very nature, consists of companies trying to gain competitive advantages over other companies. Merely because a firm is disadvantaged does not mean its contribution to market competition is substantially reduced: the disadvantage may be minor, or affect only fixed costs, or the firm may not be an important actual or potential competitor in the first place. And even a substantial reduction in the effectiveness of a few participants in a competitive market may not harm consumers at all if other participants or potential market entrants have the ability and incentive to take up the slack.

We believe there is no meaningful concept of harm to competition in antitrust that does not imply harm to consumers. If there has been significant harm to important competitors in a way that truly matters for competition, it should be straightforward to take the next step and show that harm to consumers is likely. Evidence of likely consumer harm—substantial harmful effects on prices, output, or quality—should be required for antitrust liability in rule-of-reason Sherman Act cases. If it is difficult to show that consumers were harmed or likely will be harmed, that should be a clear signal that any harm to competitors that was found may not have had any significant impact on competition.

In many cases, it will be feasible at reasonable cost to assess consumer harm directly through analyzing effects on price, quantity, or quality. In such cases, plaintiffs should be obliged to present this sort of direct analysis. In other cases, however, direct analysis will be impossible or impractical. For example, if the allegation is that a company has been driven out of business by predation or if a nascent competitor has been prevented from developing into an actual competitor by exclusionary practices, the resulting consumer harm would not appear until later. In such cases a direct analysis of actual consumer harm is not possible. Even when consumer harm is not prospective, it may be practical only to assess the harm indirectly by analysis of impacts on competition. Nevertheless, following *Brooke Group*, competitor harm alone should not be sufficient to establish liability, since it is not sufficient to establish consumer harm. It is analytically correct to infer consumer injury from injury to competitors only if (1) the injury is severe enough to have a significant impact on the competitors' effectiveness; (2) the competitors affected are important enough so that their effectiveness matters to consumers in the short run; and (3) the short-run injury to competition cannot be easily overcome by the market entry or expansion of other firms.[25]

In the context of predation, the Supreme Court has explicitly recognized that harm to competitors is insufficient to establish liability. A showing that a competitor has been driven out of business, which would certainly constitute substantial harm to the competitor and to its effectiveness, is not enough. The plaintiff must show that pricing was below cost and that the alleged predator had a "dangerous probability" of recouping its losses from predation. For this to be possible, conditions (2) and (3) must hold. Without these additional requirements the

courts would be unable to distinguish instances of harm to competitors that are part of the normal competitive process from instances of competitor harm that may lead to substantial harm to consumers.

In regard to the exclusion of nascent competitors, the appeals court decision in *Microsoft* articulates the analytically correct test—whether "the exclusion of nascent threats is the type of conduct that is reasonably capable of contributing significantly to a defendant's continued monopoly power" and "whether [the firms affected] reasonably constituted nascent threats at the time [the defendant] engaged in the anticompetitive conduct at issue."[26] This test is closely related to the three conditions mentioned earlier, with the second modified to require that the affected firms reasonably constitute important nascent competitors.[27]

Not only did the Clinton administration seem to confuse injury to competitors with injury to competition,[28] as evidenced in *Microsoft, Visa*, and *Intel*, it failed to demonstrate substantiality of harm, either to competitors or to competition. Let us start with harm to competitors. In *Microsoft* and *Visa* the government identified particular practices used by the defendant (generally practices that would be termed aggressive competition if engaged in by smaller entities) and argued that competitors would have been better off absent those practices.[29] And the respective courts agreed. We argue later in detail that the courts in both cases made findings of competitor harm without requiring an attempt to quantify or otherwise demonstrate the substantiality of that harm, even though there were analyses that could have been realistically undertaken that would have shown substantial harm if it had existed.[30]

---

25 Bork believes that we have argued "that consumer harm must be proved through direct evidence rather than, as the government and the courts thought, by inference from a showing of the intentional infliction of harm upon competitors without any reason grounded in greater efficiency and consumer welfare" (p. 61). The discussion in the text should make it clear that we believe it can be appropriate to infer consumer harm from competitor harm with the additional analytical steps described, but that the inference cannot be assumed from competitor harm alone. The standard he endorses is that an "intent" to harm competitors is sufficient to make the inference of consumer harm unless the defendant can articulate a "reason grounded in greater efficiency and consumer welfare." He appears to believe that the steps we have outlined are superfluous—that is, that injury to competitors would still be sufficient for antitrust liability even when that injury is not severe enough to significantly limit their effectiveness or where the competitors are unimportant to competition in the relevant market. Bork's approach is particularly problematic when one recognizes the difficulty of distinguishing aggressive competition (which may be designed to inflict injury on competitors but which benefits consumers) from anticompetitive behavior.

26 *United States* v. *Microsoft*, 253 F.3d 34, 79 (2001).

27 As we argue later, however, the appeals court failed to apply this test correctly to the acts it upheld as anticompetitive in *Microsoft*.

28 As noted above, Bork, much to our surprise, would apparently not describe this as confusion.

29 *United States* v. *Microsoft*, 253 F.3d 34 (2001); *United States* v. *Visa*, 163 F. Supp.2d 322 (2001). See also note 17 for a discussion of *Intel*.

30 In *Microsoft*, the appeals court reduced the set of acts found anticompetitive but failed to require a reexamination to determine whether the remaining anticompetitive acts had caused significant harm to Navigator or Java as competitors to Windows.

Without evidence that competitors have been harmed substantially enough to reduce their effectiveness in the marketplace, there can be no meaningful attempt to assess whether harm to some competitors translated into harm to competition overall, let alone substantial harm. Even if substantiality of competitor harm had been shown, it would still be necessary to show that the harm led (or was likely to lead) to substantial harm to consumers. As discussed earlier, there are many reasons why consumer harm does not automatically follow from competitor harm, even substantial competitor harm. Since the government was relying on its inference of harm to consumers from harm to competitors, it made no attempt to demonstrate directly that consumers had been (or were likely to be) harmed significantly in the form of higher prices, lower quality or lower output.

The Clinton administration's approach to consumer harm is in stark contrast to the approach laid out by the Supreme Court in the *Brooke Group* test. Even a showing of substantial harm to competitors in a highly concentrated market is not enough under the test. Additional evidence is needed that the harm to competitors comes from anticompetitive rather than procompetitive behavior and is likely to lead to the long-term elimination of competition. The government's approach, however, permits inferences of harm to competition from harm to competitors without requiring examination of the conditions that must be satisfied to validate such an inference.

AN ERROR-COST ANALYSIS

The discussion that follows uses an error-cost analysis to discuss the standard required for showing significant consumer harm in rule-of-reason Sherman Act cases. A weaker standard of evidence of consumer harm increases the likelihood of "false convictions," condemning procompetitive practices. A stronger standard increases the likelihood of "false acquittals," exonerating anticompetitive practices.[31] The standard used by the Clinton antitrust enforcers strikes that balance in the wrong place: it is too weak and leads to too many false convictions. We advocate a more stringent standard that would require evidence that consumers have been harmed substantially or, in the case of prospective harm, evidence that consumers would likely be harmed substantially. This stronger standard would necessarily reduce false convictions. However, the more stringent standard is one that can realistically be met by plaintiffs in cases where the challenged behavior is in fact anticompetitive, a point that we demonstrate in our analysis of the *Microsoft* and *Visa* cases. Consequently, our standard would result in a minimal increase in false acquittals.

31 See generally Posner (1999). "Acquittal" and "conviction" are borrowed from the criminal context for convenience, even though the antitrust litigation discussed in this chapter is civil, not criminal. This is the same terminology used in Beckner and Salop (1999, p. 41); Hylton and Salinger (2001, p. 469).

Basic Framework

The frequency of false convictions and false acquittals depends in part on the burden of proof and other standards of evidence. Civil antitrust cases are decided based on the preponderance of the evidence. That is generally taken to mean that if it is more likely than not that the defendant's actions are anticompetitive, the defendant is convicted (and conversely, if it is more likely than not that the defendant's actions are not anticompetitive, the defendant is acquitted). The frequencies of false convictions and of false acquittals also depend on what must be shown: in this context, how seriously the courts take the requirement that consumer harm is significant. Almost any action taken by a major company is likely to make some consumers unhappy, just as all contracts necessarily restrain trade.[32] As the standards for determining what constitutes significant consumer harm and what evidence is necessary to show its existence become weaker, the likelihood of false convictions increases. In terms of social cost, the problem is not such errors themselves or even the unjustified monetary damage awards to which they give rise. The social costs associated with these awards, which are primarily transfers, are relatively small. Social costs can be significant, however, when a practice that would improve efficiency is barred, a leading firm is forced to compete less effectively, or structural relief directly impairs productive efficiency.

Consider a simple model with the following parameters. The probability that the challenged action is in fact anticompetitive and has thus actually caused consumer harm is p. There is no "true" uncertainty regarding whether an action is anticompetitive—it is either anticompetitive or it is not. The court, however, does not know ex ante whether the defendant is innocent or guilty, only that the proportion of anticompetitive actions among the population of actions challenged is p.

The probability that a defendant is falsely convicted is $x_c(s)$, where s is the standard required for a showing of consumer harm.[33] That is, for a case where the challenged conduct should be permitted, $x_c(s)$ is the probability that the court makes a mistake and finds the defendant liable. Similarly, the probability of a false acquittal, permitting conduct that is anticompetitive, is $x_a(s)$. The probability of both false acquittals and false convictions depends on s. We define a higher s to be associated with a stricter standard. As s becomes more stringent, $x_c(s)$ generally decreases because it is less likely that a defendant is falsely convicted when a greater showing of consumer harm is required. Similarly, as s becomes more stringent, $x_a(s)$ generally increases. Finally, one must also consider the

32 *United States* v. *Addyston Pipe & Steel Co*., 78 F.712, 721 (1897).

33 The standard s could also include other aspects of the process, such as the preponderance standard and allocations of burdens of proof. We focus on the consumer harm standard. In addition, for simplicity, we assume that the probability p that a defendant has behaved anticompetitively does not depend on s, which may not be true if the standard of proof affects the cases brought by plaintiffs. Our discussion later, which is qualitative, would still hold.

relative costs to society of false convictions *(c_c)* and false acquittals *(c_a)*. The cost of a false conviction, c_c, is the loss in welfare because firms are prevented from engaging in the practice that has been wrongly prohibited and the impact of any other associated relief that might be imposed. Similarly, the cost of a false acquittal is the loss in welfare from failing to prohibit the conduct that is in fact anticompetitive.

The total cost of judicial errors is the sum of the respective error costs from false convictions and false acquittals. First, consider the error cost resulting from false convictions. The probability (across all cases) that a given case involves a defendant that is falsely convicted is equal to the probability a given defendant is innocent $(1 - p)$ multiplied by the probability that an innocent defendant is wrongly convicted, $x_c(s)$. The cost of a false conviction is c_c, so that the expected error cost (per case) from false convictions is $(1 - p)*x_c(s)*c_c$. Similarly, the cost of false acquittals is equal to the frequency of false acquittals multiplied by their costs, or $p*x_a(s)*c_a$. The total expected error cost (per case) is the sum of the costs from these two types of errors or $x_c(s)*(1 - p)*c_c + x_a(s)*p*c_a$. The natural objective for policy is to minimize the total expected error cost by choice of the standard, s, for finding consumer harm.

Effect of the Consumer Harm Standard on Error Costs

The socially optimal consumer harm standard depends on beliefs about the relative size of the marginal error costs from false convictions versus those from false acquittals. If the marginal error cost from false convictions (the decreased error cost resulting from a decrease in false convictions from increasing the standard s slightly) is relatively high, society should favor requiring a stricter standard for consumer harm. Conversely, if the marginal error cost from false convictions is relatively low then a looser standard for consumer harm would be appropriate.

Antitrust jurisprudence to some extent implicitly reflects this sort of error-cost analysis. This can be seen in the evidence required by the courts in recent years for predatory pricing. One can also see this reflection in the context of the standard of proof in criminal versus that in civil cases. In criminal cases society has decided that "it is better to acquit ten guilty defendants than convict one innocent one." That is, the social cost of a false conviction greatly outweighs that of a false acquittal. Thus the standard of proof in a criminal case is "beyond a reasonable doubt" rather than the "preponderance of the evidence" standard in civil cases.

In our simple model three factors determine the relative size of marginal error costs from false convictions versus those from false acquittals: marginal change in false convictions versus false acquittals from changing the current consumer harm standard (the size of dx_c/ds versus dx_a/ds), the probability p that a given defendant is guilty, and the size of c_c versus that of c_a. We now explain why consideration of these factors indicates that the standard for consumer harm advocated by the Clinton antitrust enforcers and accepted in whole or in part by some courts is too low.

ERROR PROBABILITIES: dx_c/ds VERSUS dx_a/ds. Currently some courts, such as those in *Microsoft* and *Visa*, find defendants liable without requiring a showing that there has been significant harm to either consumers or to competition. Instead, they have found defendants liable based only on evidence that some harm to competitors has resulted, from which harm to the competitive process and consumers is inferred. Such a minimal standard provides no meaningful test of whether behavior is in fact anticompetitive, and the standard is thus almost certain to result in high probabilities of false convictions (high x_c). Moving to a stricter standard is likely to significantly decrease false convictions without nearly as significant a decrease in false acquittals.

To properly infer substantial consumer harm from harm to competitors, the courts must require plaintiffs to show that competitors have been harmed *significantly*—that is, there must be a significant effect on the competitors' ability to compete effectively. In addition the courts should require plaintiffs to show that competition or consumer welfare has been harmed *significantly* as a result of competitor harm—that is, that other competitors cannot in effect replace the harmed firm or firms. Without this more stringent standard the courts have no meaningful basis for distinguishing between procompetitive and anticompetitive behavior. Requiring such a standard would significantly reduce the probability of false convictions.

This stricter standard for consumer harm would have a much smaller impact on the probability of false acquittals. As we describe in more detail in discussing *Microsoft* and *Visa*, whether a challenged act causes or is likely to cause significant consumer harm is a question of fact, which can be addressed empirically. Those cases demonstrate likely judicial error resulting from a weak consumer harm standard; they provide support for the assertion that x_c is currently high. But regardless of whether we are right on the merits, our discussion also illustrates that there were analyses the government could have undertaken in those cases that could have determined the existence and importance of consumer harm—and that the courts should have required. A stricter standard of consumer harm certainly requires more effort on the part of plaintiffs to prove liability, but it would not necessarily entail a significant increase in false acquittals.[34]

The minimal standard used by some courts would only be appropriate if there were strong reasons to believe that the vast majority of defendants had behaved anticompetitively (that p is high) or that the costs resulting from false acquittals greatly outweighed the costs of false convictions (that c_a is much higher than c_c) or both. Neither presumption seems warranted.

PROPORTION OF INNOCENCE VERSUS GUILT: $(1 - p)$ VERSUS p. While it is difficult to offer firm conclusions about the percentage of antitrust defendants that have in fact caused consumer harm, there is little reason to believe it

34 Any extra resources the government would have to expend would be worthwhile from a social perspective in avoiding false acquittals. In addition, especially in cases such as the ones discussed here, it is doubtful that the additional cost of undertaking the analyses would represent a substantial increase in total costs.

is so high as to justify a weak consumer harm standard. First, a weak standard would encourage some plaintiffs, particularly competitors, to file meritless suits seeking treble damages or the hobbling of an aggressive rival or both. Where plaintiffs do not have to show significant harm to competition or consumers, they can prevail in cases where no such harm exists. Thus it is reasonable to expect that under a weak consumer harm standard a significant proportion of private antitrust cases and perhaps even some government cases would target behavior that plaintiffs knew involved no consumer harm.

This problem is magnified because the antitrust case law considers suspect some business practices that are not *generally* anticompetitive. As the Chicago School of Economics has emphasized, there are various procompetitive reasons for firms to engage in many of the types of conduct that are frequently challenged under the Sherman Act, especially tying arrangements and vertical agreements among firms.[35] For example, companies may enter into exclusivity agreements to limit free-riding and opportunistic behavior or they may engage in tying or integration because of consumer preference or savings in transactions costs. The post-Chicago studies, while embracing the Chicago School's use of economics to evaluate the effect of allegedly anticompetitive practices on consumers, have identified many possible exceptions to its findings. These studies, for example, have identified conditions under which exclusivity restrictions or tying can be anticompetitive.[36] The models, however, require very specific conditions to hold, and they provide no support for the view enshrined in the case law that anticompetitive effects generally follow from exclusivity agreements or tying arrangements.[37] As Michael Whinston, one of the main contributors to this body of studies, has observed: "What is striking about the area of exclusive contracts and tying . . . is how little the current literature tells us about what [the typical effects on competition] are likely to be."[38]

If we are thus in a world where we cannot be confident that most antitrust defendants are guilty, there is no reason to rely on a standard of minimal consumer harm, especially when a more stringent standard incurs relatively low costs of false acquittals.

COST OF ERROR: c_c VERSUS c_a. The cost of false acquittals depends on the extent of consumer harm from anticompetitive behavior. Assuming an act is anticompetitive, market forces may provide a correction in the longer run even when a court has failed to prohibit the act, but market forces are probably less effective in correcting judicial errors. As Judge Frank Easterbrook wrote, "the economic system corrects monopoly more readily than it corrects judicial errors.

35 See, for example, Bork (1978, especially chaps. 14, 19).

36 See Whinston (1990); Carlton and Waldman (2002).

37 Hylton and Salinger (2001).

38 Whinston (2001, p. 79).

There is no automatic way to expunge mistaken decisions of the Supreme Court. A practice once condemned is likely to stay condemned, no matter its benefits. A monopolistic practice wrongly excused will eventually yield to competition, though, as the monopolist's higher prices attract rivalry."[39] For example, if a firm has achieved a monopoly over distribution through anticompetitive behavior, its competitors still have strong incentives to find alternative means of distributing their products. Market forces will certainly not correct all harms flowing from anticompetitive behavior, especially in the short run, but they can offset some of the anticompetitive effects in the long run.[40]

When courts mistakenly prohibit behavior that is procompetitive, however, market forces are prevented to some extent from serving as offsets. Competition is directly reduced in the market or markets at issue, and production and transaction costs may be increased. Moreover, procompetitive behavior is discouraged in other markets as companies across the economy seek to reduce their legal risk.

It is also important to note that the consequences of an antitrust conviction often go well beyond damage awards and orders to cease the offending behavior—though as our later discussion of *Visa* indicates, simple orders to cease and desist can have profound implications for industry structure and behavior. Courts can impose and have imposed a wide variety of behavioral restrictions and structural changes in attempts to remedy the effects of past actions that have been found illegal and to prevent future violations. Such broad remedies may have diverse consequences for competition and consumer welfare, many of which are unintended and unanticipated. The proclivity of courts to impose broad remedies in section 2 cases adds substantially to the expected societal cost of a finding of guilt where there is no real consumer harm.

Thus the remedial effect of market forces for injunctions that are wrongly denied may limit the cost of false acquittals (c_A) more than the cost of false convictions (c_C), and the tendency of courts to impose broad remedies usually increases the number of false convictions. The larger c_C is relative to c_A, all else equal, the more stringent should be the consumer harm standard required to find an antitrust violation.

Additional Considerations

The standard of proof of substantial consumer harm that should be required also depends on other factors. Based on an error-cost analysis, our conclusion is that the courts should require a lower standard of proof when the practice at issue is one that the courts and economists have experience with in assessing competitive consequences. For example, simple horizontal price-fixing cases are treated under a *per se* standard because there is no dispute that the practice is harmful.

39 Easterbrook (1984, p. 15).

40 For example, Crandall and Elzinga (forthcoming) examine the effectiveness of antitrust remedies and show that in some cases new entry made remedies irrelevant.

Moreover, the costs of false convictions under that standard are minimal.[41] A price-fixing agreement between two companies without market power may not cause any significant consumer harm, but there is little cost in prohibiting such conduct. The Supreme Court in *Broadcast Music v. CBS*, however, chose not to apply the *per se* standard because there was a significant chance that, as the Court ultimately ruled under a rule-of-reason analysis, the price agreements in the case had significant procompetitive benefits.[42] This suggests that generally the courts should require a higher standard of proof when the issues in the case are complicated or novel. Greater evidence of consumer harm should be required when, for example, the plaintiff 's liability theory depends on new and untested economic theories.

Another important factor is the likely impact of the relief demanded. When the plaintiff is seeking relief that is likely to have substantial external effects, such as companywide or industrywide restructuring, the court should require greater evidence of substantial consumer harm. Economics provides good reason to believe that even in the presence of market power, firms and industries are organized efficiently because market forces tend to reward efficiency and punish inefficiency.[43] Thus any forced reorganization is likely to involve significant social costs. When the impact of relief extends beyond the challenged practice, we should be particularly certain that there is consumer harm that needs to be remedied. This is consistent with the point made by the appeals court decision in *Microsoft* that although the court had used a minimal standard for causation (whether Microsoft's actions had actually led to consumer harm) in its finding of liability, much greater judicial scrutiny of consumer harm, among other things, was needed to support the divestiture proposal accepted by the trial court:

> Divestiture is a remedy that is imposed only with great caution, in part because its long-term efficacy is rarely certain. Absent some measure of confidence that there has been an actual loss to competition that needs to be restored, wisdom counsels against adopting radical structural relief. . . . If the court on remand is unconvinced of the causal connection between Microsoft's exclusionary conduct and the company's position in the OS [operating systems] market, it may well conclude that divestiture is not an appropriate remedy.[44]

---

41 Because Bork [note 15] finds us unclear on price fixing and horizontal mergers, a few additional remarks are in order. For the reasons just given in the text, we do *not* believe that direct (or indirect) proof of consumer harm should be required in *simple* price-fixing cases. However, evidence bearing on consumer harm is routinely and properly considered in horizontal merger cases: the Antitrust Division of the Department of Justice and the Federal Trade Commission examine whether the proposed merger will result in a significant increase in price or harm consumers in other ways. Only if there is a showing that consumer harm is likely is a defendant in a merger case obliged to prove efficiencies.

42 *Broadcast Music, Inc*. v. *CBS*, 441 U.S. 1 (1979).

43 This presumption would therefore not necessarily hold in heavily regulated industries.

44 *United States* v. *Microsoft*, 253 F.3d 34, 80 (2001).

Clearly, relief need not be narrowly structural to have the sort of radical consequences that gave the appeals court pause. Indeed, as we discuss later, even what might seem to be simple cease-and-desist orders can have such consequences. Because there is no such thing as a harmless remedy, and no court is likely knowingly to impose a remedy with *de minimis* effects, serious direct or indirect evidence of *significant* consumer harm should be required to support a finding of liability.

MICROSOFT

The Department of Justice filed its complaint against Microsoft in May 1998, focusing on the company's reaction to perceived threats to its Windows operating system, specifically from the Netscape Navigator Web browser and Sun Microsystems's Java technologies. In particular, the Justice Department argued that Microsoft took steps to prevent Navigator from becoming a viable platform that could compete with Windows. The department made four broad allegations: market foreclosure and tying under section 1 of the Sherman Act, and attempted monopolization and monopoly maintenance under section 2.[45] Twenty states and the District of Columbia joined in these claims and also asserted Microsoft engaged in monopoly leveraging in violation of section 2 of the Sherman Act.[46] The district court judge dismissed the monopoly leveraging claim before the start of the trial and rejected the section 1 foreclosure claim as well as several of the charges included under the section 2 monopoly maintenance claims. But the judge found Microsoft liable for tying under section 1 and many of the claims under section 2.[47] He ordered a remedy that included splitting Microsoft into two separate companies.

Microsoft appealed the district court's liability findings to the District of Columbia Circuit Court of Appeals, which reversed the section 2 attempted monopolization claim, affirmed a portion of the section 2 monopoly maintenance claim, and vacated and remanded the section 1 tying claims. The appeals court vacated the remedies ordered by the district court in their entirety and remanded

45 Complaint, *United States* v. *Microsoft*, Civil Action No. 98-1232 (TPJ), May 18, 1998 (www.usdoj.gov/atr/cases/f1700/1763.htm [December 3, 2002]).

46 Plaintiff States' First Amended Complaint, *New York* v. *Microsoft Corp*., Civil Action No. 98-1233 (TPJ), July 17, 1998, paras. 91–92.

47 Conclusions of Law, *United States* v. *Microsoft*, Civil Action Nos. 98-1232 and 98-1233 (TPJ), April. 3, 2000.

them for the district court "to determine the propriety of a specific remedy for the limited ground of liability which we have upheld."[48]

In September 2001 the Justice Department and the state plaintiffs announced that they would not pursue the tying claims on remand. In November 2001 Microsoft settled the case with the department and nine of the state plaintiffs.[49] That settlement had to be approved by a new district court judge. Meanwhile, the nine remaining state plaintiffs and the District of Columbia pursued stricter remedies before the same district court judge that reviewed the settlement.[50] After a Tunney Act proceeding to review whether the settlement agreement was in the public interest and an evidentiary hearing concerning an alternative remedy proposed by the nine litigating states, Judge Colleen Kollar-Kotelly adopted with minor modifications the remedy embodied in the settlement agreement.

Consumer Harm

Although the appeals court stated the appropriate principles for establishing significant consumer harm, it did not require the government to provide evidence that demonstrated the existence of such harm. The government argued that Microsoft had prevented Netscape from developing into a competing platform competitor. The government did not, however, provide any evidence or analyses that showed that the anticompetitive acts at issue had harmed Netscape as a potential platform or that Netscape seriously planned to become a platform competitor.

LIABILITY STANDARD. The appeals court stated the standard on liability:

> The question in this case is not whether Java or Navigator would actually have developed into viable platform substitutes, but (1) whether as a general matter the exclusion of nascent threats is the type of conduct that is reasonably capable of contributing significantly to a defendant's continued monopoly power and (2) whether Java

48 *United States* v. *Microsoft Corp.*, 253 F.3d 34, 107 (2001). Bork's characterization of Microsoft's behavior goes far beyond the courts' findings in many important respects. For example, he refers to "Microsoft's foreclosure of the distribution of Navigator" (*High-Stakes Antitrust* p. 53), though this charge was explicitly rejected by the district court. See Conclusions of Law, *United States* v. *Microsoft*, Civil Action Nos. 98- 1232 and 98-1233 (TPJ), 2, 38, April 3, 2000; *United States* v. *Microsoft*, 253 F.3d 34, 70 (2001). And he describes Microsoft's conduct as "predatory" throughout, even though there was no finding of predation by the court of appeals, and in oral argument the government explicitly denied that it was charging predation. See Transcript, *Microsoft* v. *United States* and *Microsoft* v. *State of New York*, United States Court of Appeals for the D.C. Circuit, 79, Nos. 00-5212 and 00-5213 (February 26, 2001); *United States* v. *Microsoft*, 253 F.3d 34, 68 (2001). Other examples are easily found.

49 Revised Proposed Final Judgment, *United States* v. *Microsoft*, Civil Action Nos. 98-1232 and 98-1233, November 6, 2002.

50 Two of the original twenty state plaintiffs had dropped out by this stage. One state, South Carolina, withdrew its complaint in December 1998 when America Online announced it would purchase Netscape. New Mexico had already reached a settlement with Microsoft in July 2001. Hahn and Layne-Farrar (forthcoming).

> and Navigator reasonably constituted nascent threats at the time Microsoft engaged in the anticompetitive conduct at issue.[51]

We believe the appeals court stated the right principles for its liability standard but failed to apply them correctly. First, in finding liability, the court relied on the district court's findings that Navigator had been significantly harmed by those Microsoft actions the appeals court found anticompetitive ("anticompetitive acts") and that Navigator was a "nascent" competitor to Windows.[52] However, the district court's finding of harm to Navigator had been based on the entire set of acts it found anticompetitive. The appeals court subsequently narrowed the acts it upheld as anticompetitive, stating it had "drastically altered the District Court's conclusions on liability."[53] A reassessment of the finding of substantial harm to Navigator was necessary to determine if the remaining anticompetitive acts had caused significant harm to it as a nascent competitor to Windows. But as we discuss next there were empirical analyses that could have been performed and would have addressed whether the challenged actions by Microsoft had caused any significant harm to Navigator.[54]

Second, the appeals court described its liability standard as "edentulous" because it did not require a showing that Java or Navigator would have actually developed as platform competitors, but it appeared to believe that its toothless standard was unavoidable given the nascent character of the competitive threats.[55] It did not want to permit harm to a nascent competitor simply because such an entity, by definition, would not yet be an established competitor. The appeals court reasoned that "to some degree, 'the defendant is made to suffer the uncertain consequences of its own undesirable conduct.'"[56] Although determining whether a company is really a nascent threat is not easy, the courts should nevertheless require an assessment based on the available evidence of whether a firm that is harmed "reasonably constituted" (as the court put it) a nascent threat. The court's failure to require this made the liability standard weaker in practice than in the principles asserted by the court.

---

51 *United States v. Microsoft Corp.*, 253 F.3d 34, 79 (2001).

52 For convenience, we refer to the acts found anticompetitive by the appeals court as the "anticompetitive acts." However, closer examination suggests that there was no showing of significant consumer harm and that the acts should not be characterized as anticompetitive.

53 *United States* v. *Microsoft*, 253 F.3d 34, 105 (2001).

54 The plaintiffs would, however, have had difficulty on remand for a different reason. In rejecting the attempted monopolization claim, the appeals court found that the plaintiffs had not proved the existence of a browser market protected by barriers to entry and found that they would not have another opportunity to prove the existence of this market on remand. Without such a market, there is no context for evaluating the competitive significance of actions Microsoft took toward Netscape. *United States* v. *Microsoft*, 253 F.3d 34, 81-83 (2001). See also Fox (2002, pp. 386–87).

55 *United States v. Microsoft*, 79.

56 Philip E. Areeda and Herbert Hovenkamp, *Antitrust Law*, vol. 3 (Little, Brown, 1996), p. 78, quoted in *United States* v. *Microsoft*, 79.

HARM TO COMPETITORS. The core theory of the plaintiffs' case during the liability phase was that Microsoft's actions caused Navigator to lose the ubiquity it needed to become a platform competitor to Windows.[57] The plaintiffs argued that although Navigator was not an operating system competitor to Windows at that time, it could develop into a platform competitor. If Navigator were to achieve ubiquity, the argument went, software firms might write to application programming interfaces (APIs) that Navigator might develop and expose, rather than to Windows APIs. The plaintiffs argued that Navigator might thus eventually become a platform competitor to Windows.

The plaintiffs' expert, Franklin Fisher, had suggested that the minimum threshold share Navigator needed for ubiquity was 50 percent.[58] Navigator's usage share had fallen to less than 15 percent by the time of the remedies hearing (though it was substantially higher at the time of trial).[59] So a central question for liability should have been whether the acts found anticompetitive by the appeals court were likely to have reduced Navigator's share by more than 35 percentage points.[60] Of course, that question would seem to have antitrust meaning only if there is an antitrust market for browsers; otherwise there is no numeraire for calculating a share. But the appeals court found that the plaintiffs had failed to prove a browser market and could not get a second bite at that apple on remand.[61]

Assuming that browsers constitute a relevant market, however, one cannot determine from the trial record whether the actions found anticompetitive by the appellate court prevented Netscape from achieving Fisher's ubiquity threshold. Many of the important actions taken by Microsoft in competing with Navigator were found not to be anticompetitive. Some actions were found permissible by the district court; others, initially found anticompetitive by the district court,

57 There was a similar claim regarding Java. Microsoft presented similar evidence during the remedies stage arguing that, as with Navigator, Microsoft's actions did not affect Java significantly enough to harm competition. For the purposes of this paper, we focus on Microsoft's actions that related to Navigator.

58 Transcript of Trial: Oral Rebuttal Testimony of Franklin Fisher (vol. 33, PM Session), *United States* v. *Microsoft*, Civil Action No. 98-1232 and 98-1223, January 6, 1999, 35.

59 Direct Testimony of Kevin M. Murphy, *New York* v. *Microsoft Corp*., Civil Action No. 98-1233 (CKK), April 12, 2002, para. 38.

60 Because the appeals court reduced the number of acts found anticompetitive, a reexamination of liability would need to determine whether the remaining anticompetitive acts had caused significant harm to Navigator as a competitor to Windows. Such a hearing would have presumably taken place about the time the remedies hearing actually took place. This chapter discusses the analyses presented by Murphy at the remedies hearing. Most of Murphy's analyses relied on data that would have been available around the time of the initial trial.

61 See note 54.

were later ruled permissible by the appellate court.[62] Some of the more significant Microsoft actions found permissible were: (1) offering its Internet Explorer at no additional cost to consumers, (2) investing heavily in improving the quality of Explorer, (3) making it free for Internet access providers, (4) offering payments to access providers for distributing Explorer, (5) developing and distributing at no charge a "tool" enabling access providers to customize Explorer, and (6) designing Explorer in a "componentized" way that made it attractive to AOL and other partners.[63]

The relevant question is whether Navigator's loss of ubiquity could be plausibly attributed to the remaining anticompetitive acts rather than to the large set of competitive acts found to be legal. If, for example, Microsoft's anticompetitive acts had reduced Navigator's share by 5 percentage points, Navigator's share would still only be 20 percent and those anticompetitive acts would not have significantly harmed its ability to become a platform competitor. That is, even if Microsoft's suspect actions did harm Navigator's success as a browser, they may have had no significant effect on its ability to develop into a platform competitor. To find liability without real evidence of the likelihood of significant harm to competition or consumers is to move very close to a *per se* standard, which seems unjustifiable for the types of practices at issue.

The appeals court's decision failed to require any evidence that would have shown whether Microsoft's actions, individually or collectively, denied Navigator the ubiquity it needed as a platform competitor. For example, consider the appeals court finding that Microsoft's contractual terms with original equipment manufacturers (OEMs) that prohibited the deletion of the Internet Explorer icon from the desktop or the start menu was an anticompetitive act.[64] It stated that by "preventing OEMs from removing visible means of user access to IE, the license restriction prevents many OEMs from pre-installing a rival browser, and, therefore, protects Microsoft's monopoly from the competition that middleware might otherwise present." The court relied on the district court's finding that "OEMs cannot practically install a second browser in addition to IE, the court found, in part because 'pre-installing more than one product in a given

62 Memorandum Opinion, *State of New York, et al*. v. *Microsoft*, Civil Action No. 98-1233 (CKK) November 1, 2002, 18–25. See also Evans (2002). Bork simply ignores this and asserts that "Netscape's browser was driven from the market by non-efficient exclusionary practices" (*High-Stakes Antitrust* p. 62). Neither the district court nor the appeals court made such a finding. See Conclusions of Law, *United States* v. *Microsoft*, Civil Action Nos. 98-1232 and 98-1233, 2, 38 (TPJ, April 3, 2000); *United States* v. *Microsoft*, 253 F.3d 34, 70–71 (2001). We believe that if this had actually been proven, it would have been quite simple to show that consumers were harmed.

63 The appeals court reversed the district court's initial finding of liability on (3), (4), and (5). The district court was ambiguous on whether (1) and (2) were anticompetitive, but the appeals court found that they were clearly permissible. *State of New York, et al*. v. *Microsoft*, 3. Making Internet Explorer "componentized" allowed other companies such as AOL to include its functionality in their own software, without necessarily opening an Explorer window, so that consumers might not even know they were using Explorer functionality. This had both technical and marketing advantages for potential partners. Direct Testimony of Kevin M. Murphy, *New York* v. *Microsoft Corp*., Civil Action No. 98- 1233 (CKK), April 12, 2002, paras. 50, 108–109, 117.

64 *United States* v. *Microsoft*, 253 F.3d 34, 61 (2001).

category . . . can significantly increase an OEM's support costs, for the redundancy can lead to confusion among novice users.'"[65] The appeals court found that there were no procompetitive justifications and concluded that the restriction was anticompetitive. The district court did not cite any evidence or analysis that showed this restriction actually had a significant effect on Navigator.[66] The appeals court failed to apply its own test of whether this restriction was "reasonably capable of contributing significantly" to the maintenance of Microsoft's market power in finding that this restriction, by itself, constituted a violation of the Sherman Act.

Kevin Murphy, Microsoft's expert at the remedies hearing, testified that this question could be addressed empirically. He examined both the individual and collective impact on Navigator use from the alleged anticompetitive acts and argued that together they affected Navigator's decline by "no more than a few percentage points."[67] For example, he considered the effect of the "no removal" restriction, as well as restrictions on the promotion of third-party browsers or Internet access providers through the use of unusually shaped icons, in one of his analyses. Murphy compared Navigator use among a control group of Internet users whose browser choice was unlikely to be affected by these restrictions and a treatment group whose choice of a browser might have been affected. The difference would measure the collective impact of the anticompetitive acts on the distribution or use of Netscape's browser. Using two data sources, he found that there was an insignificant difference in Navigator's decline between the treatment and the control group.[68]

Another of Murphy's analyses considered the change in the use of Navigator for subscribers to two groups of service providers: the treatment group of providers that signed contracts containing terms upheld as anticompetitive by the appeals court; and a control group of providers that signed less restrictive agreements containing no illegal terms. Navigator's share loss was essentially the same for both groups, thus indicating an insignificant incremental impact from the terms in the providers' contracts that the appeals court condemned.

---

65 *United States v. Microsoft*, Civil Action Nos. 98-1232 and 98-1233 (TPJ), Findings of Fact (November 5, 1999), 159, quoted in *United States v. Microsoft*, 61.

66 Direct Testimony of Kevin M. Murphy, *New York* v. *Microsoft Corp*., Civil Action No. 98-1233 (CKK), April 12, 2002.

67 Testimony of Kevin M. Murphy, *New York* v. *Microsoft*, para. 92. Richard Schmalensee's testimony at trial provided similar findings regarding the lack of effect of various contested Microsoft actions.

68 Direct Testimony of Kevin M. Murphy, *New York* v. *Microsoft*, paras. 58–67. The first comparison was between Navigator use by Internet technology professionals ("unlikely to be constrained by the anticompetitive acts because they are technically sophisticated, knowledgeable and can easily and cheaply acquire whatever brand of browser they wish") and Navigator use generally (which could have been affected by the anticompetitive acts). The second comparison was between use by people working in medium or large businesses or the government (whose "'choice' of browser for these users is often determined by the software configuration installed and supported by their employer") and use by those at home or working in small businesses (who were more likely to be affected by the anticompetitive acts).

The litigating states offered no substantive rebuttal to Murphy's testimony.[69] Regardless of the merits, however, we want to emphasize that this is a question that the appeals court should have required the district court to address directly before a final determination of liability, especially in light of the appeals court's "drastic" modifications to the trial court's liability findings.[70] This was a question that was susceptible to empirical examination, as Murphy's testimony demonstrated. Instead, the appeals court simply assumed that each of Microsoft's challenged actions that it did not find legal had sufficiently reduced Navigator's potential ability to compete with Windows so as to injure competition and thus harm consumers.[71]

HARM TO COMPETITION. The appeals court decision also suffered from a second major flaw. Although the court asked the right question, "whether Java and Navigator reasonably constituted nascent threats at the time Microsoft engaged in the anticompetitive conduct at issue," it accepted the district court's findings that Navigator was a nascent threat. The district court's findings were based on general concerns expressed by Microsoft executives about the threat from Navigator but did not include specific evidence indicating that Navigator would have (or could have) developed into a platform competitor even with the necessary ubiquity.[72] Microsoft had been worried that Netscape would transform

69 The litigating states' economic expert, Carl Shapiro, stated that "the Findings of Fact and the Court of Appeals decision in this case make it very clear that Microsoft's illegal conduct had significant effects on Netscape Navigator and on Sun's Java platform." Direct Testimony of Carl Shapiro, *New York* v. *Microsoft Corp*., Civil Action No. 98-1233 (CKK), April 5, 2002, paras. 60–61. Shapiro did not address the issues Murphy discussed in this testimony. The litigating states had the option to call Shapiro to provide rebuttal testimony but chose not to. The trial court dismissed his analysis of causation issues, commenting that "Dr. Shapiro does not appear to have gathered or synthesized empirical information or to have applied particular economic principles." See Memorandum Opinion, *State of New York, et al*. v. *Microsoft*, Civil Action No. 98-1233 (CKK) November 1, 2002, 116.

70 At trial the government presented some analyses of the impact on Navigator use of some of Microsoft's contractual restrictions, but this included restrictions that were ultimately found permissible. It is thus not possible to use the government's analysis to estimate the effects of the anticompetitive acts affirmed by the appeals court.

71 The trial court rejected Murphy's causation analysis: "Still, Dr. Murphy's conclusion that the anticompetitive conduct identified in this case had *no* effect upon Microsoft's monopoly can be seen to undercut, if not directly contradict, the inference of causation necessary to the appellate court's imposition of liability. . . . Most troubling to the Court in examining Dr. Murphy's analysis is the fact that many of the conclusions reached by Dr. Murphy cannot be reconciled logically with significant portions of the appellate court's opinion." See Memorandum Opinion, *State of New York, et al.* v. *Microsoft*, Civil Action No. 98-1233 (CKK) November 1, 2002, 118. The difficulty is that the appeals court's opinion is internally inconsistent and cannot be reconciled with its own findings or with the trial record. As Eleanor Fox has observed, after enunciating a tough test for determining whether exclusion reduced social welfare, "the court shifted to a loose analysis wherein foreclosure became the touchstone for 'anticompetitive.' Foreclosure of unspecified dimensions from one important route of access to the browser market (although plaintiffs had failed to prove a browser market) was accepted as "anticompetitive" and thus sufficient for the Government's prima facie case." Fox (2002, p. 387). See also note 6 on p. 50.

72 Bork argues that Microsoft's decision to compete aggressively with Netscape establishes that it faced no other competitors: "No predator would attack particular firms if other firms, unaffected by the onslaught, remained to offer competition" (*High-Stakes Antitrust* p. 52). Of course firms compete aggressively all the time in real-world markets and it leads to vigorous competition that helps consumers. He characterizes Microsoft's actions as predatory based on its internal communications. This amounts to basing market definition on e-mails, perhaps supplemented by linguistic arguments on the labeling of particular competitive actions.

Navigator into a competing platform.[73] But there is little evidence from either the trial or intensive interviews with Netscape employees conducted by Michael Cusumano and David Yoffie that Netscape ever seriously planned to do so.[74] James Barksdale (Netscape's CEO), for example, suggested in trial testimony that the comment by Marc Andreessen (cofounder of Netscape and an early developer of browser software) about reducing the role of Windows to that of providing "slightly buggy device drivers" reflected his youth and a "spirit of jocularity and sometimes sarcasm that have gotten us in trouble."[75] Barksdale also testified that Microsoft had "never maintained in a serious way that [Navigator] could substitute for all [of the platform characteristics of Windows]."[76] We are not suggesting that the plaintiffs should have had to, in the appeals court's words, "confidently reconstruct a product's hypothetical technological development."[77] However, at a minimum the government should have had to demonstrate that its theory regarding the Navigator threat was supported by the available evidence.

The plaintiffs' theory at trial was that, over time and with ubiquity, Navigator could have perhaps developed application programming interfaces that would attract software developers. But the plaintiffs presented no evidence that Netscape had ever taken any significant steps to develop Navigator as a platform. During the remedies phase Murphy testified that the decisions made by Netscape and later AOL indicated they had no plans to develop Navigator as a platform competitor.[78] (The litigating state plaintiffs offered no substantive rebuttal to this

73 If there were clear evidence that a defendant believed another firm was a potential competitor and if the defendant took anticompetitive actions that eliminated that other firm, liability might be appropriate even if it turned out that the other firm was not actually a potential competitor. That is, a defendant should presumably not escape liability if it took anticompetitive actions that eliminated a firm it clearly believed was a potential competitor simply because its belief was mistaken. However, it is notoriously difficult to assess the beliefs and intent of an organization, and it is generally preferable to examine directly the extent to which a firm actually was a potential competitor. At the very least, such an examination will shed light on the plausibility of the beliefs the defendant is alleged to have held. (Bork does not address the issues raised here in his apparent criticism of us, stating: "If the predator intended to kill a victim in order to harm consumers, the fact that the victim was killed due to a misapprehension by the predator should surely not be a defense" [p. 62].) The issue Murphy was addressing—whether broad remedial relief was needed to restore lost competition—is different and should turn on whether an eliminated firm was actually likely to have become a competitor, not on any mistaken beliefs of the defendant.

74 Cusumano and Yoffie (2000).

75 Transcript of Trial: Oral Testimony of James Barksdale (vol. 2, PM Session), *United States* v. *Microsoft*, Civil Action Nos. 98-1232 and 98-1223, October 20, 1998, 73.

76 Transcript of Trial: Oral Testimony of James Barksdale, *United States* v. *Microsoft*, 73.

77 *United States* v. *Microsoft*, 253 F.3d 34, 79 (2001). Bork argues that it would be legitimate to find a violation even assuming "that Microsoft's attack proved not to be the real reason for the disappearance of Netscape Navigator" because the result "would be only an injunction that proved unnecessary against illegal practices" (*High-Stakes Antitrust* p. 62). But the federal and state governments sought more than bare-bones injunctive relief. The district court ordered far more; and in negotiations, after the case was remanded, Microsoft agreed to more. The notion that relief in a real section 2 case can ever be harmless to a losing defendant seems far-fetched.

78 Direct Testimony of Kevin M. Murphy, *New York* v. *Microsoft Corp*., Civil Action No. 98-1233 (CKK), April 12, 2002, paras. 107–24.

testimony.) For example, a June 1998 strategy briefing "made it clear that the company's server products had replaced the browser as the heart of Netscape's product plans."[79] Consistent with this focus, Netscape and AOL have not developed the types of application programming interfaces (APIs) that software developers would need to start using Navigator as a platform instead of Windows.[80] Even today AOL uses Internet Explorer, not Navigator, to provide browsing functionality.[81]

Murphy noted that, by contrast, if Netscape and later AOL had serious plans to develop Navigator into a platform competitor, we would expect them to have taken very different actions.[82] They would have made much more significant efforts to develop APIs for Navigator and would have made Navigator more componentized and thus easier for potential partners to use, as had been urged by IBM/Lotus, Intuit, and AOL (before AOL acquired Netscape).[83] One would also expect that Netscape and AOL would have made more effort to pay for wider distribution of Navigator, or at least use it in AOL's client software, in light of the potential revenues from developing it as a platform competitor.

Again, although we believe the evidence suggests that Microsoft's anticompetitive acts did not deny Navigator the ubiquity the plaintiffs argued it needed and there was no evidence that Navigator had a significant chance to develop as a platform competitor, the point to emphasize is that those are factual issues that could and should have been examined at the liability stage. Instead, the district and appeals courts, using a weak consumer harm standard, accepted a liability case presented by the plaintiffs that did not attempt to assess either the extent to which Navigator had been harmed or the extent to which any harm to Navigator was important to competition in the relevant market. We are not suggesting here that a plaintiff should be required to show the exact path competition would have taken in the absence of the allegedly anticompetitive acts, especially when the case involves companies that are allegedly nascent competitors. Rather, when claims of harm to competitors and to competition can be examined to determine whether the potential harms are significant and realistic, that inquiry must be undertaken. As in the analysis of postpredation recoupment under the *Brooke*

79 Cusumano and Yoffie (2000), cited in Direct Testimony of Kevin M. Murphy, *New York* v. *Microsoft Corp*., Civil Action No. 98-1233 (CKK), April 12, 2002, para. 107.

80 Murphy's testimony indicated that only a handful of APIs have been developed for Navigator and that most of those do not provide the type of functionality across operating systems that has been argued might make Navigator attractive as a platform.

81 There are reports that there is beta testing of a version of AOL's client software that relies on Navigator's browsing code. Jim Hu, "AOL Launches New Netscape Browser," *ZDNet News*, August 29, 2002. See http://zdnet.com.com/2102-1104-955850.html (December 3, 2002).

82 Direct Testimony of Kevin M. Murphy, *New York* v. *Microsoft*, paras. 123–24.

83 Direct Testimony of Kevin M. Murphy, *New York* v. *Microsoft*, paras. 109, 117.

Group test, the plaintiff should be required to show the plausibility of the scenarios it puts forward, not to prove beyond a doubt the correctness of any one of them.

VISA AND MASTERCARD

Payment card systems have historically consisted of companies in two groups: proprietary systems and open systems. Of the four largest systems in the United States, American Express and Discover are proprietary systems; Visa and MasterCard are open systems. The proprietary systems, American Express and Discover, solicit cardholders to use the systems' charge and credit cards and acquire merchants (or contract with others to acquire merchants). A proprietary system operates the necessary processing infrastructure, conducts advertising and other marketing activities, and performs research and development. It determines the prices and other terms and conditions for its cardholders and merchants and retains the profits from its activities.

Visa and MasterCard, the open systems, are run as not-for-profit cooperatives or associations. The cooperative provides its members with a range of services. It runs the processing infrastructure, manages the brand, and engages in system-level research and development. It also provides rules that members must follow. The cooperative operates on a not-for-profit basis, setting member fees at a level that is expected to cover system costs (including funds for working capital and contingencies). It does not set prices to cardholders or merchants.[84] Individual members solicit cardholders and merchants, set prices and other terms and conditions, process transactions (sometimes with the assistance of third-party processors), advertise and establish the brand image for their cards, and develop and implement card features.[85]

Two central issues concerned the government in the investigation that led up to *United States* v. *Visa*. The first was the absence of any Visa or MasterCard rules that prevented banks from being members of both systems, a situation commonly referred to as duality. In other words the government wanted *more* separation between Visa and MasterCard. The second was the existence of Visa and MasterCard rules that prohibited members from issuing American Express or Discover cards. In other words the government wanted *less* separation between Visa (or MasterCard) and American Express (or Discover).

The government told Visa that the association could not consistently defend these contradictory positions on membership. Visa told the government it could not

84 The court found that Visa and MasterCard both operated on a not-for-profit basis. *United States* v. *Visa*, 163 F. Supp.2d 332 (2001). MasterCard completed its reorganization as a stock rather than a membership corporation on July 1, 2002. It is unclear whether this will affect its not-for-profit operation. Visa continues to operate on a not-for-profit basis and set its system fees at cost.

85 Evans and Schmalensee (1999, p. 262).

consistently prosecute both duality and exclusivity as antitrust violations.[86] Nevertheless, duality and exclusivity became counts one and two of the government's case, and Visa and MasterCard mounted a defense on both counts. The government believed it had a way out of the contradictions. Through its economic expert, Michael Katz, it put forward a theory that one could distinguish between duality in governance and duality in issuance.[87] He argued that duality in governance (or overlapping governance generally) was anticompetitive and duality in issuance (or multiple issuance generally) was procompetitive. Thus he proposed to end dual governance without ending dual issuance. Further, the repeal of the exclusivity rules could then be viewed as an extension of (procompetitive) dual issuance to multiple issuance.

Visa had been opposed to duality at its inception in the late 1970s but as a small entity at that time had acquiesced in the face of potential antitrust liability and what it viewed as the unwillingness of the government to support its position against duality. Richard Schmalensee, Visa's economic expert, believed that having exclusive systems was best overall for system and issuer competition, although it was not clear the government had shown that dual governance (as opposed to duality in total) had led to anticompetitive effects. Moreover, reacting to the value of loyalty, both Visa and MasterCard had taken steps to increase the extent to which issuers were dedicated to one system or the other, thus ameliorating some of the potential harm from duality.

In its decision the district court rejected the government's attempted distinction between dual governance and dual issuance. The court found some harmful effects from duality—that duality "has led to some blunting of competitive incentives," but could not ascribe the effects solely to dual governance.[88] The court found that dual governance was an artificial distinction that had no foundation in the actual operation of Visa and MasterCard and that large issuers could have an important influence on association decisions even if they were not governors.

The court reasoned that it could set aside its finding that duality, in total, resulted in "some blunting of competitive incentives" because the government's claim

86 Two of this chapter's authors, Evans and Schmalensee, participated in discussions with the Justice Department during the three years that preceded the filing of the lawsuit. In his description of *Visa* Robert Bork completely ignores the duality count of the government's case, even though the tension between the duality and exclusivity counts was a central feature of the proceeding. And he does not seem to realize that the novelty and complexity of the industry's organizational structure—this is *not* a simple manufacturer/dealer case—means that labeling arguments are particularly unreliable substitutes for economic analysis of competitive and consumer impacts. For both these reasons Bork sees a simple, straightforward case with an obvious remedy while the government saw a complex situation requiring what they believed was a carefully crafted remedy. Bork provides not a summary of the case as brought and tried, but a summary of that portion of the district court's opinion that dealt with exclusivity.

87 We use the unmodified term "duality" to refer to duality as it now exists, encompassing duality in membership and in governance.

88 *United States* v. *Visa*, 163 F. Supp.2d 322, 363 (2001).

related only to dual governance, so that "whether or not dual issuance has been or will be the source of anticompetitive conduct is not the issue."[89] The question of whether dual or multiple issuance can be anticompetitive, however, is relevant to evaluation of the exclusivity rules. Visa sought to prohibit the extension of multiple issuance to American Express because, among other effects, the practice would blunt competitive incentives, as had happened with duality. The court failed to address the problem of blunted incentives in its assessment of procompetitive effects from the exclusivity rules.

As noted earlier, courts should be particularly careful to require clear evidence of consumer harm in a case involving a very complicated industry structure and a novel liability theory put forward by the plaintiff. The relief devised by the court ordered Visa and MasterCard to eliminate their exclusivity rules and rescinded the existing partnership agreements already signed by banks to allow them to sign agreements with American Express or Discover. (The government's proposed relief differed substantially from the court's because it had sought to address both the duality and exclusivity claims.) The court's relief could lead to dramatic changes in the structure of the payment card industry. The greater system separation that had come about in recent years through the action of Visa and MasterCard, noted with approval by the court, could be in large measure undone. In the face of potential industry restructuring and the court's own ambivalence about the impact of decreased system separation, it should have been especially important to require the government to provide evidence on significant consumer harm that related to the remedy to be imposed. We believe the court failed to do this.

Consumer Harm

The government's case on consumer harm fits into two categories. First, it contended that American Express had been harmed by the exclusivity rules and that the loss of system competition constituted consumer harm. (For convenience, we refer to American Express rather than both American Express and Discover.) Second, the government argued that cardholders were harmed by the loss of variety that would have been available if Visa or MasterCard members issued cards for American Express. The court accepted both arguments.[90]

89 *United States* v. *Visa*, 163 F. Supp.2d 322, 329 (2001).

90 Bork, again, apparently believes that the government tried to do more than it needed to. He argues that the exclusivity agreements were "of a sort familiar to antitrust law: a horizontal agreement among competitors to refuse to deal and thus not to compete by offering new brands to their customers" (*High-Stakes Antitrust* p. 63). Having affixed this label on the basis of surface appearances—and shined it by arguing that the intent of the Visa and MasterCard banks' voting for exclusivity was anticompetitive—he would immediately shift the burden to defendants to show the agreement produced efficiencies. No analysis of effects on competitors, let alone on consumers, would be required, even though such analyses are frequently done. In unusual organizational structures or rapidly changing industries, however, efficiencies are difficult to prove—indeed, imagine trying to *prove* that all the familiar restrictions a law firm imposes on its partners enhance. Because it is hard to prove efficiencies, under Bork's approach if the defendant loses the labeling battle, the game is over even for practices that directly benefit consumers.

The government's liability case on exclusivity contained the same two central flaws as in *Microsoft*. First, it made no attempt to assess the extent to which the competitor (in this case American Express) was harmed. Second, it made no attempt to demonstrate the extent to which the alleged harm to a competitor would harm competition. And, as in *Microsoft*, these were questions that could have been answered empirically. In accepting the government's case the district court failed to require a showing that Visa's exclusivity rules had caused significant harm to competition or consumers.

Visa offered procompetitive justifications for its exclusivity rule, although a full discussion is outside the scope of this chapter. The association argued that the rule was important for ensuring the loyalty of its members in furthering the growth of the cooperative. It also contended that the exclusivity rule limited the ability of its members to take opportunistic actions that would undermine the success of the cooperative. The court rejected these justifications.[91] Visa also argued that the exclusivity rule was procompetitive because it helped maintain separation between the Visa and American Express systems. The court rejected this argument without any detailed discussion and did not appear to recognize the inconsistency with its finding that duality had led to "some blunting of competitive incentives."[92]

Harm to Competitors

The court found harm to American Express from the Visa and MasterCard exclusivity rules because they prevented American Express from taking actions it claimed to want to take. But the court did not require the government to assess the extent to which American Express had been weakened as a system competitor. Harm to a competitor, even an important one, does not imply harm to competition or to consumers.

The court found that "banks provide essential attributes to network competitors" because "Visa and MasterCard banks are the sources of virtually all of the expertise in issuing general purpose cards in the United States outside of American Express and Discover themselves."[93] There is no dispute that successful issuers have certain skills and specialized knowledge that are the reasons for their success, as is true in general with any successful company. The antitrust question, however, is how significantly American Express is harmed by not having access to these issuers.

---

91 *United States* v. *Visa*, 329. We believe the court erred in its findings, but a discussion of this issue is outside of the scope of this chapter.

92 *United States* v. *Visa*, 330, 363. The court briefly addressed the exclusivity rule as procompetitive in the introductory section of the decision and did not consider it in the detailed analysis of procompetitive justifications.

93 *United States* v. *Visa*, 389.

It was unclear whether Visa and MasterCard's exclusivity rules prevented American Express from gaining access to important issuer skills—American Express is the largest card issuer in the United States and, with 20 percent of card volume, is only slightly smaller than MasterCard, a system with thousands of issuers and 26 percent of card volume.[94] American Express has managed to acquire the issuing skills necessary for that success without having had access to any Visa and MasterCard members. Historically American Express has chosen to operate as a single-issuer proprietary system.

Entry and expansion in the credit card issuing business also appears to be relatively easy. Many of the largest Visa and MasterCard issuers have entered or grown greatly in the past decade.[95] These new or previously minor issuers were able to develop the issuing skills to become major issuers quickly without gaining direct access to the skills of existing card issuers. Similarly, American Express could develop additional issuing skills or open up its system to new entrants in a relatively short time. The company might earn higher profits if it could gain immediate access to the issuing capabilities that Visa and MasterCard members have developed, but that does not mean it needs to do so to compete effectively. Moreover, it has a number of ways of getting access to existing issuer skills in the industry. It can contract with Visa and MasterCard members to provide any expertise it needs as long as they do not issue American Express cards. The company can even purchase and convert existing Visa and MasterCard portfolios, which it acknowledged after the trial it can do successfully in addition to purchasing issuer skills.[96]

There was no economic evidence that American Express, as a system competitor, suffered any significant cost disadvantages. Its CEO, Harvey Golub, testified that there would be at best only "marginal" (i.e., small) cost savings from additional volume.[97] Moreover, switching 6 percent of volume from MasterCard to

94 *United States* v. *Visa*, 341, 387.

95 *United States* v. *Visa*, 365.

96 American Express has, in fact, purchased bankcard portfolios, including Bank of Hawaii, BSB Bank & Trust, and Valley National Bank. See American Express Press Releases (http://home3.americanexpress.com/corp/latestnews/hawaii.asp; http://home3.americanexpress.com/corp/latestnews/bsb-bank.asp; http://home3.americanexpress.com/corp/latestnews/shopright.asp) At trial American Express witnesses stated that purchasing portfolios was not an economically viable strategy. American Express has since directly contradicted that testimony by stating that it has successfully pursued that strategy with no significant problems. Opening Brief of Defendant-Appellant Visa U.S.A., Inc., *United States* v. *Visa*, 98 Civ. 7076 (BSJ), May 14, 2002, 41.

97 Trial Testimony of Harvey Golub, *United States* v. *Visa*, 98 Civ. 7076 (BSJ), July 5, 2000, 2770–71. The court cited testimony from Richard Schmalensee to support its statement that "since the card network services business is driven by scale, increasing the scale of American Express and Discover will reduce their costs and increase their competitive strength." *United States* v. *Visa*, 163 F. Supp.2d 322, 382 (2001). Schmalensee's testimony indicated that there were important scale economies at some size level—which limits the number of viable systems—but did not suggest that American Express or Discover were not at or close to the size at which additional scale economies would be marginal. Trial Testimony of Richard Schmalensee, *United States* v. *Visa*, 98 Civ. 7076 (BSJ), July 20, 2000, 5990–91. The court cited other testimony on this point. *United States* v. *Visa*, 163 F. Supp.2d 322, 389 (2001). The testimony cited did not, however, provide any evidence on whether American Express would currently gain any *significant* scale economies from additional volume.

American Express, thus reversing the size of the two systems, would simply transfer any scale economies from one system to the other. It is also worth noting that Visa, with 47 percent of card volume to MasterCard's 26 percent, was much larger.[98] MasterCard would have been unable to compete effectively against Visa, as it certainly seemed to do, if Visa had enjoyed larger scale economies.

There was also no allegation by the government or finding by the court that American Express was unable to pursue product development or innovation initiatives because of a lack of access to Visa and MasterCard banks. For example, the "Blue" chip card that American Express touts as a significant innovation was developed without access to Visa and MasterCard issuers. Because it has neither a significant innovation nor a cost disadvantage, it is difficult to see how American Express is harmed as a system by the cooperatives' exclusivity rules.

The court's decision stated that "additional issuers leads to increased card issuance." It based this finding on general statements by industry executives that having more issuers is "always better."[99] Although this is generally true, it does not discuss "how much better" and whether that difference is competitively significant.[100] The court's finding was not based on or supported by any attempt by the government to quantify or otherwise assess the significance of any additional issuance on the American Express system. The government could have tried to estimate likely additional American Express volume from the elimination of the exclusivity rules. It could then have explained how such additional volume would have strengthened American Express as a system competitor. If it believed American Express would benefit from additional scale economies, that again is a subject that could be examined empirically. Without any of this evidence, it is not possible to say whether American Express has been significantly harmed by the cooperatives' exclusivity rules.

HARM TO COMPETITION. Because the trial court's decision does not assess the extent of harm to American Express, it falls short of providing a basis for assessing harm to competition or consumers. Here, following the court's finding

98 *United States* v. *Visa*, 163 F. Supp.2d 322, 341 (2001).

99 *United States v. Visa*, 387.

100 The court stated that "Visa U.S.A.'s general counsel testified that By-law 2.10(e) exists because of the likelihood that the number of American Express cards issued in its absence could be substantial" as supporting evidence for its belief that the impact was substantial. *United States* v. *Visa*, 387. In fact, Visa's general counsel testified that he did not have any view as to the likely number of American Express cards issued in the absence of bylaw 2.10(e), noting only that the possibility it might be substantially more than ten cards was one of the reasons for the rule. See Deposition Testimony of Paul Allen, *United States* v. *Visa*, 98 Civ. 7076 (BSJ), October 29, 1999, 360–62. Moreover, the number of cards issued by American Express bank partners that might be sufficient to disrupt the Visa system is different from the number of cards that might otherwise be considered competitively significant. For example, Schmalensee's testimony in the case suggested that disruption to Visa's corporate card program was possible and of significant concern to the association, even though its corporate cards accounted for only 2 percent of purchase volume on all Visa cards in the market defined by the court. See Direct Expert Testimony of Richard Schmalensee, *United States* v. *Visa,* 98 Civ. 7076 (BSJ), August 7, 2000, 109–12; *Nilson Report*, no. 689 (April 1999), p. 6.

of a network services market, the banks are viewed as the consumers in that market—they pay fees to the systems for the network services used by the banks in serving cardholders and merchants. The court did not address the matter of whether banks have been harmed by higher prices or lower quality for network services. Because Visa operates on a not-for-profit basis, its structure precludes setting system fees higher than costs, so that more (or less) competition would not lower (or raise) Visa's fees. The court's finding was based, in part, on the argument that four competitors must be better than two.[101] That presumption is typically made because prices with four competing for-profit competitors are generally likely to be lower than prices with two for-profit competitors. There could have been no concern in this case that Visa was using any market power to set supracompetitive system fees, nor did the government attempt to make any such claim, because Visa simply sets fees at cost.[102]

The government also presented no evidence that the cooperatives' exclusivity rules have allowed them to limit their own innovation or product development. In fact, the court found that the associations have "fostered rapid innovation in systems, product offerings and services. Technological innovations by the associations have reduced transaction authorization times to just a few seconds. Fraud rates have also decreased through a number of technological innovations."[103]

The court relied on its general finding that there would have been more volume on American Express in the absence of the exclusivity rules, which would in turn have led to greater competition in the network services market, which would have resulted in benefits to banks. But these loose statements fail to assess competitive significance and could be made regardless of whether American Express would have had a 0.01 percent or 100 percent greater system volume in the absence of the exclusivity rules.

Missing in both the government's case and the court's decision was any serious attempt to assess the competitive significance of any additional card issuance. Contrast this to the evidence presented in *MountainWest*, in which Sears claimed that Visa's bylaw 2.06, prohibiting Sears from being a member of the Visa system, was anticompetitive.[104] Sears claimed that in the absence of Visa's bylaw

101 *United States* v. *Visa*, 163 F. Supp. 2d 322, 382 (2001).

102 In mergers of nonprofit hospitals the courts have recognized that the standard presumption that the anticompetitive accumulation of market power will lead to higher prices, which is also the incentive for firms to engage in such anticompetitive acts, is not present. That is, "by simply doing what is in their own economic best interest, certain nonprofit organizations ensure a competitive outcome, regardless of market structure." *Federal Trade Commission* v. *Freeman Hospital*, 911 F. Supp. 1213, 1222 (1995). See also *Federal Trade Commission* v. *Butterworth Health Corp*., 946 F. Supp. 1285, 1296–97 (1996).

103 *United States* v. *Visa*, 163 F. Supp.2d 322, 334 (2001).

104 *SCFC ILC, Inc.* v. *Visa U.S.A*., 36 F.3d 958 (1994).

2.06 MountainWest (the Sears subsidiary seeking Visa membership) would have developed 13.9 million Visa accounts within seven years and that this would have benefited consumers.[105] Sears based this claim on its projections of the results of the proposed venture. Such quantitative analyses are commonly undertaken by large businesses before major decisions are made, and they can often shed light on *issues involving quantitative significance*. That American Express apparently did no projections of this sort before deciding to open its system to selected Visa and MasterCard members suggests that observers should be more skeptical of claims that substantial output would result from such agreements.

For the purposes of analyzing Visa's conduct, Richard Schmalensee in testimony in *MountainWest* accepted Sears's projections and found that even if the market did not grow, MountainWest's issuance would account for 1.4 percent of the market (stipulated to be general-purpose credit and charge cards) after two years and about 5 percent of the market after seven years. Considering this, Schmalensee concluded that adding another issuer of this size to an already highly competitive market would be unlikely to lower price or increase industry output significantly because the incremental issuer would mostly displace cards from existing issuers.[106] Since competition among issuers is intense and Visa and MasterCard are cooperatives that do not retain profits, there are no excess profits to be squeezed out of the business to benefit consumers. The Tenth Circuit Court accepted that analysis in reaching its conclusion in the *MountainWest* decision.[107]

Dennis Carlton and Alan Frankel, economic consultants to Sears, disagreed with Schmalensee's analysis.[108] After the trial they published an analysis contending that entry by AT&T and GM had resulted in lower cardholder prices and that entry by MountainWest could have led to similar benefits for consumers.[109] Regardless of whether they were right on the merits, their analysis addressed the right issue—whether there was significant consumer harm.[110] Their analysis and Schmalensee's at trial in *MountainWest* were the types of evidence about which economists can engage in substantive debate. Without such analyses a court would have no meaningful economic basis for finding significant consumer harm.

---

105 Direct Expert Testimony of Richard Schmalensee, *United States* v. *Visa*, 98 Civ. 7076 (BSJ),August 7, 2000, 68.

106 Trial Testimony of Richard Schmalensee, *SCFC ILC, Inc.* v. *Visa U.S.A.*, October 29,1992, 2313–14.

107 *SCFC ILC, Inc.* v. *Visa U.S.A., Inc.,* 819 F. Supp. 956 (D. Utah, 1993), rev'd in part and aff 'd in part, 36 F.3d 958, 971 (10th Cir. 1994), cert. denied, 115 S. Ct. 2600 (1995).

108 Neither economist testified for Sears at trial. Sears relied on testimony from James Kearl.

109 Carlton and Frankel (1995). Neither this nor similar empirical analyses were presented by Sears at trial.

110 For an opposing point of view see Evans and Schmalensee (1999, pp. 257–62).

Nothing approaching a 5 percent increase in card issuance or usage was demonstrated or alleged in Visa. The government at one point put forward a number of 8.8 million new cards, but that estimate was dismissed by an American Express witness as speculation, not projections.[111]

The government's economic expert did not rely on these figures in his testimony and made no attempt to quantify the number of new cards that would be issued in the absence of bylaw 2.10(e).[112] Even taking this discredited number, however, the potential volume that would result from eliminating bylaw 2.10(e) is far less than Sears had projected from the elimination of bylaw 2.06 in *MountainWest* (8.8 million versus 13.9 million, a 58 percent difference, and a 1.7 percent share versus a 5 percent share, an almost 200 percent difference).[113] At one point the government's economic expert, Michael Katz, considered a study of the experience of American Express alliances with Visa and MasterCard members in other countries (where similar exclusivity rules do not apply). This study would have used the international experience, with appropriate controls, to demonstrate consumer benefits from increased output or increased variety.[114] But it was not carried out or presented at trial. Nor is it clear that there were any consumer benefits to be found from the international experience—card output from the American Express alliances with banks represented less than 1 percent of industry output in the relevant countries, and there was no evidence that any significant innovations came from those deals.[115]

LOST VARIETY. The second general finding by the court on consumer harm from the exclusivity rules was that consumers were deprived of choice and variety in card offerings, that some consumers might want an American Express card issued by a Visa member. Any exclusivity agreement, by definition, deprives consumers of choice and variety. Therefore any finding on consumer harm resulting from this lost choice and variety must include some assessment of the significance of these effects. For example, if an excluded manufacturer were unable to distribute its products effectively, depriving consumers of the ability to choose those products might constitute significant consumer harm. In this case the evidence indicated that American Express could reach all consumers.[116]

The court based its finding of consumer harm from lost variety on the following reasoning. It stated that "by working with American Express, banks could

111 Trial Testimony of Stephen McCurdy, *United States* v. *Visa*, 98 Civ. 7076 (BSJ), June 20, 2000, 959–60.

112 Trial Testimony of Michael Katz, *United States* v. *Visa*, 98 Civ. 7076 (BSJ), July 12, 2000, 3728.

113 Katz did not attempt to quantify the impact on output or price of eliminating the exclusivity rules.

114 Trial Testimony of Michael Katz, *United States* v. *Visa*, 98 Civ. 7076 (BSJ), July 12, 2000,3736–39.

115 Direct Testimony of Richard T. Rapp, *United States* v. *Visa*, 98 Civ. 7076 (BSJ), July 27, 2000, 50.

116 Trial Testimony of Kenneth Chenault, *United States* v. *Visa*, 98 Civ. 7076 (BSJ), June 29, 2000, 2438.

develop products that provide unique benefits to their customers." It cited the example of "Capital One and American Express in the United Kingdom, [where] it is undisputed that *either* Capital One or American Express could reach every consumer with an offer of *some* brand of credit card . . . yet, it is only the combination of Capital One and American Express that provides consumers the ability to take advantage of the combined skills of both entities."[117]

This argument proves too much. The same assertions could be made, for example, by virtually any manufacturer seeking distribution for its products by companies with some product differentiation. Every combination of manufacturer and distributor creates a product that is unique. Yet the courts do not automatically prohibit exclusive distribution agreements simply because the agreements, almost by definition, deprive consumers of products with "unique benefits." For example, United Airlines has an agreement with Pepsi-Cola Company to serve Pepsi-owned soft drinks on its domestic and international flights. Consumers can no longer get Coca-Cola soft drinks on United flights.[118] Certainly there are consumers with distinct preferences for United flights and Coca-Cola. These consumers are denied the unique benefits of flying their preferred airline and drinking their preferred soft drink, but the courts, sensibly, do not prohibit such agreements—in part at least because few sensible people believe that the harm involved is significant.

The government did not attempt to demonstrate the importance of particular combinations of issuers and systems to consumers. Although there may have been marketing documents that promoted the benefits of certain issuer-system combinations, that does not resolve how significant these benefits are (or whether it would be possible for American Express or Discover to achieve these benefits without Visa and MasterCard issuers). The government could have asked its economic expert to examine how much consumers might value new issuer-system combinations or how much output might increase as a result of such offerings, but it apparently did not do so.

The actual decisions of industry participants indicate that these benefits may not be very great. For example, most major Visa and MasterCard issuers have chosen to dedicate themselves to one system or the other in recent years. If there were significant benefits from issuing both Visa and MasterCard in large quantities, it is unlikely members would have been willing to do this. Furthermore, for most of its history American Express has had no interest in using other banks as issuers. If there had been substantial benefits from additional combinations of

117 *United States* v. *Visa*, 163 F. Supp. 2d 322, 395 (2001).

118 "United Airlines Will Start Serving Pepsi instead of Coke," *New York Times*, March 26, 2000, p. C4. Bork responds that the appropriate analogy is where there is an agreement by "United, American, Delta, Northwest, Continental, Southwest, and all the other airlines not to sell Coke or anything but Pepsi" (*High-Stakes Antitrust* p. 64). Our main point here is simply that the loss of variety that the government called consumer harm is inherent to any type of exclusivity agreement. Bork's analysis again focuses on labels—that the associations' rules are agreements among competitors—rather than economic effects— could American Express effectively reach customers? He expressively disavows any need to address the economic question.

issuers with the American Express system, the company would have sought much earlier to enter into such agreements. It is also worth noting that the court's findings included an extensive discussion of the many choices and features available to consumers.[119]

CONCLUSIONS

There has always been a tension in antitrust cases over the risks of being so lenient that firms think they can get away with anticompetitive behavior and being so strict that the courts condemn practices that help consumers and thus stifle the very competitive process the antitrust laws seek to protect. There is no way to eliminate both risks; and the courts—and ultimately society—need to choose how to minimize the expected costs of the inevitable errors. At least in the context of predatory pricing, the Supreme Court has expressed a preference for erring on the side of acquitting the guilty rather than convicting the innocent. The *Brooke Group* test requires that plaintiffs meet a strong consumer harm standard, one that necessitates showing that over time predatory prices will reduce consumer welfare. Although the Court has not been quite so explicit about the consumer harm standard in other contexts, the logic of *Brooke Group* along with other decisions by the Court, especially *California Dental*, argues for a strong consumer standard in all rule-of-reason cases.

We agree with this approach. An error-cost analysis suggests that a strong standard of consumer harm would reduce the costs of making false convictions while, at least in the form we present, imposing relatively small costs from false acquittals. Most rule-of-reason cases involve complex factual situations. Practices are frequently challenged on the basis of economic theories whose predictions have not been empirically verified by the profession and whose assumptions are highly special and often untestable. There is nothing wrong with this: it is the best the economics profession can do. The only way for the courts to determine whether the challenged practices harm consumers is to seek relevant evidence. To paraphrase the Supreme Court in *California Dental*, one needs empirical analyses, not assumptions.

The Clinton administration disagreed with this approach. It invited the courts to rely on a weak standard for assessing liability in antitrust cases brought against Intel, Microsoft, and Visa and MasterCard. It was enough, it argued, to show that the practices challenged had harmed the competitive process through harm to competitors. And it suggested in some cases that there was no need to show, directly or indirectly (via significant harm to competition), that the challenged practices generally raised prices, lowered output, or reduced quality, thereby reducing consumer welfare. In the two cases that went to trial and for which there is a complete record—*Microsoft* and *Visa*—the district court accepted the government's approach. In the one case—*Microsoft*—that has gone to an appeals

119 *United States* v. *Visa*, 163 F. Supp.2d 322, 395 (2001).

court, the District of Columbia Circuit Court affirmed liability without reaching findings that the actions declared anticompetitive resulted in substantial harm to consumers or that there was a causal relationship between those actions and any significant changes in the competitive process that could lead to substantial consumer harm. And in *Visa* the district court found liability even though there was no evidence that the exclusivity rules at issue had resulted in significantly higher prices or lower output.

It remains to be seen whether other appellate courts and ultimately the Supreme Court will adopt what is, we believe, an unjustifiably toothless standard and whether this will, indeed, become the Clinton administration's lasting contribution to antitrust jurisprudence. It would be a sad day for consumers if the courts did so.

REFERENCES

Beckner, C. Frederick, III, and Steven C. Salop. 1999. "Decision Theory and Antitrust Rules." *Antitrust Law Journal* 67 (Winter): 41–76.

Bork, Robert H. 1978. *Antitrust Paradox: A Policy at War with Itself*. Free Press. Carlton, Dennis W., and Allan S. Frankel. 1995. "Antitrust and Payment Technologies." *Federal Reserve Bank of St. Louis Review* 77 (December): 41–54.

Carlton, Dennis W., and Jeffrey M. Perloff. 2000. *Modern Industrial Organization*, 3d ed. Addison Wesley Longman.

Carlton, Dennis W., and Michael Waldman. 2002. "The Strategic Use of Tying to Preserve and Create Market Power in Evolving Industries." *Rand Journal of Economics* 33 (Summer): 194–220.

Chang, Howard H., and others. 1998. "Some Economic Principles for Guiding Antitrust Policy towards Joint Ventures." *Columbia Business Law Review*, no. 2: 223–329.

Crandall, Robert W., and Kenneth G. Elzinga. Forthcoming. "Injunctive Relief in Sherman Act Monopolization Cases." *Journal of Research in Law and Economics*.

Cusumano, Michael A., and David B.Yoffie. 2000. *Competing on Internet Time: Lessons from Netscape and Its Battle with Microsoft*. Touchstone Books.

Denger, Michael L., and John A. Herfort. 1994. "Predatory Pricing Claims after Brooke Group." *Antitrust Law Journal* 62 (Spring): 541–58.

Easterbrook, Frank H. 1984. "The Limits of Antitrust." *Texas Law Review* 63 (August): 1–40.

Evans, David S. 2001. "Dodging the Consumer Harm Inquiry: A Brief Survey of Recent Government Antitrust Cases." *St. John's Law Review* 75 (Fall): 545–59.

———. 2002. “Introduction.” In *Microsoft, Antitrust and the New Economy: Selected Essays*, edited by David S. Evans. Kluwer.

Evans, David, and Richard Schmalensee. 1999. *Paying with Plastic: The Digital Revolution in Buying and Borrowing*. MIT Press.

Evans, David S., and others. 2000. *Did Microsoft Harm Consumers: Two Opposing Views*. AEI-Brookings Joint Center for Regulatory Studies.

Fox, Eleanor. 2002. “What Is Harm to Competition? Antitrust, Exclusionary Practices, and Anticompetitive Effect.” *Antitrust Law Journal* 70, no. 2: 371–412.

Hahn, Robert W. and Anne Layne-Farrar. Forthcoming. “Federalism in Antitrust.” *Harvard Journal of Law and Public Policy*.

Joffe, Robert D. 2001. “Antitrust Law and Proof of Consumer Injury.” *St. John’s Law Review* 75 (Fall): 615–32.

Houck, Stephen D. 2001. “Injury to Competition/Consumers in High Tech Cases.” *St. John’s Law Review* 75 (Fall): 593–614.

Hylton, Keith N., and Michael Salinger. 2001. “Tying Law and Policy: A Decision-Theoretic Approach.” *Antitrust Law Journal* 69, no. 2: 469–526.

Litan, Robert E., and Carl Shapiro. 2002. “Antitrust Policy during the Clinton Administration.” In *American Economic Policy* in the 1990s, edited by Jeffrey A. Frankel and Peter R. Orszag, 435–85.

Posner, Richard A. 1999. “An Economic Approach to the Laws of Evidence.” *Stanford Law Review* 51 (July): 1477–1546.

———. 2001. Antitrust Law, 2d ed. University of Chicago Press.

Salop, Steven C., and Craig Romaine. 1999. “Preserving Monopoly: Economic Analysis, Legal Standards, and Microsoft.” *George Mason Law Review* 7 (Spring): 617–71.

Whinston, Michael D. 1990. “Tying, Foreclosure, and Exclusion.” *American Economic Review* 80 (September): 837–59.

———. 2001. “Exclusivity and Tying in U.S. v. Microsoft: What We Know and Don’t Know.” *Journal of Economic Perspectives* 15 (2): 63–80.

THE PROBLEM OF INTERCHANGE FEE ANALYSIS: CASE WITHOUT A CAUSE?

Christian Ahlborn,
Linklaters & Alliance

Howard H. Chang,
NERA Economic Consulting

David S. Evans,
NERA Economic Consulting

*Previously published in **European Competition Law Review**, Vol. 22, Issue 8, August 2001.*

In a recent article in *European Competition Law Review*, David Balto analysed the issue of interchange fees in payment card systems.[1] These are fees that banks pay one another for each credit card and debit card transaction made by their customers.[2] They arise when two banks—the merchant's bank and the cardholder's bank—are involved in the transaction. Balto regards interchange fees as "an effective tax on merchants and ultimately consumers, that often seems unresponsive to either competition or other economic forces".[3] Various competition authorities and regulatory agencies also have concerns about interchanging fees and are currently investigating the issue.[4]

Balto's competition analysis of interchange fees, in a nutshell, runs along the following lines:

- Interchange fees may have been justified in the past on the basis that they compensated card issuing banks for certain costs that might not otherwise be recovered;
- This cost justification provided for a "narrow and tenuous exception to the traditional antitrust skepticism towards collective price fixing";
- Due to a change in the underlying technological and economic circumstances, the cost argument for interchange fees is now lacking in many respects but interchange fees have not decreased accordingly;
- Interchange fees are now unnecessarily high translating into unnecessarily high payment card costs to merchants which in turn are passed on to consumers in the form of higher retail prices; and
- It is impracticable for merchants to charge different prices for cash and card purchases, so cash users are actually subsidizing card users.

---

* *Christian Ahlborn is a competition lawyer with Linklaters & Alliance. David Evans and Howard Chang are economists with National Economic Research Associates, Inc.*

1 David A. Balto, "The Problem of Interchange Fees: Costs without Benefits?", [2000] E.C.L.R. 215.

2 ATM systems also set interchange fees. This article focuses on credit and debit card interchange fees because many of Balto's arguments are specific to credit and debit card transactions. For example, his argument that cash customers at merchants are subsidizing credit card customers as a result of credit card interchange fees would not apply to ATM interchange fees.

3 Ibid. at 222.

4 See European Commission, "Commission Plans to Clear Certain Visa Provisions, Challenge Others", Press Release, October 16, 2000, available at http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&doc=IP/00/1164|0|AGED&lg=EN; Reserve Bank of Australia and Australian Competition and Consumer Commission, *Debit and Credit Card Schemes in Australia* (October 2000), available at http://www.accc.gov.au/docs/Banks_Interchange2.pdf; Don Cruickshank (Chairman, Banking Review), *Competition in UK Banking: A Report to the Chancellor of the Exchequer* (March 2000) at 247–272, available at http://www.rroom.co.uk/response/Mon/annexd3.pdf. Although the U.S. authorities have not launched an investigation to our knowledge, it should be noted that Mr Balto is a senior official at the Federal Trade Commission.

Balto's analysis of interchange fees raises two fundamental issues. The first concerns the underlying economic rationale for interchange fees: are interchange fees really no more than a cost-compensation mechanism between different banks? The second relates to the nature of competition in the payment card sector and the impact that interchange fees have on competition: do interchange fees restrict competition, and more specifically, are they appropriately characterized as collective price fixing?

Section I provides an overview of the payment card industry and highlights the features, such as the open payment card system, network effects and two-sided products, that are critical for the understanding of interchange fees. Section II discusses the rationale for interchange fees while section III analyses the impact of interchange fees on competition. Section IV briefly deals with the alleged subsidies from cash users, an issue that raises a market-failure concern that banking regulators might consider, but does not appear to be something that competition policy regulators would ordinarily deal with.

I. PAYMENT CARD SYSTEMS: AN OVERVIEW

The payment card business started in the United States in 1950 when Diners Club introduced a card that people could use to pay for meals at associated restaurants in Manhattan.[5] Diners Club's success persuaded American Express, then a thriving travel agency and travellers cheque firm, to launch its own card brand in 1958.[6] The American Express card became the premier charge card used by business travellers by the early 1960s. Later that decade, the bank associations, Visa and MasterCard, introduced national credit cards and expanded well beyond the traditional travel and entertainment sectors. By the early 1970s, cards were a global business.[7]

The payment card business grew rapidly as customers and retailers became aware of the greater convenience: customers did not have to carry around large sums of cash or thick cheque books and could defer payment for a few weeks, while retailers faced increased demand without having to offer their own credit programmes.

5 "Dining on the Cuff", *Newsweek* 73, January 29, 1951; "Credit Card 'Pays' Entertainment Bills", *Business Week* 34, November 11, 1950. This is the origin of the general-purpose payment card industry in which cards could be used at many independent merchants. Earlier in the century, certain retailers offered cards that could be used at their stores.

6 Peter Z. Grossman, *American Express: the Unofficial History of the People Who Built the Green Financial Empire* (1987), pp. 254, 264–285.

7 For a detailed account and economic analysis of the payment card industry, see David S. Evans and Richard L. Schmalensee, *Paying with Plastic* (1999).

Proprietary systems versus open systems

Payment card systems fall into two groups: proprietary systems and open systems. Of the five major systems in the United States, Diners Club, American Express and Discover are proprietary systems while Visa and MasterCard are open systems.

A proprietary system consists of a single for-profit firm that signs up and services both cardholders and merchants, establishes the prices to charge them, operates the physical system that authorises transactions, bills cardholders and merchants, and retains the profits resulting from these activities. Proprietary systems are sometimes referred to as three-party systems.

Open systems, sometimes referred to as four-party systems, are run as co-operatives.[8] Members (which are financial institutions) vote for a board of directors, which in turn appoints the management of the co-operative. The management of the co-operative and its members play distinct roles within the open payment card system:

- The co-operative (the Visa or MasterCard organisation) is responsible for managing aspects of the card system from which all members can benefit and which no member could do on its own. This includes managing the brand (including advertising, brand positioning and brand innovation) and providing a system for authorisation and settlement of transactions involving more than one bank. The co-operative also provides for certain rules, which members have to follow. The co-operative as such does not retain profits; members' fees are set at a level at which they just roughly cover expenses (including, of course, some funds for working capital and contingencies) so that the co-operative breaks even.
- The members (for example Citibank or Chase Manhattan) are authorized to use the system's name and symbols in issuing cards and/or enrolling retailers (merchants) to accept them. Members compete with each other for services to cardholders and have total discretion in setting card fees and interest rates, as well as other parameters of their service; in the same way, members compete for services to merchants for which they set their prices (merchant discounts). Financial institutions that issue cards to consumers and provide services to cardholders are called "issuers"; financial institutions that enroll merchants and provide services to them are called "acquirers". Some institutions act as both issuer and acquirer.

8 For a description of MasterCard's predecessor's formation as a co-operative, see Gavin Spofford and Robert H. Grant, *A History of Bank Credit Cards* (1975), pp. 40–41. For a description of how Visa's predecessor became a co-operative, see Joseph Nocera, *A Piece of the Action: How the Middle Class Joined the Money Class* (1994), pp. 89–93.

Key economic characteristics of payment card systems

A payment card system provides a basic payment service for customers to pay merchants.[9] This basic payment service has two fundamental economic characteristics.

The payment card service exhibits network effects

The payment card service becomes more valuable as more people use it. Customers find a payment card service more valuable the more widely it is accepted by merchants. Merchants, in turn, find the system more valuable the more customers have (and indeed use) a card associated with a particular system.

These network effects are the raison d'etre for payment card systems, whose main function is to provide a uniform acceptance of their card brands: consumers know that their cards will be accepted at merchants displaying the marks for their cards; and merchants know that transactions with cards displaying a system's mark can be processed through the payment card system associated with that mark.

For open systems, a uniform acceptance of their brands (and hence the ability to benefit from the network effects) requires an "honour all cards" rule that obliges any merchant that joins a payment card system to accept for payment all of the cards that carry that system's mark. Without such a rule, the holder of a Visa card issued by Bank A would not be sure that his card could be used with a merchant which accepts Visa cards but which has been signed up by Bank B. Given that a *merchant serviced by* Bank B is required to accept *a card issued by* Bank A, Bank B then needs some assurance that it will be paid by Bank A. Thus, there must also be a requirement that Bank A will pay Bank B, on specified terms.

The payment service is a two-sided product

The payment service is a product that is only valuable if customers of each side use the product jointly. A transaction using a particular payment system takes place only when both a customer and merchant belong to and are willing to use that payment system.

The classic example of a two-sided product is a matchmaking service.[10] A matchmaking service has little value (to heterosexuals) if the only customers who join are men. Matchmakers try to achieve a balance of men and women. Another example of a two-sided product is Adobe's Acrobat software, which consists of a program to publish in the Acrobat PDF format and another program to read documents published in that format. People are only able to communicate using

9 In addition to the basic payment service, the system may provide additional services such as payment guarantees, credit facilitation and accounting, which benefit the customer, the merchant or both. For simplicity we will focus on the basic payment service.

10 Although there are many matchmaking services (*e.g.* B2B exchanges), the best known are those involving men and women. These include formal matchmaking services as well as informal ones such as singles' bars and discos.

documents in Adobe format if the sender uses the Adobe publishing software and the receiver uses the Adobe reader software. Again, the value of the Adobe software can be derived only from joint use.

The particular implication of a two-sided product is that a supplier will not determine the price for each of the two elements of the product independently; rather, in setting its price for one side, the supplier will also take into account the indirect effect the price has on the other side and will maximize the overall profits for the product from both sides. So, if a matchmaking service that charges the same price to men and women finds that it has a mostly male client base, it will reduce the price it charges to women. Increasing its female client base may make the service more attractive for its male customers, which in turn may trigger a "virtuous circle" of increasing both its male and female client base, providing a service that is ultimately of higher value to all users.[11] The optimal price for a two-sided product may well involve what might loosely be characterised as "cross-subsidisation" from one side to the other. Adobe has chosen to charge for its publishing software but to give away its reader software, thus providing some assurance to purchasers of its publishing software that there will be a user base for documents in Acrobat format. Without the flexibility to adjust prices for the two sides, the success or viability of a two-sided product can be greatly reduced.

II. THE RATIONALE FOR THE INTERCHANGE FEE

The previous section has provided us with the building blocks that are needed to deal with the first of the two central issues: what is the underlying rationale for the interchange fee between acquiring banks and issuer banks? Are interchange fees, as Balto suggests, compensation paid by merchant banks for costs incurred by issuers, or are there other underlying economic forces? The answer to these questions comes in two parts.

Optimal pricing by a proprietary payment card system

Payment services, as we have seen, are two-sided products that exhibit network effects. This means that a proprietary payment card system will set its prices to cardholders (such as card fees and interest rates) and to merchants (merchant discounts) in a way that maximises its overall profit from the system. Three factors, in particular, will influence the way it charges cardholders relative to merchants.

Elasticity of demand

Firms selling goods or services to different groups of consumers will tend to charge a higher price to the group that is less price sensitive (i.e. has a lower elasticity of demand). As mentioned earlier, Adobe is giving away its reader software

11 Howard W. French, "Osaka Journal: Japanese Date Clubs Take the Muss Out of Mating", *New York Times*, February 13, 2001.

(whose users are likely to be relatively price-sensitive) while charging for its publishing software (whose users are likely to be less price-sensitive). Another example is airlines, which charge business travellers more for their seats than leisure travellers.[12]

In the same way, the relative price-sensitivity of merchants (which is determined by the extent to which there are other payment devices and, in particular, by the extent to which they will lose sales if they do not take cards) and of consumers (which is again determined by the extent to which alternative payment devices are available) will affect a payment card system's relative pricing. The more price-sensitive consumers are relative to merchants for the demand of payment card services, the higher merchant fees will be relative to the cardholder fees.

There are two points worth highlighting here. First, any "cross-subsidisation" does not imply dominance or absence of competition. Secondly, such pricing is generally welfare enhancing; it covers the fixed costs for a good or service in a way that is least painful for cardholders and merchants overall (and which has the largest positive impact on system output).

Network effects

Unlike the usual case where a business sells to two independent groups of consumers (in our example above, business and leisure travellers), a payment card system has to take into account the interdependence of merchants and cardholders. Higher prices to merchants result in fewer merchants joining the system, which in turn makes a payment card less valuable to a payment cardholder. Higher prices to cardholders result in fewer cardholders, which in turn means that a payment card affiliation is less valuable to a merchant.

The relative importance of these two network effects influences the profit-maximising price as well as the value of the payment system to society as a whole.

Costs and other factors

The costs of servicing merchants and cardholders must be taken into account.[13]

Pricing by an open payment card system

Would optimal pricing under an open card system be substantially different? In theory, the answer is no. In practice, however, open systems encounter a problem that proprietary systems do not face. Under an open system, members are free to set prices to cardholders and merchants, and the resulting merchant fees and credit card fees/interest rates are determined by competition among issuers and among acquirers. There is no reason why, as a result of these two independent

12 Michael E. Levine, "Airline Competition in Deregulated Markets: Theory, Firm Strategy, and Public Policy" (1987) 4 Yale L.J. on Reg. 393, 446-454.

13 There may be other relevant factors, for example the sale of complementary products (such as credit facilitation).

competitive processes, the prices actually charged to customers and merchants should take into account the two-sided market and network effects discussed above. In fact, it is highly unlikely that the competing issuers and acquirers will take these externalities into account: they will only consider the impact of their behaviour on their profits, not the wider implication of their actions on the system as a whole.

Without a correction to this independent pricing, an open system will not be able to manage the right balance of cardholders and merchants. It would be like a matchmaking service consisting of two separate businesses in which one signed up men and the other women, with neither paying any attention to making sure there were enough men for the women and vice versa. The interchange fee provides a correction to this problem, remedying the pricing deficiency of the open system.

The function of the interchange fee

The interchange fee, often specified as a percentage of the transaction, is the amount that flows between the acquirer and the issuer for a transaction.

From the standpoint of the system, the interchange fee influences the relative prices faced by merchants and cardholders. Where, for example, the interchange fee is paid by the acquirer to the issuer,[14] the interchange fee is one of the costs that the acquirer must consider when it sets its prices to the merchant, and the acquirer will pass on some or all of this cost (depending on the nature of the competition among acquirers) to the merchant. A higher interchange fee therefore generally leads to a higher merchant discount. At the same time, the interchange fee is also one of the sources of revenue that the issuer must consider when it sets its prices to the cardholder. As a mirror image to what happens on the acquirer's side, part or all of the issuer's benefit will be passed on to the cardholder and will therefore result in lower cardholder fees.

There is another way of thinking about the interchange fee that is helpful. The total price of a card transaction is the amount of money that the cardholder and the merchant both pay. Since they jointly demand this service and the card system jointly supplies it to them, this total price really reflects what the card system is charging for the service. The specific amounts paid by the cardholder and the merchant really reflect how the system has chosen to collect this price, much as a matchmaking service collects from men versus women in the case of dating services or from buyers and sellers in the case of B2B exchanges. In open systems, the interchange fee is the mechanism that determines how that total price is divided between the two matched customers.

14 This is the case in most—but not all—card systems.

A common misconception about the interchange fee seems implicit in Balto's article. The interchange fee is not a price paid by the acquirers (and thus indirectly by merchants) for services rendered by the issuers. This view of the interchange fee as a price is based, erroneously, on a fictitious "vertical structure" of the industry: the "upstream issuers" supply an input to "midstream acquirers", who then supply a final service to "downstream merchants". In this vertical structure, the interchange fee is the acquirers' payment for the issuers' input and is therefore a price in that sense. But this vertical structure completely ignores the role of cardholders as consumers of the payment service; it is these cardholders that merchants get access to via their acquirers. Unlike this fictitious world, in the real world, the interchange fee affects not only the marginal cost of merchants but also the size of the cardholder clientele.

In light of the above, we can therefore conclude that interchange fees, far from being a mere compensation for certain costs as Balto suggests, are in fact a complex mechanism for ensuring the optimal functioning of an open system. The interchange fee is a device that enables the system to influence the relative merchant and cardholder prices:

(i) it accounts for the relative importance of merchants and cardholders in developing the system; and

(ii) it determines the extent to which cardholders and merchants will pay for the costs of the system.

Empirical evidence

The theory presented above is in accord with the facts. The relative fees charged by card systems to merchants and cardholders seem to vary consistently with the three factors identified above. The original charge card systems in the United States—American Express and Diners Club—charged merchant discounts in the range of 5-10 percent during their first decade. Both systems targeted cards to the travel and entertainment sector and were not initially interested in seeking widespread merchant coverage outside that sector. When the bank associations, Visa and MasterCard, entered the market and introduced national credit card products in the mid-1960s in the United States, they wanted to expand well beyond the traditional travel and entertainment sector. Not surprisingly, the merchant discounts for their products were much lower than those of American Express and Diners Club. As a result, they were able to get many more merchants to sign up for their cards. When the on-line debit systems entered the U.S. market in the late 1980s and early 1990s, they faced a very different situation. They already had a base of cardholders that had ATM cards as part of their current accounts. Merchants, on the other hand, could not accept on-line debit without installing a new technology—pin pads. Consequently, on-line debit card systems chose a merchant discount rate that was much lower than for credit because otherwise merchants would not have installed the necessary technology.

Is there an alternative?

Individually negotiated interchange fees and "zero" interchange fees have been suggested as alternatives to the current situation. Both suggestions are fundamentally flawed.

We have shown that open payment card systems require an interchange fee (or something equivalent) because the "honour all cards" rule requires an agreement between different banks when one bank's cardholder conducts a transaction at another bank's merchant.

The interchange fees cannot be individually negotiated for two reasons: first, as mentioned above, individual members would not take into account the externalities that result from the two-sided market and network effects discussed above and hence individually negotiated interchange fees would not be effective in balancing the interests of cardholders and merchants. Secondly, individually negotiated interchange fees are not manageable from a practical point of view. In a small system with 100 member banks, 4,950 agreements would have to be negotiated. With over 21,000 member financial institutions,[15] Visa would require more than 220 million agreements. Furthermore, it is by no means clear that all members would reach an agreement. But without agreement, issuing banks could refuse to honour acquiring bank transactions and thereby "hold up" the acquiring banks for huge interchange fees[16]; their refusal would reduce the merchant base and ultimately reduce the value of the card brand to all cardholders and merchants.

The alternative proposition, namely that issuers must reimburse acquirers at par, effectively amounts to mandating an interchange fee of zero. Setting the interchange fee at this arbitrary level would remove the open systems' ability to react to cardholder/merchant imbalances and would put them at a serious disadvantage with respect to competing proprietary systems, ultimately reducing competition in the payment card industry. And, of course, setting the interchange fee at zero is just as much "collective price fixing" as setting it at any other number—so this cannot be a solution to the competition problem raised by Balto.

The only way to remove interchange fees while maintaining an efficient payment card system would be to turn open systems into proprietary systems (although merchants would still pay an "implicit" interchange fee, as can be observed from American Express which currently charges merchants higher discount than the open systems in the United States). The price of turning explicit into implicit interchange fees, however, would be high. Only a few banks could likely operate their own proprietary systems, and we would be left with just a handful of issuers. Most of the current competition among members of open systems would be eliminated.

15 Visa International, *Who We Are*, available at http://www.visa.com/av/who/main.html

16 Visa could require issuers to honour transactions but that would be tantamount to a default interchange fee of zero (or whatever rate was specified under the requirement).

III. THE IMPACT OF INTERCHANGE FEES ON COMPETITION

This brings us to our second issue, namely the question of whether interchange fees lead to anti-competitive effects (similar to price fixing or otherwise) in the payment card industry. Two aspects have to be distinguished, namely the effects of interchange fees on intra-system competition (i.e. competition that takes place within the open systems) and on inter-system competition (i.e. competition that takes place between systems).

Intra-system competition

Unlike proprietary card systems, an open card system provides for competition among its members in most of the services rendered to cardholders and merchants. Only activities from which all members can benefit and which no member could carry out by itself are in the hands of the co-operative and are decided collectively.

The interchange fee does not provide a source of profits to the co-operative or its members. The co-operative itself does not receive the interchange fees; the fee is simply a payment from acquirers to issuers. As discussed above, the generally intense competition among issuers results in the interchange fee being mainly passed on to cardholders in the form of lower fees, while the generally intense competition among acquirers results in the interchange fee being passed on to merchants in the form of higher merchant discounts. The interchange fee does not favour a particular issuer over other issuers, or a particular acquirer over other acquirers; it does not restrict any member's ability to compete. Furthermore, the interchange fee does not affect the intensity of competition. Ironically, one of the major complaints about the interchange fee is that it results in too many card transactions from a social welfare perspective.[17] Antitrust concerns typically arise in circumstances where output is too low or prices are too high. Neither circumstance is given in the context of interchange fees.

Inter-system competition

At the system level, open card systems compete with proprietary card systems (and indeed with each other). Visa and MasterCard give consumers alternatives to American Express, Diners Club and Discover, as well as other card systems that operate in particular regions (e.g. regional ATM systems in the United States, ecKarte in Germany, domestic debit systems in many European countries, and JCB in Japan and several other countries). They also compete with cash and cheques. Card systems compete on innovation (such as the affinity card and improvements in processing transactions), advertising and merchant acceptance.

17 See n. 2 above, at 221; Alan S. Frankel, "Monopoly and Competition in the Supply and Exchange of Money" (1998) 66 Antitrust L.J. 313, 347.

It is at this inter-system level that interchange fees are an important competition variable. As we have seen, interchange fees allow open systems to determine the relative importance of merchants and cardholders in establishing the value of the brand, which in turn enables open systems to position themselves in the systems market in competition with each other, proprietary systems, cash, and cheques. American Express, for example, has historically sought to earn a large fraction of its revenues from merchants. It has done this by charging much higher fees to merchants in the United States than have Visa or MasterCard acquirers, and it has accepted having a much smaller number of merchants available to its cardholders as a cost of adopting this strategy. American Express has an implicit interchange fee—one that flows from the acquiring to the issuing side of its business—that is much higher than Visa's interchange fee.

Interchange fees are clearly the result of collective action by the members of an open payment card system (and they also determine the prices of merchants relative to cardholders—although they do not set the *absolute* prices to users of the system). In fact, by definition, any system-wide decision in an open card system is necessarily collective. For example, Visa's decision to sponsor the Olympics, MasterCard's decision to use a hologram as a security feature, and Visa's decision to invest in smart-card technology are all collective decisions.

Does this mean that interchange fees (or indeed any other competitive strategy or decision by the management of a co-operative card association) are anti-competitive?

The important point to consider when answering this question is that almost no individual members could compete at the system level even in the absence of any restriction from rules of their payment card system. For inter-system competition, the strong network effects act as a significant barrier to entry for individual financial institutions and prevent a multitude of competing payment card systems. Members, linked through the "honour all cards" rule, need to manage their brand jointly. Equally, there is a collective need to balance the relative acceptance of the system by cardholders and merchants in order to promote the fullest use of the system.

If companies A, B, C and D create a joint venture to enter a market that none of them could have entered individually, then this is fundamentally different from the situation where companies E, F, G and H co-ordinate their behaviour in a market in which all of them are already present. While the latter amounts to cartelistic behaviour, the former is, if anything, pro-competitive despite the fact that all companies engage in "collective action". In his analysis, Balto seems to confuse these two cases.

Impact of interchange fees

Therefore, interchange fees, far from being an act of "collective price fixing" are fundamentally pro-competitive. They allow an open system to compete with proprietary systems on an equal footing and to manage the system more efficiently

in the view of the two-sided nature of the product and the network effects present in the market. They do not restrict output or raise total prices to cardholders and merchants.

The U.S. courts reached the same conclusion in the NaBanco decision in 1986.[18] None of the changes in the marketplace identified by Balto undermines that finding. Nor does the fact that, with the benefit of almost 20 additional years of economic analysis, our understanding of the role of interchange fees in two-sided markets with network effects goes beyond the classic paper by William Baxter.[19]

IV. CASH SUBSIDIES

Having addressed the main two issues underlying the Balto article, the remainder of the article will briefly deal with Balto's proposition that cash users are subsidising card users because it is impracticable for merchants to charge different prices for cash and card purchases. It is far from clear that merchants incur higher costs for card transactions than those using cash or cheques. But even taking Balto's assumption to be true, his argument is nevertheless flawed.

When customers use one of their cards, they impose a cost on the merchant, namely the merchant discount. Balto argues that it is hard for the merchant to charge these costs back to the customer. Card systems' association rules often prohibit surcharges on card transactions.[20] The result, Balto argues, is that customers who use cash are subsidising customers who use cards and that this results in payment cards being used too frequently. According to Balto, a zero interchange fee would be the obvious solution.

First, it is common that merchants pass along all sorts of costs that do not benefit all customers to the same extent. All customers pay higher prices when merchants offer free parking, escalators, gift wrapping, convenient store hours and many other amenities that are used by only some customers. Many merchants do not charge separately for each of these services. It is, therefore, neither surprising nor remarkable that they do not impose surcharges on credit or debit cards.

Secondly, while any of the above examples of market imperfections including the "cash subsidy" are trivial, removing the interchange fee is, as we have seen, likely to have a serious negative impact on competition: open systems would be

18 *National Bancard Corporation (NaBanco)* v. *Visa U.S.A., Inc.*, 596 F. Supp. 1231 (S.D. Fla. 1984), aff'd 779 F.2d 592 (1lth Cir. 1986), *cert. denied*, 479 U.S. 923 (1986).

19 See William Baxter, "Bank Interchange of Transactional Paper: Legal and Economic Perspectives" (1983) 26 J.L. & Econ. 541.

20 The European Commission recently announced that it intends to take a favourable view of such rules. See European Commission, *Commission Plans to Clear Certain Visa Provisions, Challenge Others*, Press Release, October 16, 2000, available at http://europa.eu.int/rapid/start/cgi/guesten.ksh?p_action.gettxt=gt&-doc=IP/00/l164|0|AGED&1g= EN.

at a competitive disadvantage with proprietary systems, such as American Express or Discover. It is questionable whether the market imperfections alleged by Balto actually exist. However, even if they did, it is not likely that curing them would be worth reducing the intense competition made possible by the existence of card associations.

Thirdly, even in the absence of reduced competition, there is no reason to believe that a zero interchange fee would improve social welfare: cardholders would pay higher prices for using their cards but would be able to use them at more merchants, which would pay lower prices for accepting cards but would have fewer customers wanting to use their cards. A mandated zero interchange fee would also prevent the associations from using interchange fees to provide incentives—for example, the associations have used incentive fees to encourage merchants to install electronic terminals.

Finally, it should not be overlooked that it is far from clear that there is too much use of cards from a social perspective. Cash and cheques have been subsidized by the government and in some countries these subsidies continue. Moreover, in many countries consumers do not pay the direct cost of using cash and cheques and therefore tend to use them too much (in the same way Balto claims consumers use cards too much). In the United States, for example, banks do not usually charge people for taking cash out at a bank branch counter or on their ATM card on the bank's ATMs), even though the bank incurs corresponding costs. Likewise, many customers get free cheques. Card customers therefore may subsidise cash and cheque customers at the banks. So even if cash users were subsidising card users, it is far from clear that such a "subsidy" would result in excessive use of cards.

V. CONCLUSION

Suppose you were told there was a business practice that helped to create a trillion dollar industry. Suppose that this practice increased industry output. Finally, suppose that all the firms in the industry have chosen to use this practice since the beginning of the industry, regardless of whether they plausibly have market power. Such a business practice would hardly seem like a candidate for antitrust scrutiny. Yet, that is precisely what Balto has suggested.

Setting prices in order to balance cardholder and merchant demand was essential for the creation of the payment card systems, which had to deal with selling products in two-sided markets with network effects. The interchange fee has been the device used by the card associations to achieve this. It was obviously not a device for exercising market power since it is undisputed that the card associations competed intensively with cash, cheque and other payment cards in their early years in the United States. Even today, there is no dispute that in many countries, especially those in which credit cards are not as widely used, payment cards comprise a small share of transactions and compete with cash and cheques.

There is no basis for competition authorities to intervene in the setting of interchange fees. The interchange fee is not a price in the normal economic use of that term but rather a device for promoting the card brand by achieving the optimal balance of cardholders and merchants. The interchange fee determines the division of the total price of the card transaction service between the issuer and the acquirer but does not directly affect the total price. The interchange fee is set collectively, but so, too, are many matters that co-operatives must agree on to have a viable product.

There is also no basis for regulatory authorities to mandate a zero interchange fee or an interchange fee based on cost. Regulatory intervention of this sort would make sense only if the authorities could demonstrate that the current system results in a significant market failure and that either of these regulated alternatives would improve social welfare. As noted, no significant market failure has been identified except in the trivial sense that consumers do not pay, down to the penny, for every cost they cause in the real world. Neither alternative obviously improves social welfare: reducing the interchange fee to zero would result in higher cardholder prices, lower merchant prices, fewer cardholders, and lower merchant value. There is no economic reason why all of these complex consequences balance out to an improvement in social welfare. Indeed, Rochet and Tirole at the University of Toulouse have found that, under certain circumstances, the payment card associations have private incentives to set an interchange fee at the socially optimal level (the level that an all-knowing, benevolent social planner would set).[21] That is because the associations have an incentive to balance the opposing demands of cardholders and merchants and cannot, by their structure, use interchange fees to capture supracompetitive profits. If a regulatory authority were to substitute its judgment for the associations', it would need to consider the same factors as the associations: demand elasticities, network effects, and costs. Only by coincidence would that consideration result in a socially optimal interchange fee of zero (or equal to some measure of cost).

21 Jean-Charles Rochet and Jean Tirole, *Cooperation Among Competitors: The Economics of Credit Card Associations* (April 7, 2000) unpublished manuscript.

BIBLIOGRAPHY

Ahlborn, C., H. Chang and D. Evans. "The Problem of Interchange Fee Analysis: Case without a Cause?" *European Competition Law Review*, Vol. 22., Issue 8, August 2001.

Aizcorbe, A., A. Kennickell and K. Moore. "Recent Changes in U.S. Family Finances: Evidence from the 1998 and 2001 Survey of Consumer Finances." *Federal Reserve Bulletin*, Vol. 89, No. 1, January 2003.

Angeletos, G. et al. "The Hyperbolic Consumption Model: Calibration, Simulation, and Empirical Evaluation." *Journal of Economic Perspectives*, Vol. 15, No. 3, Summer 2001.

Anvari, M. "The Canadian Payment System: An Evolving Structure." In: D. Humphrey, ed. *The U.S. Payment System: Efficiency, Risk and the Role of the Federal Reserve*. Boston: Kluwer Academic Publishers, 1990.

Armstrong, M. "Competition in Two-Sided Markets." Working Paper, October 2002.

Ausubel, L. "The Failure of Competition in the Credit Card Market." *American Economic Review*, Vol. 81, No. 1, March 1991.

Ausubel, L. "Credit Card Defaults, Credit Card Profits, and Bankruptcy." *American Bankruptcy Law Journal,* Vol. 71, No. 2, 1997.

Ausubel, L. "Adverse Selection in the Credit Card Market," University of Maryland Department of Economics, Working Paper, June 17, 1999.

Avery, R. et al. "The Use of Cash and Transaction Accounts by American Families." *Federal Reserve Bulletin*, Vol. 72, No. 2, February 1986.

Ayadi, O. "Adverse Selection, Search Costs and Sticky Credit Card Rates." *Financial Services Review*, Vol. 6, No. 1 (1996).

Backstrom, H. and P. Stenkula. "Electronic Money—Risks, Questions, Potential." *Sveriges Riksbank Quarterly Review*, No. 1, 1997.

Baker, D. "Compulsory Access to Network Joint Ventures Under the Sherman Act: Rules or Roulette?" *Utah Law Review*, 1993.

Baker, D. and R. Brandel. *The Law of Electronic Fund Transfer Systems*. New York: Warren, Gorham & Lamont, 1988.

Balto, D. "Payment Systems and Antitrust: Can the Opportunities for Network Competition Be Recognized?" *Federal Reserve Bank of St. Louis Review*, Vol. 77, December 1995.

Balto, D. "Networks and Exclusivity: Antitrust Analysis to Promote Network Competition." George Mason Law Review, Vol. 7, Spring 1999.

Balto, D. "The Problem of Interchange Fees: Costs Without Benefits." *European Competition Law Review*, Vol. 21, No. 4, 2000.

Balto, D. and J. McAndrews. “Joint Venture Payment Networks and Public Policy.” *Electronic Banking Law and Commerce Report*, 1998.

Bank for International Settlements. *Retail Payments in Selected Countries: A Comparative Study*. Basel, Switzerland: Bank for International Settlements, 1999.

Barron, J., M. Staten and J. Umbeck. “Discounts for Cash in Retail Gasoline Marketing.” *Contemporary Policy Issues*, Vol. 10, No. 4, October 1992.

Bauer, P. “Efficiency and Technical Progress in Check Processing.” *Federal Reserve Bank of Cleveland Economic Review*, September 1993.

Bauer, P. “Currency: Time for Change?” *Federal Reserve Bank of Cleveland Economic Commentary*, October 1, 1998.

Bauer, P. and D. Hancock. “The Efficiency of the Federal Reserve in Providing Check Processing Systems.” *Journal of Banking and Finance*, Vol. 17, 1993.

Bauer, P. and D. Hancock. “Scale Economies and Technological Change in Federal Reserve ACH Payment Processing.” *Federal Reserve Bank of Cleveland Economic Review*, Vol. 31, No. 3, 3rd Quarter 1995.

Baxter, W. “Bank Interchange of Transactional Paper: Legal and Economic Perspectives.” *Journal of Law and Economics*, Vol. 26, October 1983.

Berlin, M. and L. Mester, “Credit Card Rates and Consumer Search.” Federal Reserve Bank of Philadelphia Working Paper No. 88-1, 1987.

Bernkopf, M. “Electronic Cash and Monetary Policy.” *First Monday*, Vol. 1, No. 1, 1996, available at http://www.firstmonday.dk/issues/issue1/ecash/index.html.

Birch, D. “The European Purse Scene: A Snapshot and Some Predictions.” *E-Money (The Journal of Electronic Commerce for the Financial Services Industry)*, Vol. 1, No. 1, May 1998.

Bird, E., P. Hagstrom and R. Wild. “Credit Card Debts of the Poor: High and Rising,” *Journal of Policy Analysis and Management*, Vol. 18, 1999.

Black, S. and D. Morgan. “The Changing Mix of Bank Card Borrowers and the Rising Rate of Charge-Offs.” *Proceedings of the 34th Annual Conference on Bank Structure and Competition: Payments Systems in the Global Economy: Risks and Opportunities*. 1998.

Black, S and D. Morgan. “Risk and the Democratization of Credit Cards,” Federal Reserve Bank of New York, Research Paper No. 9815, June 25, 1998.

Blanchflower, D., D. Evans and A. Oswald. “Credit Cards and Consumers.” National Economic Research Associates, Working Paper, December 1998.

Board of Governors of the Federal Reserve System. “Credit Cards in the U.S. Economy: Their Impact on Costs, Prices, and Retail Sales.” Washington, D.C.: Board of Governors of the Federal Reserve System, July 1988.

Board of Governors of the Federal Reserve System. "The Profitability of Credit Card Operations of Depository Institutions." Washington, D.C.: Board of Governors of the Federal Reserve System (various years).

Board of Governors of the Federal Reserve System. "The Future of Retail Electronic Payments Systems: Industry Interviews and Analysis." Washington, D.C.: Federal Reserve System, December 2002.

Boeschoten, W. "National Trends in Payment Systems and the Demand for Currency and Banknotes." Research Memorandum WO&E No. 9108, March 1991.

Boeschoten, W. *Currency Use and Payment Patterns*. Norwell, Mass.: Kluwer Academic Publishers, 1992.

Boeschoten, W. and M. Fase. "The Way We Pay with Money." *Journal of Business and Economic Statistics*, Vol. 7, 1989.

Boeschoten, W. and G. Hebbink. "Electronic Money, Currency Demand and Seigniorage Loss in the G-10 Countries." De Nederlandsche Bank Staff Report No. 1/1996, May 1996.

Boeschoten, W. and G. Hebbink. "Electronic Money, Currency Demand and Seigniorage Loss in the G10 Countries." DNB Staff Reports No. 1, 1996.

Brito, D. and P. Hartley. "Consumer Rationality and Credit Cards." *Journal of Political Economy*, Vol. 103, No. 2, April 1995.

Budnitz, M. "Stored Value Cards and the Consumer: The Need for Regulation." *The American University Law Review*, Vol. 46, No. 4, April 1997.

Caillaud, B. and B. Jullien. "Chicken & Egg: Competition Among Intermediation Service Providers." *Rand Journal of Economics*, Vol. 34, No. 2, Summer 2003.

Calder, L. *Financing the American Dream: A Cultural History of Consumer Credit*. Princeton, NJ: Princeton University Press, 1999.

Calem, P. "The Strange Behavior of the Credit Card Market." *Federal Reserve Bank of Philadelphia Business Review*, January 1992.

Calem, P. and L. Mester. "Consumer Behavior and the Stickiness of Credit Card Interest Rates." *American Economic Review*, Vol. 85, No. 5, 1995.

Cargill, T. and J. Wendel. "Bank Credit Cards: Consumer Irrationality Versus Market Forces." *Journal of Consumer Affairs*, Vol. 30, No. 2, Winter 1996.

Carlton, D. and A. Frankel. "Antitrust and Payment Technologies." *Federal Reserve Bank of St. Louis Review*, Vol. 77, No. 6, 1995.

Carlton, D. and A. Frankel. "The Antitrust Economics of Credit Card Networks." *Antitrust Law Journal*, Vol. 63, 1995.

Carlton, D. and A. Frankel. "The Antitrust Economics of Credit Card Networks: Reply to Evans and Schmalensee." *Antitrust Law Journal*, Vol. 63, 1995.

Carlton, D. and S. Salop. "You Keep On Knocking But You Can't Come In: Evaluating Restrictions on Access to Input Joint Ventures." *Harvard Journal of Law and Technology*, Vol. 9, Summer 1996.

Carow, K. and M. Staten. "Debit, Credit, or Cash: Survey Evidence on Gasoline Purchases." *Journal of Economics and Business*, Vol. 51, 1999.

Carow, K. and M. Staten. "Plastic Choices: Consumer Usage of Bank Cards vs. Proprietary Credit Cards." Indiana University, Kelley School of Business, 2000.

Caskey, J. and G. Sellon. "Is the Debit Card Revolution Finally Here?" *Federal Reserve Bank of Kansas City Economic Review*, 4th Quarter, 1994.

Chakravorti, S. "How Do We Pay?" *Federal Reserve Bank of Dallas Financial Industry Issues*, 1st Quarter 1997.

Chakravorti, S. "Why Has Stored Value Not Caught On?" Federal Reserve Bank of Chicago Emerging Issues Series S&R-2000-6, May 2000.

Chakravorti, S. "Theory of Credit Card Networks: A Survey of the Literature." *Review of Network Economics*, Vol. 2, Issue 2, June 2003.

Chakravorti, S. and W. Emmons. "Who Pays for Credit Cards?" Federal Reserve Bank of Chicago, Emerging Payments Occasional Paper Series EPS-2001-1, 2001.

Chakravorti, S. and A. Shah. "A Study of the Interrelated Bilateral Transactions in Credit Card Networks." Federal Reserve Bank of Chicago, Emerging Payments Occasional Paper Series EPS-2001-2, 2001.

Chakravorti, S. and A. Shah. "Underlying Incentives in Credit Card Networks." *Antitrust Bulletin*, Vol. 48, 2003.

Chakravorti, S. and T. To. "A Theory of Merchant Credit Card Acceptance." Federal Reserve Bank of Chicago Working Paper No. WP-99-16, 1999.

Chakravorti, S. and T. To. "A Theory of Credit Cards." mimeo, July 2001.

Chang, H. "Interchange Fees in the Courts and Regulatory Authorities." *The Payment Card Economics Review*, Vol. 1, Winter 2003.

Chang, H. and D. Evans. "The Competitive Effect of the Collective Setting of Interchange Fees by Payment Card Systems." *Antitrust Bulletin*, Vol. 45, 2000.

Chang, H., D. Evans and R. Schmalensee. "Some Economic Principles for Guiding Antitrust Policy Towards Joint Ventures." *Columbia Business Law Review*, 1998.

Chang, H., D. Evans and R. Schmalensee. "An Economic Critique of the Reserve Bank of Australia's Proposal for Interchange Fee Regulation." mimeo, March 14, 2002.

Chinoy, S. “Electronic Money in Electronic Purses and Wallets.” *Banking and Finance Law Review*, Vol. 12, 1996.

Chutkow, P. *Visa: The Power of an Idea*. Chicago, Ill.: Harcourt, 2001.

Combs, K. and S. Schreft. “Do Consumers Really Want Credit Card Reform?” *Federal Reserve Bank of Kansas City Economic Review*, Vol. 84, No. 3, 3rd Quarter 1999.

Cornett, M. and J. Musumeci. “How Legislation Affects Value: The Failure of Credit Card Cap Legislation.” *Financial Management*, Vol. 28, Autumn 1999.

Daniels, K., N. Murphy and D. O’Toole. “An Empirical Analysis of the Use of Money Orders, the Payment System of the Poor.” *Financial Services Review*, Vol. 3, No. 1, 1993/94.

De Grauwe, P., E. Buyst and L. Rinaldi. “Costs and Benefits of a Cashless Society: The Case of Iceland.” University of Leuven, mimeo, 1999.

De Grauwe, P., E. Buyst and L. Rinaldi. “The Costs of Cash and Cards Compared. The Cases of Iceland and Belgium.” University of Leuven, mimeo, February 2000.

De Grauwe, P. and L. Rinaldi. “A Model of the Card Payment System and the Interchange Fee.” University of Leuven, CESIFO Working Paper No. 796, October 2002.

DeMuth, C. “The Case Against Credit Card Interest Regulation.” *Yale Journal on Regulation*, Vol. 3, No. 2, 1986.

Doyle, B. “‘Here, Dollars, Dollars…’—Estimating Currency Demand and Worldwide Currency Substitution.” Board of Governors of the Federal Reserve System, International Finance Discussion Papers No. 657, January 2000.

Drehmann, M. and C. Goodhart. “Is Cash Becoming Technologically Outmoded or Does It Remain Necessary to Facilitate ‘Bad Behaviour’? An Empirical Investigation into the Determinant of Cash Holdings.” London School of Economics, Financial Markets Group, Discussion Paper No. 358, September 2000.

Duca, J. and W. Whitesell. “Credit Cards and Money Demand: A Cross-Sectional Study.” *Journal of Money, Credit, and Banking*, Vol. 27, No. 2, 1995.

Dudley, W. “The Tug-of-War Over ‘Float’.” Morgan Guaranty Trust Co., *Morgan Guaranty Survey,* 1983.

Dudley, W. “A Comparison of Direct Deposit and Check Payment Costs.” *Staff Studies*. Washington, DC: Board of Governors of the Federal Reserve System, 1984.

Durkin, T. “Credit Cards: Use and Consumer Attitudes, 1970-2000.” *Federal Reserve Bulletin*, September 2000.

European Central Bank. “Issues Arising from the Emergence of Electronic Money.” *Monthly Bulletin*, November 2000.

Evans, D. “Dodging the Consumer Harm Inquiry: A Brief Survey of Recent Government Antitrust Cases.” *St. John’s Law Review*, Vol. 75, Fall 2001.

Evans, D. “The Antitrust Economics of Multi-Sided Platform Markets.” *Yale Journal on Regulation*, Vol. 20, Summer 2003.

Evans, D. “Some Empirical Aspects of Multi-Sided Platform Industries.” *Review of Network Economics*, Vol. 2, Issue 3, September 2003.

Evans, D. and M. Leder. “The Growth and Diffusion of Credit Cards in Society.” National Economic Research Associates, Working Paper, December 1998.

Evans, D. and M. Leder. “The Role of Credit Cards in Providing Financing for Small Businesses.” National Economic Research Associates, Working Paper, December 1998.

Evans, D., B. Reddy and R. Schmalensee. “Did AT&T and GM Affect Credit Card Pricing?” National Economic Research Associates, Working Paper, December 1998.

Evans, D. and R. Schmalensee. *The Economics of the Payment Card Industry.* Cambridge, Mass.: National Economic Research Associates, 1993.

Evans, D. and R. Schmalensee. “Economic Aspects of Payment Card Systems and Antitrust Policy Toward Joint Ventures.” *Antitrust Law Journal*, Vol. 63, 1995.

Evans, D. and R. Schmalensee. “A Guide to the Antitrust Economics of Networks.” *Antitrust*, 10, 1996.

Evans, D. and R. Schmalensee. “Joint Venture Membership: Visa and Discover Card (1993).” In: Kwoka Jr., J. and L. White. *The Antitrust Revolution*. New York, NY: Oxford University Press, 1999.

Evans, D. and R. Schmalensee. *Paying with Plastic: The Digital Revolution in Buying and Borrowing*. Cambridge, Mass.: The MIT Press, 1999.

Federal Reserve Bank of St. Louis. *A Summary of Consumer and Business Attitudes on Direct Deposit and Direct Payment: A National Market Research Study.* St. Louis, Mo.: Federal Reserve Bank of St. Louis, 1998.

Felgran, S. “Shared ATM Networks: Market Structure and Public Policy.” *New England Economic Review*, January/February 1984.

Felgran, S. “From ATM to POS Networks: Branching, Access, and Pricing.” *New England Economic Review*, May/June 1985.

Felgran, S. and E. Ferguson. “The Evolution of Retail EFT Networks.” *New England Economic Review*, July/August 1986.

Field, R. “The (e)cashless society?” *Journal of Internet Banking and Commerce*, Vol. 3., No. 3, November 1998.

Frankel, A. “Monopoly and Competition in the Supply and Exchange of Money.” *Antitrust Law Journal*, Vol. 66, 1998.

Frederick, S., G. Loewenstein and T. O’Donoghue. “Time Discounting and Time Preference: A Critical Review.” *Journal of Economic Literature*, Vol. 40, No. 2, June 2002.

Friedman, J. and J. Meehan. *House of Cards. Inside the Troubled Empire of American Express*. New York: Kensington, 1992.

Furche, A. and G. Wrightson. “Why Do Stored Value Systems Fail?” *Netnomics*, Vol. 2, No. 1, 2000.

Furletti, M. “Mandatory Arbitration Clauses in the Credit Card Industry.” Federal Reserve Bank of Philadelphia, Payment Cards Center Discussion Paper, January 2003.

Gans, J. and S. King. “The Neutrality of Interchange Fees in Payment Systems.” *Topics in Economic Analysis & Policy*, Vol. 3, 2003.

Garcia, G. “Bank Credit Cards and the Demand for Currency: A Comment.” *Southern Economic Journal*, Vol. 43, No. 3, January 1977.

Garcia, G. “A Note on Bank Credit Cards’ Impact on Household Money Holdings.” *Journal of Economics and Business*, Vol. 29, No. 2, Winter 1977.

Garcia, G. “Bank Credit Cards, Time Deposits, and MR.” *Journal of Economics and Business*, Vol. 30, No. 3, Spring/Summer 1978.

Garcia, G. “Credit Cards: An Interdisciplinary Survey.” *Journal of Consumer Research*, Vol. 6, No. 4, March 1980.

Gerdes, G. and J. Walton II. “The Use of Checks and Other Noncash Payment Instruments in the United States.” *Federal Reserve Bulletin*, August 2002.

Good, B. “Electronic Money.” Federal Reserve Bank of Cleveland, Working Paper No. 97-16, August 1997.

Goodhart, C. and M Krueger. “The Impact of Technology on Cash Usage.” London School of Economics, Financial Markets Group, Discussion Paper No. 374, April 2001.

Gowrisankaran, G. and J. Stavins. “Network Externalities and Technology Adoption: Lessons from Electronic Payments.” mimeo, April 2002.

Gresvik, O. and A. Kaloudis. “Increased Cash Holdings—Reduced Use of Cash: A Paradox?” *Norges Bank Economic Bulletin*, 4th Quarter, 2001.

Gresvik, O. and G. Øwre. “Banks’ Costs and Income in the Payment System in 2001.” *Norges Bank Economic Bulletin*, 4th Quarter, 2002.

Gross, D. and N. Souleles. "How Do Individuals Use Credit Cards?" University of Chicago and University of Pennsylvania, Working Paper, 1998.

Gross, D. and N. Souleles. "Consumer Response to Changes in Credit Supply: Evidence from Credit Card Data." University of Pennsylvania, The Wharton School, Financial Institutions Center Working Paper No. 01-10, February 2000.

Gross, D. and N. Souleles. "Do Liquidity Constraints and Interest Rates Matter for Consumer Behavior? Evidence from Credit Card Data." *Quarterly Journal of Economics*, Vol. 117, Issue 1, February 2002.

Grossman, P. *American Express: The Unofficial History of the People Who Built the Great Financial Empire*. New York: Crown Publishers Inc, 1997.

Guthrie, G. and J. Wright. "Competing Payment Schemes." National University of Singapore, Department of Economics, Working Paper, September 9, 2003.

Hancock, D. and D. Humphrey. "Payment Transactions, Instruments and Systems: A Survey." *Journal of Banking and Finance*, Vol. 21, 1998.

Hancock, D., D. Humphrey and J. Wilcox. "Cost Reductions in Electronic Payments: The Roles of Consolidation, Economies of Scale, and Technical Change," *Journal of Banking and Finance*, Vol. 23, 1999.

Hannan, T. "Retail Fees of Depository Institutions, 1994-1999." *Federal Reserve Bulletin,* January 2001.

Hannan, T., E. Kiser, R. Prager and J. McAndrews. "To Surcharge or Not to Surcharge: An Empirical Investigation of ATM Pricing." Board of Governors of the Federal Reserve System, Finance and Economics Discussion Series No. 2001-38, May 24, 2001.

Hausman, J., G. Leonard and J. Tirole. "On Nonexclusive Membership in Competing Joint Ventures." *Rand Journal of Economics*, Vol. 34, No. 1, Spring 2003.

Hayashi, F. and E. Klee. "Technology Adoption and Consumer Payments: Evidence from Survey Data." Federal Reserve Bank of Kansas City, Payment Systems Research Working Paper No. 02-01, November 8, 2002.

Hayashi, F., R. Sullivan and S. Weiner. *A Guide to the ATM and Debit Card Industry*. Kansas City, Kansas: Federal Reserve Bank of Kansas City, 2003.

Hirschman, E. "Differences in Consumer Purchase Behavior by Credit Card Payment System." *Journal of Consumer Research*, Vol. 6, 1979.

Hirschman, E. "Consumer Payment Systems: The Relationship of Attribute Structure to Preference and Usage." *Journal of Business*, Vol. 55, No. 4, 1982.

Hoenig, T. "The Evolution of the Payment System: A U.S. Perspective." *Federal Reserve Bank of Kansas City Economic Review*, Vol. 80, No. 3, 3rd Quarter 1995.

Hovenkamp, H. "Exclusive Joint Ventures and Antitrust Policy." *Columbia Business Law Review,* 1995.

Humphrey, D. *The U.S. Payments System: Costs, Pricing, Competition, and Risk*. New York: Salomon Bros. Center for the Study of Financial Institutions, Graduate School of Business Administration of New York University, 1984.

Humphrey, D. "Delivering Deposit Services: ATMs Versus Branches." *Federal Reserve Bank of Richmond Economic Quarterly*, Vol. 80, Spring 1994.

Humphrey, D. "The Economics of Electronic Benefit Transfer Payments." *Federal Reserve Bank of Richmond Economic Quarterly*, Vol. 82, No. 2, Spring 1996.

Humphrey, D. and A. Berger. "Market Failure and Resource Use: Economic Incentives to Use Different Payment Instruments." In: D. Humphrey, ed. *The U.S. Payment System: Efficiency, Risk and the Role of the Federal Reserve*. Boston: Kluwer Academic Publishers, 1990.

Humphrey, D., R. Keppler and F. Montes-Negret. "Cost Recovery and Pricing of Payment Services." World Bank Policy Research Working Paper No. 1833, October 1997.

Humphrey, D., M. Kim and B. Vale. "Realizing the Gains from Electronic Payments: Costs, Pricing, and Payment Choice." *Proceedings from the Federal Reserve Bank of Chicago 34th Annual Conference on Bank Structure and Regulation*. Chicago: Federal Reserve Bank of Chicago, 1998.

Humphrey, D., L. Pulley and J. Vesala. "Cash, Paper and Electronic Payments: A Cross-Country Analysis." *Journal of Money, Credit and Banking*, Vol. 28, No. 4, Part 2, November 1996.

Humphrey, D., L. Pulley and J. Vesala. "The Check's in the Mail: Why the U.S. Lags in the Adoption of Cost-Saving Electronic Payments." *Journal of Financial Services Research,* Vol. 17, No. 1, February 2000.

Humphrey, D., S. Sato, M. Tsurumi and J. Vesala. "The Evolution of Payments in Europe, Japan and the United States: Lessons for Emerging Market Economies." World Bank Policy Research Working Paper No. 1676, October 1996.

Kemppainen, K. "Competition and Regulation in European Retail Payment Systems." Bank of Finland Discussion Paper 16/2003, 2003.

Kennickell, A. and M. Kwast. "Who Uses Electronic Banking? Results from the 1995 Survey of Consumer Finances." *Proceedings from the Federal Reserve Bank of Chicago Annual Conference on Bank Structure and Competition.* Chicago, IL: Federal Reserve Bank of Chicago, 1997.

Kennickell, A. and M. Starr-McCluer. "Changes in Family Finances from 1989 to 1992: Evidence from the Survey of Consumer Finances." *Federal Reserve Bulletin*, Vol. 78, No. 1, January 1992.

Kennickell, A., M. Starr-McCluer and A. Sunden. “Family Finances in the U.S.: Recent Evidence from the Survey of Consumer Finances.” *Federal Reserve Bulletin*, Vol. 83, No. 1, January 1997.

Kennickell, A., M. Starr-McCluer and B. Surette, “Recent Changes in U.S. Family Finances: Results from the 1998 Survey of Consumer Finances.” *Federal Reserve Bulletin*, Vol. 86, No. 1, January 2000.

Kitch, E. “The Framing Hypothesis: Is It Supported by Credit Card Issuer Opposition to a Surcharge on a Cash Price?” *Journal of Law, Economics and Organization*, Vol. 6, 1990.

Klein, L. *It’s In the Cards: Consumer Credit and the American Experience*. Westport, Conn.: Praeger Publishing, 1999.

Knittel, C. and V. Stango. “Price Ceilings as Focal Points for Tacit Collusion: Evidence from the Credit Card Market.” mimeo, December 2001.

Knudson, S., J. Walton II and F. Young. “Business-to-Business Payments and the Role of Financial Electronic Data Interchange.” *Federal Reserve Bulletin*, Vol. 80, No. 4, April 1994.

Kokkola, T. and R. Pauli. “Electronic Cash.” *Bank of Finland Bulletin*, Vol. 68, No. 12, December 1994.

Lacker, J. “Should We Subsidize the Use of Currency?” *Federal Reserve Bank of Richmond Economic Quarterly*, Vol. 79, No. 1, Winter 1993.

Lacker, J. “Stored Value Cards: Costly Private Substitutes for Government Currency.” *Federal Reserve Bank of Richmond Economic Quarterly*, Vol. 82, No. 3, Summer 1996.

Lacker, J. “The Check Float Puzzle.” *Federal Reserve Bank of Richmond Economic Quarterly*, Vol. 83, No. 3, Summer 1997.

Lacker, J., J. Walker and J. Weinberg. “The Fed’s Entry into Check Clearing Reconsidered.” *Federal Reserve Bank of Richmond Economic Quarterly*, Vol. 85, No. 2, Spring 1999.

Lee, B. and O. Longe-Akindemowo. “Regulatory Issues in Electronic Money: A Legal-Economic Analysis.” *Netnomics*, Vol. 1., No. 1, 1999.

Lemley, M. and D. McGowan. “Legal Implications of Network Economic Effects.” *California Law Review*, Vol. 86, May 1998.

Lindley, J., P. Rudolph and E. Selby Jr. “Credit Card Possession and Use: Changes Over Time.” *Journal of Economics and Business*, Vol. 41, No. 2, May 1989.

Listfield, R. and F. Montes-Negret. “Modernizing Payment Systems in Emerging Economies.” World Bank Policy Research Working Paper No. 1336, 1994.

Listfield, F. and F. Montes-Negret. “Payment Systems in Latin America: A Tale of Two Countries—Colombia and El Salvador.” World Bank Policy Research Working Paper No. 1519, 1995.

Listfield, R. and F. Montes-Negret. “Brazil’s Efficient Payment System: A Legacy of High Inflation.” World Bank Policy Research Working Paper No. 1680, November 1996.

Lorenz, G. “Electronic Stored Value Payment Systems, Market Position, and Regulatory Issues.” *American University Law Review*, Vol. 46, No. 4, April 1997.

MacKie-Mason, J. and K. White. “Evaluating and Selecting Digital Payment Mechanisms.” University of Michigan, Ann Arbor, 1996.

Mann, R. “Credit Cards and Debit Cards in the United States and Japan.” *Monetary and Economic Studies*, Vol. 20, No. 1, January 2002.

Mandell, L. *The Credit Card Industry: A History*. Boston: Twayne Publishers, 1990.

Manenti, F. and E. Somma. “Plastic Clashes: Competition among Closed and Open Systems in the Credit Card Industry.” Working Paper, October 2003.

Manning, R. *Credit Card Nation*. New York: Basic Books, 2000.

Mantel, B. “Are Americans’ Check-Writing Habits Rational?” *Detroit FedPoints: Michigan Financial and Economic Update*, September/October 1999.

Mantel, B. “Why Don’t Consumers Use Electronic Banking Products? Toward a Theory of Obstacles, Incentives, and Opportunities.” Federal Reserve Bank of Chicago, Emerging Payments Occasional Paper Series EPS-2000-1, September 2000.

Mantel, B. “Why Do Consumers Pay Bills Electronically? An Empirical Analysis.” *Federal Reserve Bank of Chicago Economic Perspectives*, 4th Quarter, 2000.

Mantel, B. “E-money and E-commerce: Two Alternative Views of Future Innovations.” *Chicago Fed Letter*, No. 163a, March 2001.

Markose, S. and Y. Loke. “Can Cash Hold Its Own? International Comparisons: Theory and Evidence.” University of Essex, Economics Department, mimeo, February 2002.

McAndrews, J. “The Evolution of Shared ATM Networks.” *Federal Reserve Bank of Philadelphia Business Review*, May/June 1991.

McAndrews, J. “Pricing in Vertically Integrated Network Switches.” Federal Reserve Bank of Philadelphia Working Paper No. 96-19, 1996.

McAndrews, J. “Network Issues and Payment Systems.” *Federal Reserve Bank of Philadelphia Business Review*, November/December 1997.

McAndrews, J. “ATM Surcharges.” *Current Issues in Economics and Finance*, Vol. 4, No. 4, April 1998.

McAndrews, James J. “E-Money and Payment System Risk.” Contemporary Economic Policy, Vol. 17, 1999.

McAndrews, J. “Automated Teller Machine Network Pricing: A Review of the Literature.” *Review of Network Economics*, Vol. 2, Issue 2, June 2003.

McAndrews, J. and R. Rob. “Shared Ownership and Pricing in a Network Switch.” *International Journal of Industrial Organization*, Vol. 14, 1996.

McHugh, T. “The Growth of Person-to-Person Electronic Payments.” *Chicago Fed Letter*, No. 180, August 2002.

Mester, L. “Why Are Credit Card Rates Sticky?” Federal Reserve Bank of Philadelphia Working Paper No. 93-16, June 1993.

Mester, L. “The Changing Nature of the Payment System: Should New Players Mean New Rules?” *Federal Reserve Bank of Philadelphia Business Review*, March/April 2000.

Murphy, N. “Determinants of Household Check Writing: The Impacts of the Use of Electronic Banking Services and Alternative Pricing of Services.” *Financial Services Review*, Vol. 1, 1991.

NACHA. “ACH Statistics, 1991-2001,” available at http://www.nacha.org, visited on December 22, 2002.

Nash, R. and J. Sinkey Jr. “On Competition, Risk, and Hidden Assets in the Market for Bank Credit Cards.” *Journal of Banking and Finance*, Vol. 21, January 1997.

Nocera, J. *A Piece of the Action: How the Middle Class Joined the Money Class*. New York: Simon & Schuster, 1994.

Osterberg, W. and J. Thompson. “Bank Notes and Stored-Value Cards: Stepping Lightly into the Past.” *Federal Reserve Bank of Cleveland Economic Commentary*, September 1998.

Palva, M. “The Finnish Payment System.” *Proceedings from the Workshop on Promoting the Use of Electronic Payments: Assessing Future Requirements*. Chicago, IL: Federal Reserve Bank of Chicago, 2000.

Park, J. “The Credit Card Industry: Profitability and Efficiency.” Federal Reserve Bank of New York Research Paper No. 9314, 1993.

Park, J. “Effects of Price Competition in the Credit Card Industry.” *Economic Letters*, Vol. 57, No. 1, 1997.

Park, J. “Option Value of Credit Lines as an Explanation of High Credit Card Rates.” Federal Reserve Bank of New York Research Paper No. 9702, 1997.

Pavel, C. and P. Binkley. "Cost and Competition in Bank Credit Cards." *Federal Reserve Bank of Chicago Economic Perspectives*, March/April 1987.

Philips, J. "Bytes of Cash: Banking, Computing, and Personal Finance." First Monday, Vol. 1, No. 5, 1996, available at http://www.firstmonday.dk/issues/issue5/philips/index.html.

Phillips, A. "Migration Of Corporate Payments From Check To Electronic Format: A Report On The Current Status Of Payments." *Financial Management*, Vol. 27, No. 4, Winter 1998.

Phillips, A. "The Role of Standardization in Shared Bank Card Systems." *Product Standardization and Competitive Strategy*. H. Landis Gabel ed., Amsterdam, Netherlands: Elsevier Science Publishers, 1987.

Piraino, T. "Reconciling Competition and Cooperation: A New Antitrust Standard for Joint Ventures." *William and Mary Law Review*, Vol. 35, Spring 1994.

Piraino, T. "The Antitrust Analysis of Network Joint Ventures." *Hastings Law Journal*, Vol. 47, November 1995.

Plotkin, M. and E. Albert. "Smart Cards—Why Regulation is Premature." *Journal of International Banking Law*, Vol. 12, 1997.

Prager, R. "ATM Network Mergers and the Creation of Market Power." *Antitrust Bulletin*, Vol. 44, 1999.

Prager, R. "The Effects of ATM Surcharges on Small Banking Organizations." *Review of Industrial Organization*, Vol. 18, Issue 2, March 2001.

Pratt, W. "Refusals to Deal in the Context of Network Joint Ventures." *Business Lawyer*, February 1997.

Prelec, D. and G. Loewenstein. "The Red and the Black: Mental Accounting of Savings and Debt." *Marketing Science*, Vol. 17, 1998.

Prescott, E. and D. Tatar. "Means of Payment, the Unbanked, and EFT '99." *Federal Reserve Bank of Richmond Economic Quarterly*, Vol. 85, No. 4, 1999.

Prinz, A. "The Regulation of E-money: How Policy is Being Shaped in Europe." *E-money (The Journal of Electronic Commerce for the Financial Services Industry)*, Vol. 1, No. 3, July 1998.

Prinz, A. "The Regulation of E-money: How, When, and Why?" *E-money (The Journal of Electronic Commerce for the Financial Services Industry)*, Vol. 1, No. 8, December 1998.

Prinz, A. "Money in the Real and the Virtual World: E-money, C-money and the Demand for CB-money." *Netnomics*, Vol. 1, No. 1, 1999.

Prinz, A. "Standardising Electronic Means of Payment?" *Netnomics*, Vol. 3, No. 2, September 2001.

Rascovich, A. and L. Froeb. "Has Competition Failed in the Credit Card Market?" Economic Analysis Group, discussion paper. Washington, DC: U.S. Department of Justice, June 1992.

Rinaldi, L. "Payment Cards and Money Demand in Belgium." University of Leuven, mimeo, July 2001.

Robinson, P. and I. Flatraaker. "Costs in the Payment System." *Norges Bank Economic Bulletin*, June 1995.

Rochet, J. and J. Tirole. "Cooperation Among Competitors: Some Economics of Payment Card Associations." *Rand Journal of Economics*, Vol. 33, No. 4, Winter 2002.

Rochet, J. and J. Tirole. "An Economic Analysis of the Determination of Interchange Fees in Payment Card Systems." *Review of Network Economics*, Vol. 2, Issue 2, June 2003.

Rochet, J. and J. Tirole. "Platform Competition in Two-Sided Markets." *Journal of the European Economic Association*, Vol. 1, Issue 4, June 2003.

Rogoff, K. "Blessing or Curse? Foreign and Underground Demand for Euro Notes." *Economic Policy*, 26, April 1998.

Rogoff, K. "The Surprising Popularity of Paper Currency." *Finance and Development,* Vol. 39, No. 1, March 2002.

Rougeau, V. "Rediscovering Usury: An Argument for Legal Controls on Credit Card Interest Rates." *University of Colorado Law Review*, Vol. 67, Winter 1996.

Sato, S. and D. Humphrey. "Transforming Payment Systems: Meeting the Needs of Emerging Market Economies." World Bank Discussion Paper No. 291, July 1995.

Schmalensee, R. "Payment Systems and Interchange Fees." *Journal of Industrial Economics*, Vol. 50, No. 2, June 2002.

Schmalensee, R. "Interchange Fees: A Review of the Literature." *The Payment Card Economics Review*, Vol. 1, Winter 2003.

Scholnick, B. "Regulation, Competition and Risk in the Market for Credit Cards." *Canadian Public Policy*, Vol. 26, No. 2, 2000.

Schreft, S. "Transactions Costs and the Use of Cash and Credit." *Economic Theory*, Vol. 2, 1991

Schreft, S. "Looking Forward: The Role of Government in Regulating Electronic Cash." *Federal Reserve Bank of Kansas City Economic Review*, 4th Quarter, 1997.

Schreft, S. "Clicking with Dollars: How Consumers Can Pay for Purchases from E-tailers." *Federal Reserve Bank of Kansas City Economic Review*, 1st Quarter, 2002.

Schreft, S. and B. Smith. “The Evolution of Cash Transactions: Some Implications for Monetary Policy.” Federal Reserve Bank of Kansas City, Working Paper No. 99-02, November 1999.

Schwartz, M. and D. Vincent. “Spreading the Pain Can Aggravate the Injury: Uniform-Pricing Constraints in Payment Networks.” Working Paper, October 2000.

Schwartz, M. and D. Vincent. “Same Price, Cash or Card: Vertical Control by Payments Networks.” Working Paper, February 2002.

Shaffer, S. “Evidence of Monopoly Power Among Credit Card Banks.” Federal Reserve Bank of Philadelphia Working Paper No. 94-16, 1994.

Shaffer, S. “The Competitive Impact of Disclosure Requirements in the Credit Card Industry.” *Journal of Regulatory Economics*, Vol. 15, No. 2, 1999.

Shapiro, C. “Exclusivity in Network Industries.” *George Mason Law Review*, Vol. 7, Spring 1999.

Shy, O. and J. Tarkka. “The Market for Electronic Cash Cards.” *Journal of Money, Credit and Banking*, Vol. 34, No. 2, May 2002.

Sienkiewicz, S. “Credit Cards and Payment Efficiency.” Federal Reserve Bank of Philadelphia, Payment Cards Center Discussion Paper, August 2001.

Sienkiewicz, S. “The Evolution of EFT Networks from ATMs to New On-Line Debit Payment Products.” Federal Reserve Bank of Philadelphia, Payment Cards Center Discussion Paper, April 2002.

Sinkey, J. and R. Nash. “On Competition, Risk, and Hidden Assets in the Market for Bank Credit Cards.” *Journal of Finance*, Vol. 21, 1997.

Sinkey, J. and R. Nash. “Assessing the Riskiness and Profitability of Credit-Card Banks.” *Journal of Financial Services Research*, Vol. 7, 1993.

Small, J. and J. Wright. “Decentralised Interchange Fees in Open Payment Networks An Economic Analysis.” NECG and University of Auckland, mimeo, December 2000.

Small, J. and J. Wright. “The Bilateral Negotiation of Interchange Fees in Payment Schemes.” Working Paper, September 2001.

Snellman, J. and J. Vesala. “Changing Payment Patterns in Finland: Cash Substitution and Electrification.” Bank of Finland Discussion Paper 8/99, 1999.

Snellman, J., J. Vesala and D. Humphrey. “Substitution of Noncash Payment Instruments for Cash in Europe.” Bank of Finland Discussion Paper 1/2000, 2000.

Solomon, E. “What Should Regulators Do About Consolidation and Electronic Money?” *Journal of Banking and Finance*, Vol. 23, February 1999.

Spiotto, A. and B. Mantel. “Electronic Bill Presentment, Payment, and Aggregation: The Consumer’s Perspective.” *ABA Bank Compliance Journal*, May/June 2001.

Spiotto, A. “Electronic Bill Payment and Presentment: A Primer.” *The Business Lawyer*, Vol. 57, No. 1, November 2001.

Spiotto, A. “Credit, Debit, or ACH: Consequences and Liabilities. A Comparison of the Differences in Consumer Liabilities.” Federal Reserve Bank of Chicago, Emerging Payments Occasional Paper Series EPS-2001-3, 2001.

Stango, V. “Competition and Pricing in the Credit Card Market.” *Review of Economics and Statistics*, Vol. 82, August 2000.

Stango, V. “Pricing with Consumer Switching Costs: Evidence from the Credit Card Market.” mimeo, November 2001.

Stango, V. “Strategic Responses to Regulatory Threat in the Credit Card Market.” mimeo, February 2002.

Stavins, J. “Can Demand Elasticities Explain Sticky Credit Card Rates?” *New England Economic Review*, July/August 1996.

Stavins, J. “A Comparison of Social Costs and Benefits of Paper Check Presentment and ECP Truncation.” *New England Economic Review,* July/August 1997.

Stavins, J. “Checking Accounts: Fees and Features, Consumer Preferences, Impact on Bank Revenues.” *New England Banking Trends*, No. 22, Fall 1999.

Stavins, J. “ATM Fees: Does Size Matter?” *New England Economic Review*, January/February 2000.

Stavins, J. “Credit Card Borrowing, Delinquency, and Personal Bankruptcy.” *New England Economic Review*, July/August 2000.

Stavins, J. “While More People Are Paying Electronically, Many of Us Still Cling to Checks.” *Federal Reserve Bank of Boston Regional Review*, Vol. 11, No. 4, 2001.

Stuber, G. *The Electronic Purse. An Overview of Recent Developments and Policy Issues.* Bank of Canada, January 1996.

Tanaka, T. “Possible Economic Consequences of Digital Cash.” *First Monday*, Vol. 1, No. 2, 1996, available at http://www.firstmonday.dk/issues/issue2/digital_cash/index.html.

United States General Accounting Office. *Food Assistance. Potential Impacts of Alternative Systems for Delivering Food Stamp Program Benefits.* Washington, DC: United States General Accounting Office, 1994.

Van Hove, L. “Electronic Purses and Currency: A Competition Between Networks.” *E-money (The Journal of Electronic Commerce for the Financial Services Industry)*, Vol. 1, No. 2, June 1998.

Van Hove, L. “Electronic Money and the Network Externalities Theory: Lessons for Real Life.” *Netnomics*, Vol. 1, No. 2, 1999.

Van Hove, L. “Electronic Purses, Interoperability, and the Internet.” First Monday, Vol. 4, No. 4, 1999, available at http://www.firstmonday.dk/issues/issue4_4/vanhove/index.html.

Van Hove, L. “Electronic Purses: (Which) Way to Go?” *First Monday*, Vol. 5, No. 7, 2000, available at http://www.firstmonday.dk/issues/issue5_7/hove/index.html.

Van Hove, L. “The New York City Smart Card Trial in Perspective: A Research Note.” *International Journal of Electronic Commerce*, Vol. 5, No. 2, Winter 2000-2001.

Van Hove, L. “The Price of Cash Revisited.” *ePSO Newsletter*, No. 8, July 2001.

Van Hove, L. “Electronic Money and Cost-Based Pricing.” *Economic Policy Papers (Austria)*, No. 2, 2002.

Walters, M. “What Future for Stored Value?” *ePSO Newsletter*, No. 3, November 2000.

Weiner, S. (1999). “Electronic Payments in the U.S. Economy: An Overview.” *Federal Reserve Bank of Kansas City Economic Review*, 4th Quarter.

Wells, K. “Are Checks Overused?” *Federal Reserve Bank of Minneapolis Quarterly Review,* Vol. 20, No. 4, 1996.

White, K. “The Effect of Bank Credit Cards on the Household Transactions Demand for Money.” *Journal of Money, Credit and Banking*, Vol. 8, 1976.

Whitehead, D. “Firms Involved in ATM, POS, and Home Banking: A Survey.” *Federal Reserve Bank of Atlanta Economic Review*, July/August 1984.

Winn, J. “Clash Of The Titans: Regulating The Competition Between Established and Emerging Electronic Payment Systems.” *Berkeley Technology Law Journal*, Vol. 14, 1999.

Wolters, T. “‘Carry Your Credit in Your Pocket’: The Early History of the Credit Card at Bank of America and Chase Manhattan.” *Enterprise and Society*, Vol. 1, June 2000.

Wright, J. “An Economic Analysis of a Card Payment Network.” NECG and University of Auckland, mimeo, December 2000.

Wright, J. “Optimal Card Payment Systems.” *European Economic Review*, Vol. 47, Issue 4, 2003.

Wright, J. “Pricing in Debit and Credit Card Schemes.” *Economics Letters*, Vol. 80, Issue 3, 2003.

Wright, J. “One-Sided Logic in Two-Sided Markets.” AEI-Brookings Joint Center for Regulatory Studies, Working Paper, September 2003.

Wright, J. “The Determinants of Optimal Interchange Fees in Payment Systems.” *Journal of Industrial Economics*, forthcoming.

Yoo, P. “Charging Up a Mountain of Debt: Accounting for the Growth of Credit Card Debt.” *Federal Reserve Bank of St. Louis Review*, Vol. 79, No. 2, 1997.

Yoo, P. “Still Charging: The Growth of Credit Card Debt between 1992 and 1995.” *Federal Reserve Bank of St. Louis Review*, Vol. 80, No. 1, 1998.

Zilberfarb, Ben-Zion. “The Effect of Automated Teller Machines on Demand Deposits: An Empirical Analysis.” *Journal of Financial Services Research*, Vol. 2, No. 1, February 1989.

Zywicki, T. “The Economics of Credit Cards.” *Chapman Law Review*, Vol. 3, Spring 2000.

ABOUT THE AUTHORS

Christian Ahlborn
Partner, Linklaters & Alliance
christian.ahlborn@linklaters.com

David G. Blanchflower
Bruce V. Rauner Professor of Economics, Dartmouth College
blanchflower@dartmouth.edu

Howard H. Chang
Vice President, NERA Economic Consulting
howard.chang@nera.com

David S. Evans
Senior Vice President, NERA Economic Consulting
david.evans@nera.com

Richard Schmalensee
Professor of Economics and Management
and *John C Head III Dean of the Sloan School of Management*,
Massachusetts Institute of Technology
rschmal@mit.edu