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The Failure of Competition in the Credit Card Market

By LAWRENCE M. AUSUBEL*

The bank credit card market, containing 4,000 firms and lacking regulatory barriers, casually appears to be a hospitable environment for the model of perfect competition. Nevertheless, this article reports that credit card interest rates have been exceptionally sticky relative to the cost of funds. Moreover, major credit card issuers have persistently earned from three to five times the ordinary rate of return in banking during the period 1983–1988. The failure of the competitive model appears to be partly attributable to consumers making credit card choices without taking account of the very high probability that they will pay interest on their outstanding balances. (JEL 315, 612)

This article presents and discusses a collection of data which is paradoxical within the paradigm of perfect competition. The market studied, the bank credit card industry in the United States, contains literally 4,000 firms who sell a relatively homogeneous good to 75 million consumers. The ten largest firms account for only about two-fifths of market share. Firms have historically operated without regulatory barriers to conducting business across state lines—and at least 20 firms aggressively solicit business on a national scale. Firms have also operated in the virtual absence of price regulations for most of a decade. There do not appear to be any particularly con-

strained inputs, significant sunk costs, or significant barriers to entry. Finally, there is no evidence of any explicit collusion on price or quantity.

Given such a favorable market description, or one not even half so optimistic, many economists would prefer to presume that the market must behave as a competitive spot market in continuous equilibrium. It is the purpose of this article to argue that this presumption is empirically unjustified in the market for bank credit cards in the 1980's. Section I outlines the market structure of the bank credit card industry. Section II offers empirical evidence of extreme price stickiness in credit card interest rates. Section III provides direct profit data on the industry, arguing that the 50 largest credit card issuers have earned from three to five times the ordinary rate of return for the banking industry during the period 1983–1988. Section IV examines profits over a larger sample of banks and a longer time period. Section V presents additional data on resales of credit card portfolios between banks, suggesting that the extraordinary profits exist *ex ante* as well as *ex post* (and that bankers expect the profitability to persist). Section VI explores some theoretical explanations for price stickiness and supra-normal profits. Section VII calculates what would be “competitive” interest rates. Section VIII briefly discusses the extent of welfare loss in the market and the merits of regulation to correct market failure. Conclusions are presented in Section IX.

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I. The Bank Credit Card Market: Is 4,000 Enough for Competition?

Credit cards are the currency of late 20th-century America. The aggregate charge volume on plastic in the United States was estimated at \$375 billion in 1987.¹ Almost half of this total—\$165 billion in volume—was charged on MasterCard and Visa credit cards (the primary focus of this article), and volume was growing at well over 10 percent per year.² The remaining volume arose largely from similar credit cards (e.g., the Discover and Optima cards), “travel and entertainment” cards (e.g., the American Express card), and retail cards (e.g., department store and oil company cards).

Borrowing via credit cards (and all consumer borrowing) is also significant and has been even more of a growth industry. Outstanding U.S. balances on revolving credit accounts equaled \$203 billion at year-end 1989, up from only \$70 billion in 1982.³ More than \$130 billion of this total consisted of MasterCard and Visa balances, more than a threefold increase from 1982, and bank card balances were still increasing at more than a 15-percent annual rate.⁴ Overall outstanding consumer installment credit balances in the United States reached \$717 billion, up from \$356 billion in 1982;⁵ it is worth observing that many of the considerations explicitly discussed here in con-

nection with the credit card industry apply also to other forms of consumer borrowing (especially other unsecured credit).

If Visa and MasterCard were the relevant levels of business to examine, then two firms would control a substantial part of the credit card market. However, most relevant business decisions are made at the level of the issuing bank. Individual banks own their cardholders' accounts and determine the interest rate, annual fee, grace period, credit limit, and other terms of the accounts. (Only charges such as the “interchange fee” from the merchant's bank to the cardholder's bank are standardized, and the cardholder's bank appears only to break even on such charges. Moreover, there is absolutely no indication that the MasterCard and Visa organizations serve to facilitate collusion on other prices.⁶) In essence, MasterCard International and Visa U.S.A. are organizations largely irrelevant to this discussion; “firms” will henceforth refer to the issuing banks.

The market for MasterCard and Visa cards, thus, is relatively unconcentrated. The top ten firms control only about two-fifths of the market, and the next ten firms control only one-tenth of the market (see Table 1). Moreover, the market is exceptionally broad. A bank that ranked number 100 in 1987 still had approximately 160,000 active accounts, \$125 million in outstanding balances, and \$250 million in annual charge volume.⁷

Unlike most aspects of American banking, the credit card business has historically operated free of interstate banking and

¹Moreover, Americans were estimated to have made 9.1 billion credit card transactions in 1987 (*The Nilson Report*, Number 428, May 1988, p. 5).

²U.S. volume in 1987 consisted of \$138 billion in sales slips (i.e., charged goods and services) and \$27 billion in cash advances. Visa accounted for 59 percent of this value and MasterCard accounted for the remaining 41 percent. (*The Nilson Report*, Number 422, February 1988, p. 6, and Number 423, March 1988, pp. 4–5).

³Federal Reserve Board's series of Consumer Installment Credit, as published in *Federal Reserve Bulletin*, April 1990, table 1.55, line 15 (and previous issues).

⁴*Federal Reserve Bulletin*, April 1990, table 1.55, lines 16, 19, and 21. Revolving credit held by commercial banks, savings institutions, and pools of securitized assets consists almost entirely of MasterCard and Visa balances.

⁵*Federal Reserve Bulletin*, April 1990, table 1.55, line 1 (and previous issues).

⁶Moreover, the observed interest rate behavior does not seem to fit the conventional view of collusive pricing. Around 1985, three major issuers (Chase Manhattan, Manufacturers Hanover, and Maryland Bank) reduced their interest rates on standard cards to the 17.5–17.9-percent range. Far from this triggering an industry price war, other major issuers (e.g., Citibank and First Chicago) steadfastly maintained 19.8-percent rates on most accounts, without apparent detriment to their customer bases. Finally, in the spring of 1989, the three price-cutters announced rate increases, apparently finding *without facing retaliation* that the earlier cuts had been unprofitable (*The New York Times*, April 27, 1989, p. 32; *Wall Street Journal*, March 22, 1989, p. B1).

⁷*The Nilson Report*, Number 406 (June 1987), p. 7.

TABLE 1.—TOP TEN ISSUERS OF MASTERCARD AND VISA CARDS, 1987

Bank	Number of accounts	Percentage market share (by number of accounts)	Outstanding balances (\$ billion)	Percentage market share (by outstanding balances)
Citibank	10,000,000	8.4	\$15.3B	16.3
Chase Manhattan Bank	5,000,000	4.2	\$5.4B	5.8
Bank of America	4,800,000	4.0	\$5.2B	5.5
First Chicago	4,500,000	3.8	\$4.6B	4.9
Manufacturers Hanover	3,300,000	2.8	\$2.0B	2.1
Wells Fargo Bank	1,800,000	1.5	\$2.8B	3.0
Maryland Bank	1,800,000	1.5	\$1.7B	1.8
Marine Midland Bank	1,700,000	1.4	\$1.4B	1.5
Chemical Bank	1,500,000	1.3	\$1.3B	1.4
Associates National Bank	1,200,000	1.0	\$1.0B	1.1
Top ten	35,600,000	30.0	\$40.7B	43.4
Second ten	11,500,000	9.7	\$9.0B	9.6
Total	118,900,000	100.0	\$93.9B	100.0

Sources: Individual banks' numbers of accounts surveyed by *American Banker*, (March 1, 1988, pp. 1-2) and *Credit Card News* (August 15, 1988, pp. 4-16); total number of accounts from *Nilson Report* (Number 406 [June 1987], p. 4). Individual banks' outstanding balances based on *American Banker* (September 21, 1987, p. 43 [call report data]) and *Nilson Report* (Number 406 [June 1987], pp. 4-5); total outstanding balances from *Federal Reserve Bulletin* (December 1988, table 1.55; revolving credit outstanding at commercial banks and savings institutions, minus loans outstanding at Greenwood Trust Co. [Discover card] and American Express Centurion Bank). Data reported for December 31, 1986, adjusted for acquisitions effective in 1987. Conflicts between sources were resolved using best available information.

branch banking restrictions. Indeed, the largest issuers today conduct truly national businesses. For example, Maryland Bank (ranked number seven in Table 1) conducts business in all 50 states and has only five percent of its accounts in its home state.⁸ The only states where more than five percent of its business is concentrated are California (10.7 percent), Texas (6.7 percent), Pennsylvania (6.0 percent), and New Jersey (5.8 percent).

In the past, credit card issuers were constrained by state usury laws. However, the U.S. Supreme Court's December 1978 *Marquette* decision paved the way for the practical elimination of price regulations.⁹ The

Court held that only the usury ceiling of the state in which the bank is located, and not that of the state in which the consumer is located, restricts the interest rate the bank may charge. This gave banks the option of shifting their credit card operations to wholly owned subsidiaries situated in states without usury laws. By 1982, amid *Marquette*-created bank pressure and historically high market interest rates, most leading banking states had relaxed or repealed their interest rate ceilings. Meanwhile, South Dakota and Delaware had established themselves as attractive home-away-from-home for credit card issuers. While a number of states maintain binding usury laws at this writing (most notably, Arkansas, with a ceiling of five percentage points above the Federal Reserve discount rate), essentially all major issuers can pursue business in those states free of restric-

⁸Prospectus for Maryland Bank, N.A., Credit Card Trust 1987-A, December 9, 1987, pp. 17-18.

⁹*Marquette National Bank v. First of Omaha Service Corporation*, 439 U.S. 299 (1978). The *Marquette* decision applies to credit cards issued by nationally chartered banks, but not to retail cards (e.g., oil company credit cards). The decision explicitly permits banks to "export" their interest rates; banks have interpreted this also to permit the "export" of annual fees and

other customer fees. At this writing, at the behest of the Iowa Attorney General, courts are considering whether this rule does indeed apply to fees.

tion. It is fair to say that the bank credit card market in the United States was functionally deregulated in 1982.

II. Credit Card Interest Rate Behavior

A. Sticky Interest Rates

The cost of funds is obviously the primary determinant of the marginal cost of lending via credit cards, and it is usually the only component of marginal cost that varies widely from quarter to quarter. Thus, a model of continuous spot market equilibrium would predict a substantial degree of connection between the interest rate charged on credit cards and the banks' cost of funds. However, Figure 1, which compares credit card interest rates with the cost of funds, displays stark empirical rejection of this prediction. Credit card interest rates were highly sticky during the period 1982–1989 and, in fact, were virtually constant.¹⁰

In this section, credit card interest rates are captured by two distinct sets of data: one aggregated and one disaggregated. The first set of data is the *Federal Reserve Bulletin* series for credit card interest rates, based on the Federal Reserve Board's quarterly survey of banks. Reported are arithmetic averages of each bank's "most common" rate charged during the first week of each mid-quarter month.¹¹ This series is plotted in Figure 1. The second set of data (and much of the empirical discussion of this and the next section) is derived from the author's own bank credit card survey (BCCS) of 58 of the largest bank issuers of credit cards. The first mailing (21 responses) asked primarily for pricing and cost data; it generated a quarterly interest rate series for 17 credit card issuers and an annual loan-loss series for 10 issuers. The follow-up

mailing (11 responses) included a request for direct profit calculations, which were provided by seven banks. Appendix A provides details of the construction of the BCCS. Table 2 includes the size distribution of banks that reported data. Respondents were promised anonymity.

The most aesthetically pleasing way for an economist to determine the cost of funds is to "let the market decide it." In the case of credit cards, this is feasible because of the phenomenon of credit card securitization. Consistently, during 1987–1989, credit-card-backed securities offered yields in the vicinity of 0.75 percent above those of Treasury securities with comparable maturities.¹² Meanwhile, the Visa systemwide average cardholder payment rate (i.e., cardholder payments as a percentage of outstanding balances) ranged from 13 to 17 percent per month during the years 1983–1987, implying an average maturity for credit card receivables of 6–8 months.¹³ To be conservative, I will define the cost of funds to equal the one-year Treasury bill yield¹⁴ plus 0.75 percent, averaged over each quarter. This series is also plotted in Figure 1.

The proposition that interest rates are sticky can be formally supported by regressing credit card interest rates on the cost of

¹²See, for example, "Credit Card Bonds are Hot, but Maybe Stingy on Yield," *Wall Street Journal*, April 16, 1990, p. C1; *Credit Card News*, Volume 1, Number 3 (June 15, 1988), p. 2, and Volume 1, Number 14 (November 15, 1988), p. 7; *Credit Card Management*, May/June 1988, p. 34.

¹³The source of the systemwide cardholder payment rate is Standard & Poor's *Asset-Backed Securitization CreditReview*, March 16, 1987, p. 19. Individual banks' prospectuses have reported cardholder payment rates of 9–23 percent per month, never implying an average maturity of more than one year (see list of prospectuses in Appendix B). This impression was substantiated by a trade-publication report quoting the chairman of FCC National Bank (First Chicago's Delaware credit card subsidiary, listed fourth in Table 1) as saying that his bank finances its credit card portfolio with a variety of financial instruments with combined maturities equivalent to a 145-day duration (*Credit Card News*, March 15, 1989, p. 2).

¹⁴*Federal Reserve Bulletin*, April 1990, table 1.35, line 21 (and previous issues).

¹⁰Indeed, the highest value reported in the *Federal Reserve Bulletin* series in the period 1982–1989 is 18.85 percent (first quarter, 1985) and the lowest value reported is 17.77 percent (fourth quarter, 1988).

¹¹Federal Reserve Board's G.19 statistical release, April 5, 1990; *Federal Reserve Bulletin*, April 1990, table 1.56, line 4 (and previous issues).

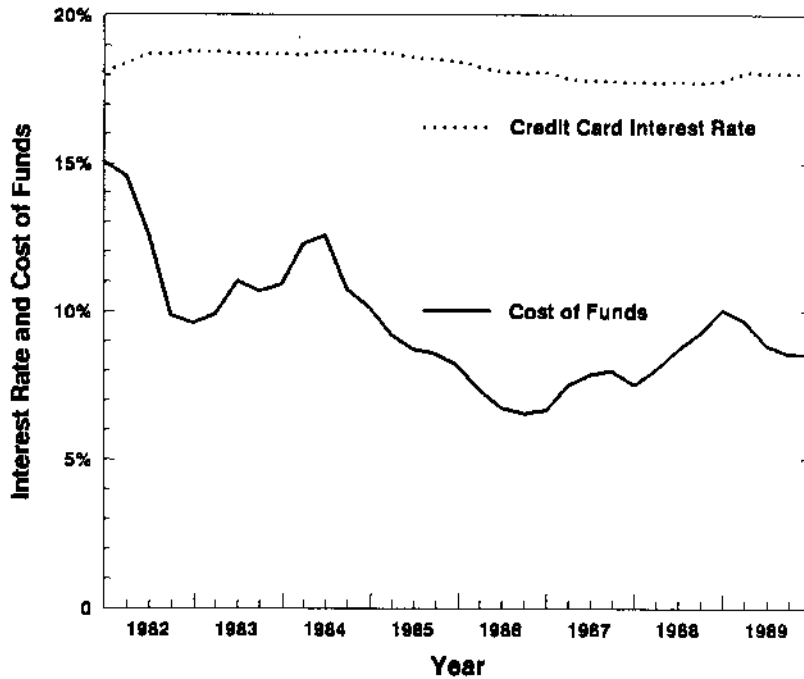


FIGURE 1. STICKY CREDIT CARD INTEREST RATES, 1982-1989

Notes: Credit card interest rate is the quarterly Federal Reserve System series; cost of funds is the quarterly one-year Treasury bill yield plus 0.75 percent.

funds. First, using the Federal Reserve series, an aggregate credit card interest rate is regressed on its own lagged value, the lagged cost of funds, and a constant. Second, a more thorough regression can be run using the author's BCCS series for the 17 individual banks: each bank's credit card interest

rate is regressed on its own lagged value, the lagged cost of funds, and a dummy variable for that bank. The results of these linear regressions are reported in Table 3. Note that, in the second regression, every coefficient has a *t* statistic of at least 6, while inclusion of additional variables with

TABLE 2—SIZE OF BANK CREDIT CARD ISSUERS FOR WHICH DATA ARE REPORTED

1987 ranking by number of active accounts (1 = largest)	Number of banks with BCCS reports enabling computation of profits	Number of banks with call reports enabling computation of profits	Number of banks with prospectuses enabling estimation of profits	Number of banks with BCCS reports of interest rate series
1-10	1	3	4	2
11-20	2	3	0	5
21-30	2	1	1	3
31-40	1	1	2	1
41-50	1	1	1	4
51+	0	0	0	2
Total:	7	9	8	17

Sources: Author's bank credit card survey (BCCS), consolidated reports of condition and income (call reports), and prospectuses and registration statements. Ranks according to *The Nilson Report*, Number 406 (June 1987), pp. 6-7.

TABLE 3—ORDINARY LEAST-SQUARES REGRESSION OF CREDIT CARD INTEREST RATE ON COST OF FUNDS AND LAGGED CREDIT CARD INTEREST RATE (QUARTERLY, 1982–1987)

Variable	Federal Reserve Board survey data	Bank credit card survey data
COST OF FUNDS ₋₁	0.0422 (0.00584)	0.0540 (0.00896)
CREDIT CARD INTEREST RATE ₋₁	0.895 (0.0444)	0.685 (0.0326)
Constant	1.51 (0.807)	
Bank-1 dummy		5.75 (0.659)
Bank-2 dummy		5.11 (0.594)
Bank-3 dummy		6.38 (0.719)
Bank-4 dummy		5.79 (0.657)
Bank-5 dummy		5.70 (0.651)
Bank-6 dummy		4.18 (0.500)
Bank-7 dummy		5.69 (0.645)
Bank-8 dummy		5.12 (0.595)
Bank-9 dummy		5.61 (0.644)
Bank-10 dummy		5.44 (0.634)
Bank-11 dummy		5.00 (0.589)
Bank-12 dummy		5.12 (0.595)
Bank-13 dummy		4.99 (0.586)
Bank-14 dummy		4.88 (0.577)
Bank-15 dummy		5.50 (0.636)
Bank-16 dummy		5.22 (0.593)
Bank-17 dummy		6.17 (0.707)
Number of observations:	24	408
R ² :	0.96	0.937
Durbin <i>h</i> :	-0.69	0.10

Notes: CREDIT CARD INTEREST RATE is the dependent variable in each regression. COST OF FUNDS is defined as the yield on one-year Treasury bills plus 0.75 percent. Observe that there is no cross-firm variation in this variable, so that year dummy variables cannot be included in the second regression equation. Banks included in the author's bank credit card survey were assured anonymity. Numbers in parentheses are standard errors.

other lags tended to cause some coefficients to become insignificant. To aid in comparing the results of the two regressions, the Fed series is used only for the period 1982–1987; using 1982–1989 data yields the same conclusions.¹⁵

The coefficient on the cost of funds, while statistically significant in each of the two regressions, is economically insignificant. Whereas a competitive-spot-market model would predict a coefficient near 1, the regressions using aggregated and disaggregated data yielded coefficients of only 0.042 and 0.054, respectively. It takes many years for the price to adjust to changes in marginal cost when the rate of adjustment is only on the order of 5 percent per quarter.

B. Nonprice Competition

The credit card industry has defended its high interest rates in the mid-to-late 1980's, in part, by asserting that the increased spread between the credit card interest rate and the cost of funds had been caused by an increase in the industry's rate of bad loans. The loan-loss data from the author's BCCS indicate that, in the period 1982–1987, the charge-off rate actually did increase roughly coincident with the increase in the interest rate spread (see Table 4). However, higher loan losses are an explanation for the higher interest rate spreads only if one believes that the latter are solely determined by costs. If credit card interest rates are determined otherwise, then *the causation may run in the reverse direction*: an increased interest rate spread may cause an increase in charge-offs.

Suppose, for example, that a bank can select both its interest rate and the default risk of its marginal customer. By choosing a higher marginal default rate, the bank increases its total number of loans but also its charge-off rate (the average default rate). Suppose that the bank first selects its interest rate and then its marginal default rate. Profit maximization requires the bank to set

¹⁵With the 1982–1989 *Federal Reserve Bulletin* series, one obtains a coefficient of 0.0439 on COST OF FUNDS₋₁, a coefficient of 0.864 on CREDIT CARD INTEREST RATE₋₁, and a constant of 2.06.

TABLE 4—LOAN LOSSES ON CREDIT CARDS OF
TEN SURVEY BANKS DURING 1976–1987
(FEWER THAN NINE DURING 1976–1978 AND 1986–1987)
AND THE SPREAD BETWEEN CREDIT CARD
INTEREST RATES AND THE COST OF FUNDS

Year	Average charge-off rate (percentage)	Interest rate spread (percentage)
1976	1.15	10.57
1977	0.99	10.36
1978	1.27	8.11
1979	1.44	5.78
1980	2.04	5.08
1981	1.48	2.94
1982	1.67	6.42
1983	1.32	8.79
1984	1.36	7.69
1985	1.94	9.82
1986	3.01	11.55
1987	2.60	10.43

Source: Author's bank credit card survey (Appendix A, Table A.1, questions 7 and 1).

its marginal default rate equal to the difference between the interest rate it charges and the marginal cost (net of defaults) of lending funds. (The net marginal cost should equal the cost of funds plus a constant that is fairly stable in the short run.) Thus, the prediction is that an optimizing bank should set its marginal default rate equal to the interest rate spread plus a constant.

Suppose now that there is an independent reason why credit card interest rates fail to fall when general market interest rates decline (for example, see Section VI, below). The logic of the previous paragraph dictates that loan losses will subsequently increase. If firms do not compete and drive price down toward marginal cost, they are likely instead to compete and drive marginal cost up toward price,¹⁶ in the form of issuing cards to less credit-worthy customers.

¹⁶A related argument was made in the context of airline regulation. George W. Douglas and James C. Miller (1974) argued that the Civil Aeronautics Board's price regulations, at a time when the introduction of jet engines reduced the fundamental cost of air transportation, led airlines to compete and drive their costs up to price by placing fewer passengers on a given airplane. The arguments differ in two important ways. First, in the airline industry, price rigidity may have been caused by price regulation, whereas with credit

III. The *Ex Post* Profitability of the Credit Card Market

As seen in Section I, the credit card market of the 1980's possessed most of the usual prerequisites for invoking the model of perfect competition. A perfectly competitive model would at least predict zero long-run economic profits for "marginal" firms. Moreover, since free entry into the industry is possible and no input appears to be in scarce supply,¹⁷ there is no credible source of rents to distinguish "inframarginal" firms from "marginal" firms. Thus, the competitive model would predict that all credit card issuers earn zero long-run economic profits. Many models of imperfect competition which preserve the free-entry assumption would also yield the zero-profit prediction.

By way of contrast, the interest rate stickiness documented in the previous section suggests that credit cards must become extraordinarily profitable whenever the cost of funds drops. Indeed, in this section, I will present a rather paradoxical set of data which indicates that returns from the credit card business were several times greater than the ordinary rate of return in banking during the years 1983–1988.

At the same time, this profitability data will help to assure that the above evidence of interest rate stickiness has been correctly interpreted. One might have thought to argue that price rigidity is consistent with

cards, there is price stickiness despite a deregulated environment. Second, under regulation, the airlines apparently competed away their profits.

¹⁷Free entry is a reasonable depiction of a credit card market in which 4,087 banks (and other deposit institutions) already issued their own Visa cards and a similar (largely overlapping) number issued their own MasterCard in September 1987. All of these institutions could legally offer accounts to customers anywhere in the United States. Nonmember institutions could join the Visa system by paying a fairly trivial entry fee: six dollars per million dollars in assets, plus one thousand dollars, according to a Visa official. (Only the assets of the subsidiary that issues the cards, and not the assets of the holding company, are figured into this formula.) Furthermore, it would seem strained to argue either that adjustment to the "long run" requires many years or that some input is in scarce supply, given the deluge of credit card solicitations made by banks in recent years.

competitive spot markets, if unobservable increases in quality exactly offset reductions in factor costs. The profitability data enable one to dismiss this possibility: profits, in fact, dramatically rose at the time that the cost of funds dropped.

It is possible to object to the following analysis on several grounds. First, the data reported, by their very nature, represent *ex post* profits. Perhaps (especially since the sample period is during a cyclical boom) the observed profits are merely a very favorable realization of a random variable whose *ex ante* returns were quite ordinary. Second, it might be thought that, while the credit card market was extremely profitable in the years 1983–1988, the market has now equilibrated and henceforth normal returns will be observed. Third, the profitability figures might be derived from accounting data that either are being misinterpreted or are systematically misstating true economic profits.

I consider each of these concerns elsewhere in the paper. In Section IV, I briefly discuss an additional source of evidence (the Federal Reserve System's functional cost analysis), which, while significantly less reliable than the other data (in this author's opinion), gives profits over a longer period that includes the previous cyclical downturn. In Section V, I introduce another independent set of data which examines resale prices of credit card portfolios between banks and finds that they trade at large premia. The latter data indicate that *ex ante* returns from credit cards are quite large and, since they are based on market valuations, should help allay any fears that the accounting data are being misinterpreted. Finally, it should be recalled from Table 4 that the interest rate spread was quite healthy except for a brief period around 1981 and that this brief spell of unprofitability can be attributed to banks not having yet established credit card subsidiaries exploiting the Supreme Court's *Marquette* decision. This episode does not seem likely to be repeated.

The *ex post* profit data reported and discussed in this section originate from three independent sources and were assembled by the author.

Bank credit card survey: The author's follow-up survey yielded profit calculations performed directly by executives of seven of the 50 largest bank issuers of credit cards.

Call reports: Profitability data for another nine of these issuers were extracted from call reports filed by the banks with the FDIC.

Prospectuses: Partial data on profitability for an additional eight large banks were obtained from filings with the SEC in connection with the sale of credit-card-backed securities.

Respondents to the author's survey were promised anonymity (but details of the construction are provided in Appendix A). The call reports and prospectuses are part of the public record. Table 2 reports the size distribution of banks included in each of the survey, call report, and prospectus samples.

A. An Illustrative Profit Calculation

As will be detailed in the next two subsections, earnings in the banking industry are usefully expressed as a percentage of assets: returns on assets are linked with returns on equity by the banking system's capital requirements. Before reporting summary profit figures for 15 and estimates for eight of the 50 largest issuers, I will examine in detail the components of revenues and costs for one individual credit card issuer. I consider here Maryland Bank, N.A. (MBNA), the Delaware-based credit card arm of MNC Financial, which is ranked seventh in Table 1.¹⁸ This institution was selected because more public information exists on its credit card operations than on any other bank's: MBNA, which is required to file its own call report, has credit card loans exceeding 92 percent of its assets, and it has also made several credit-card-backed securities offerings.

¹⁸MNC Financial is the 39th largest U.S. bank holding company and the corporate parent of Maryland National Bank, the largest commercial bank in Maryland. MBNA was founded in Newark, Delaware, in 1982, apparently to avoid Maryland's usury law. See also the text near footnote 9.

TABLE 5—COMPONENTS OF PROFITS FOR MARYLAND BANK, N.A.

Components	1985	1986	1987
Finance charges	16.66%	14.92%	13.21%
Annual fees	1.40%	1.58%	1.29%
Other customer charges	1.10%	1.42%	1.17%
Interchange fees	3.06%	3.00%	2.92%
Total revenue:	22.22%	20.92%	18.60%
Interest expenses	9.57%	7.80%	7.13%
Noninterest expenses	4.47%	4.71%	4.87%
Net charge-offs	1.09%	1.77%	1.80%
Total cost:	15.13%	14.28%	13.80%
Return on assets (pretax profits expressed as a percentage of outstanding balances)	7.09%	6.63%	4.80%

Sources: Consolidated reports of condition and income (call reports), prospectuses, and registration statements for Maryland Bank, N.A.

MBNA's credit card operations (and their profitability) are fairly typical of major issuers, with the exception that the bank has stressed the concept of "affinity credit cards," whereby cards are marketed to members of professional organizations, fraternal orders, and cause-related groups (with the organizations' endorsements). As a consequence, its interest rates are somewhat lower and its customers are somewhat more credit-worthy than average. Indeed, it may interest readers that, during the period when this article was undergoing the journal's review process, MBNA's marketing agent proposed to establish an official American Economic Association Visa card. This card would have carried a \$20 annual fee (\$40 for a gold card) and an 18.9-percent annual fee; the AEA would have received \$1 for each account opened, \$3 for each account renewed, and \$0.25 per retail transaction. MBNA's agent estimated that 1,000 cards would be issued, generating \$13 in revenue per card per year for the AEA. However, the AEA's executive committee, concerned that the AEA "would be viewed as endorsing a specific credit card by entering into such a contract," voted against establishing the affinity card program.¹⁹

¹⁹Draft minutes of the March 23, 1990, meeting of the AEA Executive Committee; Report of the Secre-

tary to the Executive Committee. I thank Orley Ashenfelter and C. Elton Hinshaw for providing this information.

An item-by-item profit calculation for MBNA is displayed in Table 5. As is typical for credit card issuers, the single largest component of revenue is the finance charge (which, for MBNA, derives from annual percentage rates of 14.5–18.9 percent, depending on the account). Despite the fact that the bank provides a 25-day grace period during which no finance charge is assessed if the account balance is paid in full, more than 80 percent of the bank's credit card outstanding balances do accrue interest.²⁰ The drop in finance-charge revenues displayed in Table 5 is largely attributable to the bank's decision to reduce the interest rates on some of its accounts during 1985–1987.

MBNA also derives direct customer revenues from the annual fee and other customer charges (e.g., \$15 late payment, over-limit, and returned-check charges). Indirect revenues are derived from the interchange fee, the portion of the merchant discount that is paid to the customer's bank. It is worth reemphasizing that the price sched-

²⁰A good rule of thumb mentioned in credit card trade publications is that 90 percent of an issuer's overall outstanding balances accrue interest. See the discussion in Section VI-C.

ules that determine direct customer revenues are set entirely at the bank level; only the interchange fee is set systemwide by the MasterCard and Visa organizations.

Costs can be divided among interest expenses, operating expenses, and loan losses. Interest expense is determined by market interest rates and thus is relatively uniform across banks, as a percentage of outstanding balances. Noninterest expenses, which include employee salaries, occupancy, equipment, and data processing, are also available from the banks' direct reports and call reports. These noninterest expenses typically equal 4–6 percent of outstanding balances for large issuers and are mostly (but not entirely) a proper component of total cost. The exception is that the expense of generating a new account (mostly advertising and marketing costs) should properly be considered an investment and thus should be amortized over a longer period. Nevertheless, I have no systematic way to separate out these new-account expenses from banks' profits; consequently, I use the entire "noninterest expense" in my computations. Observe that this will tend to overstate costs and understate the returns on assets and equity. Loan losses are best measured by the bank's "net credit losses" or "net charge-offs," which represent the outstanding balances that the bank newly treats as uncollectable.²¹ (Typically, a bank charges

off a balance six months after the cardholder ceases payment on an account.) MBNA's charge-off rate is 1–2 percent lower than that of many large credit card issuers.

As seen in Table 5, MBNA's *pretax* return on assets (ROA) in credit cards equaled 7.09 percent in 1985, 6.63 percent in 1986, and 4.80 percent in 1987. The 1987 figure, for example, interacts with a 42-percent tax rate to yield an *after-tax* return on assets of 2.78 percent. For evidence of the accuracy of this computation, one need look no further than MNC Financial's 1987 annual report:

Our credit card operations had another outstanding year. Maryland Bank, N.A. (MBNA) is by no means typical of the industry, which often is the target for criticism and concern. Over the past five years, MBNA has been one of our fastest growing businesses. With \$2 billion in outstandings, it continues to be a low cost, high-volume producer with chargeoffs of about 2%—about half of the industry average. We think most investors will find it hard not to be impressed with a business that earns more than 2.5% (after-tax, 1987) on assets.²²

By way of comparison, the bank holding company as a whole earned a 1.36-percent ROA before taxes and a 1.00-percent ROA after taxes in 1987.²³ The holding company, minus its credit card business, earned less than a 0.80-percent ROA after taxes in 1987.

B. *The Ordinary Rate of Return in the Banking Industry*

The pretax return on assets for all U.S. commercial banks during the sample years

²¹The follow-up bank credit card survey specifically asked for the bank's "net credit losses" (see Appendix A). The item used from call reports is the "net charge-offs." An alternative measure of losses that could have been used from the call reports is the bank's "provision for loan losses," which is often higher and which may include an allowance for loans that the bank (statistically) expects to charge off in the future. There are two reasons not to use the figure for provision. First, credit card accounts incur most of their charge-offs in the initial two years of the life of the account. Hence, the difference between "provision" and "net charge-offs" (and, in fact, some of "net charge-offs" itself) typically represents an expense of generating new accounts and, as in the case of marketing expenses, should properly be treated as an investment which is amortized over a longer period. Using "net charge-offs" mitigates this effect and gives a better measure of cost. Second, "provision" is a quantity that is easily manipulated by the bank: one can use a large loss provision to defer income taxes or a small

loss provision to report high current earnings. "Net charge-offs" is less manipulable. The Federal Reserve System's functional cost analysis also uses "net credit losses" in earnings computations.

²²MNC Financial, 1987 Annual Report (dated March 1988), p. 4.

²³MNC Financial, 1987 Annual Report (dated March 1988), p. 1.

equaled 0.85 percent in 1983, 0.83 percent in 1984, 0.90 percent in 1985, 0.80 percent in 1986, 0.28 percent in 1987, and 1.14 percent in 1988.²⁴ Taking into account that some areas of banking were effectively taxed at a lower rate than the credit card businesses (which were taxed at close to the statutory tax rates of 34–46 percent during this period), it is probably correct to think of 1.20 percent as the ordinary (pretax) return on assets in the banking industry at large.

The relationship between the ordinary rate of return on assets and the ordinary rate of return on equity in the banking industry depends on the capital requirements of banks. For the period 1983–1988, the capital requirement equaled about 6 percent of assets. First, in 1984–1985, U.S. banking regulators promulgated capital standards for all commercial bank activities equaling 6 percent of assets for total capital (and 5.5 percent of assets for primary capital).²⁵ Second, *actual* total equity capital for all insured U.S. commercial banks equaled 5.96 percent of assets in 1983, 6.01 percent in 1984, 6.17 percent in 1985, 6.21 percent in 1986, 6.06 percent in 1987, and 6.10 percent in 1988 (with substantially smaller percentages for the larger banks).²⁶ Dividing an ordinary (pretax) return on assets of 1.20 percent by a capital requirement of 6 per-

cent would imply an ordinary (pretax) return on equity of 20 percent per year.

C. Computations of Ex Post Profitability for 15 Large Issuers

Several different summary measures of (*ex post*) profitability are presented in Tables 6 and 7. The first measure of return on assets, ROA (reported), is precisely the calculation we illustrated above for MBNA. One potential flaw in this calculation is that it relies on the bank's own reported cost of funds. The problem here is that some banks may not have been allocating the true opportunity cost of their low-cost core deposits (e.g., passbook accounts and non-interest-bearing checking accounts) to their credit card businesses; in that event, some of the profits allocated to the credit card operations would in fact be attributable to the branch banking business.

This difficulty is easily remedied by replacing each bank's reported interest expense with the standardized index of the cost of funds defined and defended in Section II. My second measure of return on assets, ROA (adjusted), is computed by using an interest expense of COST OF FUNDS applied to the nonequity portion of assets; thus, interest expense as a percentage of assets equals 94 percent of COST OF FUNDS.²⁷ If anything, my adjustment tends to reduce systematically the reported returns; observe in Table 7 that ROA (reported) exceeds ROA (adjusted) in four out of six years.

The return on equity is computed in two different ways in Table 7. The first and most obvious measure, ROE (actual cap), merely divides (pretax) profits by the actual capital residing in the credit card bank at the previous year's end. (Since each bank in Table 7 is a legally distinct entity, its capital is a

²⁴*Federal Reserve Bulletin*, July 1989, p. 462 (table 1), and July 1988, p. 404 (table 1). The substantially lower earnings for 1987 reflect the decision of large banks to set aside large sums to cover troubled loans to developing countries. Excluding international operations, the banks' rates of earnings in 1987 appear to have very slightly exceeded those of 1986.

²⁵At this writing, bank capital standards are scheduled to rise, by international agreement, to 8 percent of total risk assets in 1992. At the same time, the new and rapidly expanding practice of securitizing credit card assets has the effect of removing the credit card accounts from banks' balance sheets, thus reducing the effective capital requirement.

²⁶*Federal Reserve Bulletin*, July 1989, pp. 474–83 (table A.1), and July 1988, p. 405 (table 2). For money-center banks, equity capital equaled 4.30, 4.56, 4.69, 4.78, 4.33, and 4.42 percent of assets in the respective years. For other banks with \$5 billion or more in assets, equity capital equaled 4.76, 5.08, 5.42, 5.50, 5.29, and 5.29 percent of assets in the respective years.

²⁷ROA (adjusted), as computed from the call report data, also contains a second, minor adjustment: to the extent that a bank has purchased credit card portfolios from other banks at a premium (see Section V) and subtracted a portion of the premium from its profits, ROA (adjusted) adds it back in.

TABLE 6—RETURN ON ASSETS AND RETURN ON EQUITY (PRETAX) BASED ON DIRECT REPORTS OF CREDIT CARD ISSUERS

Bank	Rank	Measure	Percentage returns				
			1984	1985	1986	1987	1988
A	1-10	ROA (reported)	5.98	4.36	5.59	6.91	N.A.
		ROA (adjusted)	6.09	6.06	6.64	6.53	N.A.
		ROE (adjusted)	101.5	101.1	110.7	108.8	N.A.
B	11-20	ROA (reported)	8.09	7.78	3.74	4.21	N.A.
		ROA (adjusted)	8.00	7.22	7.15	5.04	N.A.
		ROE (adjusted)	133.3	120.3	119.1	84.0	N.A.
C	11-20	ROA (reported)	5.01	5.70	3.82	4.55	4.30
		ROA (adjusted)	5.00	6.21	6.49	5.33	4.23
		ROE (adjusted)	83.3	103.5	108.2	88.8	70.5
D	21-30	ROA (reported)	7.20	7.86	7.81	7.93	8.05
		ROA (adjusted)	3.28	6.39	7.33	6.39	5.84
		ROE (adjusted)	54.7	106.5	122.2	106.5	97.4
E	21-30	ROA (reported)	8.48	8.92	8.74	9.96	9.69
		ROA (adjusted)	7.48	9.20	10.02	8.09	7.31
		ROE (adjusted)	124.6	153.3	166.9	134.8	121.8
F	31-40	ROA (reported)	7.27	7.54	6.41	8.39	5.87
		ROA (adjusted)	5.75	6.62	5.91	6.98	4.95
		ROE (adjusted)	95.9	110.3	98.5	116.4	82.5
G	41-50	ROA (reported)	2.24	6.37	6.26	6.15	2.75
		ROA (adjusted)	1.67	6.54	6.41	5.81	2.74
		ROE (adjusted)	27.8	109.0	106.8	96.9	45.6
Direct report averages:		ROA (reported)	6.32	6.93	6.05	6.87	6.13
		ROA (adjusted)	5.32	6.89	7.14	6.31	5.01
		ROE (adjusted)	88.7	114.9	118.9	105.2	83.6

Source: Author's bank credit card survey (Appendix A, follow-up survey, Table A2, question 4).

well-defined quantity.²⁸) However, ROE (actual cap) is not an entirely appealing measure of return on equity. Observe that, for example, the quantity of capital that resides in Citibank South Dakota (as opposed to the principal New York bank or the parent holding company) is relatively discretionary and arbitrary. Indeed, one finds that the credit card subsidiary of a bank is often relatively undercapitalized in

some years and relatively overcapitalized in other years. While ROE (actual cap) is reported in Table 7, this datum should probably be interpreted skeptically.

A preferred measure to consult is ROE (adjusted), which is computed simply by dividing ROA (adjusted) by 6 percent. The logic behind this measure is that, as argued above, the capital requirement during the sample period has in practice equaled about 6 percent of assets, uniformly across banking activities. Thus, it seems more sensible to impute the 6-percent capital standard to all credit card assets than to rely on a capriciously chosen bank number. ROE (adjusted), which is the last measure provided in Tables 6 and 7, is probably the most informative to examine and discuss.

²⁸Data on credit card capitalization for the firms reported in Table 6 do not exist. In fact, six of the seven firms operate their credit card businesses within the same bank as their other lines of business, so there does not exist capital separately allocated to the credit card business; "actual capital," then, is not a well-defined quantity.

TABLE 7—RETURN ON ASSETS AND RETURN ON EQUITY (PRETAX) BASED ON CALL REPORTS FILED WITH THE FDIC

Bank	Rank	Measure	Percentage returns					
			1983	1984	1985	1986	1987	1988
Citibank (South Dakota), N.A.	1	ROA (reported)	7.44	7.05	6.02	6.24	5.31	4.26
		ROE (actual cap)	81.4	80.3	75.5	75.1	77.7	48.6
		ROA (adjusted)	5.40	5.24	5.56	6.62	5.61	3.92
		ROE (adjusted)	90.1	87.4	92.7	110.3	93.5	65.4
Chase Manhattan Bank (U.S.A.)	2	ROA (reported)	4.73	5.63	5.29	6.03	4.50	3.84
		ROE (actual cap)	56.4	71.2	109.1	146.5	75.2	53.9
		ROA (adjusted)	3.32	3.62	4.28	5.46	3.24	2.68
		ROE (adjusted)	55.3	60.4	71.3	91.1	54.0	44.7
Maryland Bank, N.A.	7	ROA (reported)	8.14	7.35	7.09	6.63	4.80	N.A.
		ROE (actual cap)	74.8	142.0	121.6	128.8	86.8	N.A.
		ROA (adjusted)	7.72	6.76	8.04	7.67	4.86	N.A.
		ROE (adjusted)	128.6	112.7	134.0	127.8	81.0	N.A.
Beneficial National Bank (U.S.A.)	15 ^a	ROA (reported)	4.23	5.10	3.20	1.61	N.A.	N.A.
		ROE (actual cap)	34.3	77.7	39.6	22.0	N.A.	N.A.
		ROA (adjusted)	1.31	4.01	4.27	3.70	N.A.	N.A.
		ROE (adjusted)	21.9	66.9	71.1	61.7	N.A.	N.A.
Lomas Bank U.S.A.	18	ROA (reported)	N.A.	N.A.	N.A.	3.59	4.74	4.35
		ROE (actual cap)	N.A.	N.A.	N.A.	60.6	80.7	39.9
		ROA (adjusted)	N.A.	N.A.	N.A.	4.47	5.20	4.71
		ROE (adjusted)	N.A.	N.A.	N.A.	74.5	86.6	78.5
CoreStates Bank of Delaware	20	ROA (reported)	2.86	4.21	5.09	6.46	5.03	4.10
		ROE (actual cap)	63.9	61.9	100.1	131.8	95.1	70.1
		ROA (adjusted)	2.71	4.65	6.14	7.55	5.91	4.57
		ROE (adjusted)	45.1	77.6	102.3	125.9	98.6	76.2
First City Bank—Sioux Falls	21	ROA (reported)	N.A.	N.A.	6.88	4.15	5.34	6.85
		ROE (actual cap)	N.A.	N.A.	74.0	41.6	43.4	48.5
		ROA (adjusted)	N.A.	N.A.	5.82	4.56	5.59	6.58
		ROE (adjusted)	N.A.	N.A.	97.1	75.9	93.2	109.6
First Omni Bank, N.A.	33	ROA (reported)	8.68	5.98	8.07	6.77	5.69	5.01
		ROE (actual cap)	29.8	32.2	58.0	99.8	93.2	72.4
		ROA (adjusted)	6.19	3.36	6.51	6.85	5.51	4.38
		ROE (adjusted)	103.2	56.0	108.5	114.2	91.8	73.0
Avco National Bank	44 ^a	ROA (reported)	N.A.	4.82	3.72	1.19	N.A.	N.A.
		ROE (actual cap)	N.A.	344.6	103.6	27.9	N.A.	N.A.
		ROA (adjusted)	N.A.	4.23	4.66	5.06	N.A.	N.A.
		ROE (adjusted)	N.A.	70.5	77.7	84.3	N.A.	N.A.
Call-report averages:		ROA (reported)	6.01	5.73	5.67	4.74	5.06	4.74
		ROE (actual cap)	56.8	115.7	85.2	81.6	78.9	55.6
		ROA (adjusted)	4.44	4.55	5.66	5.77	5.13	4.47
		ROE (adjusted)	74.0	75.9	94.3	96.2	85.5	74.6

Source: Consolidated reports of condition and income (call reports).

^aBank's credit card portfolio was acquired in 1986-1987; see Table 9.

By the standards of the previous subsection, the rates of return reported in Tables 6 and 7 are extraordinary. All seven banks that provided direct reports of profit data for 1985 and six out of seven that provided direct reports for 1986 attained (pretax) returns on equity exceeding 100 percent per year! The sample average for these banks also exceeded 100 percent in 1987 and exceeded 80 percent in 1984 and 1988. The profit figures drawn from call reports are not quite as large but still are generous. Sample averages for return on equity exceeded 90 percent in 1985 and 1986 and exceeded 70 percent in all remaining years. It is unclear why the direct reports provided returns on equity systematically 10–20 percentage points higher than the call reports. Part of the reason is undoubtedly that firms that established separate credit card banks sustained higher rates of growth in assets, concealing a greater investment in new accounts in the cost data.²⁹

D. *Estimates of Ex Post Profitability for an Additional Eight Issuers*

The computations of the preceding subsection were performed for 15 credit card issuers for whom all components of profits were known. If the data set is expanded to include banks for whom most, but not all, components are known, it is possible to make statements about an even larger proportion of the 50 largest firms.

Eight additional banks, including Bank of America (ranked third largest), First Chicago (ranked fourth), and Manufacturers Hanover (ranked fifth), have disclosed significant information in connection with the issuance of credit-card-backed securi-

ties.³⁰ All items in Table 5 except noninterest expenses (i.e., non-credit-related operating expenses) and interchange fees are thus known for these issuers; moreover, these two missing items (unlike customer revenue and net charge-offs) do not vary widely among comparable banks. I approximate their rates of profit by assuming that the additional eight issuers' operating expenses and interchange fees are equal (as a percentage of assets) to those for which I have direct knowledge. Making the same normalizations for these banks as before, I obtain conservative³¹ average pretax returns on equity (adjusted) of 65 percent in 1984 (three banks), 87 percent in 1985 (five banks), 92 percent in 1986 (all eight banks), 76 percent in 1987 (seven banks), and 62 percent in 1988 (six banks). It is worth noting that all of these numbers are quite close to the adjusted ROE's of Table 7, and all exceed 60 percent per year.

The sample from which a conclusion about profitability can be based is rather large. Exact computations or good estimates are available for as many as 23 of the 50 largest issuers of bank credit cards, with approximately 50 percent of industry market share (by outstanding balances). Included in the sample are all of the five largest firms.

The conclusion drawn from Table 6, Table 7, and the numbers stated two paragraphs above is quite straightforward. As argued above, the ordinary (pretax) return on equity in banking is on the order of 20 percent per year. Credit card businesses earned annual returns of 60–100 percent or more during the years 1983–1988. Plastic earned

²⁹An anonymous referee correctly observed that the return on assets derived from direct reports uses credit card balances in place of total assets as denominator. However, the call report data show that this does not appreciably overstate the true return on assets. Premises and fixed assets typically equaled no more than 0.3–2.0 percent of a credit card bank's total assets, while credit card loans generally exceeded 97 percent of total assets.

³⁰See Appendix B for a listing of the relevant registration statements. While information in connection with credit-card-backed securities is also available for Citibank, Maryland National, and Lomas Bank U.S.A., these banks are already represented in Table 7 and so are excluded from the current discussion.

³¹Some prospectuses report gross rather than net charge-offs, reducing the reported level of profits. Furthermore, the figures I used for noninterest expense (generally 5.40 percent of outstanding balances) seem to be on the high side.

strongly positive economic profits: the credit card business earned 3–5 times the ordinary rate of return in the banking industry.

IV. Additional Evidence from the Functional Cost Analysis

The previous discussion has focused on the profitability of the 50 largest issuers of credit cards during the period 1983–1988. It is interesting to consider briefly whether the conclusions change when the sample of banks and the time period examined are extended.

This exercise should help address two potential questions.³² First, suppose it were the case that the smaller players in the market earned only the ordinary rate of return on capital. Then, the reader may be troubled by the possibility that the larger firms may possess some unobservable attributes which are not reproducible (e.g., “business acumen”) that earn positive rents. (However, there would still remain the question of why 50 larger firms is not enough for competition.) On the other hand, if (literally hundreds of firms, including small regional banks, all earn supranormal profits, it becomes much more convincing that none of these firms possesses anything special (except for a base of customers). Second, the reader may be concerned that the article has focused on a period of time that coincides with a cyclical boom in the national economy. Part of this selection of time is unavoidable: as observed in Section I, the credit card market did not become functionally deregulated until about 1982; much of the earlier experience can be dismissed as the result of state usury ceilings. In addition, my reliable sources of data only extend back to this time. Nevertheless, it may be helpful to present some (albeit imperfect) data which provide a better sense of the extent to which profitability is cyclical.

³²These are questions that were raised by two anonymous referees. I am grateful to them for raising these issues.

Both of these points can be discussed by introducing an additional source of data: the Federal Reserve System’s functional cost analysis (FCA). In this author’s opinion, the FCA data are considerably less reliable than the other profitability data utilized in this article, and so they should be interpreted cautiously. There has been little effort to track the same banks from year to year; in particular, the sample size has dropped approximately 60 percent from 1976 to 1988. One also obtains the sense that the accounting data provided by the smaller banks in the Fed’s sample do not do as good a job as the other sources of properly allocating costs between credit cards and the banks’ other lines of business. Nevertheless, it is the only available source of profitability figures for the smaller banks and for earlier years.

The average charge-off rate and the average return on assets from the functional cost analysis for the years 1976–1988 are displayed in Table 8. The typical credit card issuer represented in the FCA sample is ranked approximately between number 300 and 400, nationally, by outstanding balances. The first observation to make is that the charge-off experience of the smaller banks is broadly consistent with what has already been seen in Table 4. As before, loan losses remained tightly in the 1–3 percent per year range.

Since bank credit card operating expenses are believed to exhibit increasing returns to scale over a range (Christine Pavel and Paula Binkley, 1987), one would expect that the return on assets would be somewhat lower than that reported above for the largest issuers. Indeed, during the period 1983–1988 (for which numbers are available for both the smaller issuers and the larger issuers), the smaller banks earned only about 60 percent of the returns of the larger banks and only about 50 percent of the “excess” returns of the larger banks. Nevertheless, the returns do remain substantially above the ordinary rate of return in banking; over the longer period that includes the cyclical downturn, the smaller issuers still appear to have earned roughly twice the ordinary rate of return in banking.

TABLE 8—RETURN ON ASSETS FOR SMALLER CREDIT CARD ISSUERS, 1976–1987, FROM THE FEDERAL RESERVE SYSTEM'S FUNCTIONAL COST ANALYSIS (FCA)

Year	Number of banks in sample	Average charge-off rate (percentage)	Average return on assets (percentage)
1976	236	1.48	2.72
1977	224	1.41	3.07
1978	181	1.66	2.44
1979	184	1.92	1.60
1980	139	2.54	-1.52
1981	128	2.25	0.97
1982	138	1.93	2.40
1983	102	1.58	2.37
1984	98	1.24	3.45
1985	85	1.81	3.97
1986	76	2.33	3.28
1987	93	1.65	3.94
1988	89	2.51	2.72

Notes: Data are taken from the Board of Governors of the Federal Reserve System's *Functional Cost Analysis, National Average Report, Commercial Banks, Credit Card Function (Card Banks), 1976–1988*. The third column represents "net credit losses + net fraud losses"; the fourth column represents "net earnings after cost of money." Both columns are expressed as percentages of average outstanding balances on credit cards and are weighted averages based on individual banks' average outstanding balances. Earnings are before taxes. In Section III-B, it is argued that the ordinary return on assets is approximately 1.20 percent.

These numbers may significantly understate the profitability of credit cards over the entire business cycle. First, banks have the ability (with some lags) to increase their lendings at cyclical peaks and to cut their lendings at cyclical troughs. (This is not merely conjectural: their ability to act in this way is fairly apparent from data on banks' levels of outstanding balances.) Thus, greater weight should be placed on the returns in boom years. Second, as emphasized above, banks took some time to learn how to exploit the December 1978 *Marquette* decision and so were hindered in their ability to react to climbing costs of funds during 1979–1981. The learning has now been done, and so the 1979–1981 earnings experience is unlikely to be repeated.

V. The *Ex Ante* Profitability of the Credit Card Market

As was emphasized in the fourth paragraph of Section III, there is good reason to be a bit skeptical of *ex post* profitability data. In this section, I will seek (as directly as possible) to examine *ex ante* returns of the credit card market.

Suppose that bank I has issued credit cards to consumers and has $\$X$ in balances outstanding on these accounts. The question one may ask is how much bank II will pay bank I to acquire these accounts, as a function of X . If the credit card accounts were expected, *ex ante*, to pay the ordinary rate of return on capital (or the risky equivalent), then the transaction would presumably occur at about *par* (i.e., bank II would pay bank I the same $\$X$ to assume the accounts). If there existed a substantial probability that consumers would default on the loans and if the contractual interest payments and fees did not adequately compensate for this eventuality, then bank II could presumably acquire these loans at a *discount*.³³ Finally, only if the owner of the credit card accounts could be expected to earn above the ordinary rate of return on capital would the accounts sell at a *premium* above $\$X$; then, the future stream of positive economic profits would be capitalized in the transaction price. If bank II pays bank I $\$120$ million for accounts on which only $\$100$ million is owed, I will refer to this as a 20-percent premium.

The model of perfect competition predicts that resales of credit card accounts will occur at *par*, in the long run.³⁴ During the

³³For a good example of discounted loans, consider the resale among banks of loans to developing countries; in the late 1980's, such transactions frequently occurred at prices well below 50 percent of face value.

³⁴One may argue that there should exist a premium representing the cost of establishing an ongoing business. An important point to observe is that, typically, when a bank acquires another bank's credit card portfolio, it transfers the acquired portfolio over to its own preexisting offices and processing facilities. That is to say, basically the only portion of the "ongoing business" that the acquirer desires is the customer base. In the

TABLE 9—PREMIA IN REALES OF CREDIT CARD ACCOUNTS

Date	Seller	Buyer	Outstanding balances	Premium reported (percentage)	Primary source
April 1984	Continental Bank	Chemical Bank	\$824 million	21	WS April 2, 1984
December 1986	Texas American Bancshares	Republic Bank	\$50 million	14	WS January 2, 1987
December 1986	Beneficial National Bank	First Chicago	\$1,100 million	13	AB January 2, 1987
February 1987	National Bancshares Texas	Lomas & Nettleton	\$41 million	14	WS February 23, 1987
April 1987	Louisiana Bancshares	Lomas & Nettleton	\$157 million	16	WS April 16, 1987
May 1987	Avco National Bank	Household Bank	\$322 million	19	WS April 29, 1987
July 1987	Bank of Mid-America	Lomas & Nettleton	\$120 million	19	WS July 23, 1987
July 1987	Colonial National Bank	Household Bank	\$317 million	11	WS July 23, 1987
September 1988	First Republic Bank Delaware	Citicorp	\$623 million	25	NY September 12, 1988
November 1988	Equibank	CoreStates Bank	\$100 million	25	KP
February 1989	Meritor Financial Group	Chase Manhattan	\$85 million	24	AB February 2, 1989
March 1989	Society for Savings Bancorp	First Chicago	\$230 million	18	NY April 13, 1989
May 1989	Michigan National Bank	Chase Manhattan	\$1,100 million	21	WS July 19, 1989
May 1989	Empire of America	Citicorp	\$650 million	3	AB June 2, 1989
June 1989	Colonial National Bank	Household Bank	\$98 million	25	AB June 23, 1989
July 1989	Leader Federal Savings	Chase Manhattan	\$36 million	20	KP
August 1989	California Federal Bank	Household Bank	\$125 million	18	AB September 18, 1989
September 1989	Chevy Chase Savings	CoreStates Bank	\$200 million	23	AB September 18, 1989
September 1989	Imperial Savings & Loan	Wells Fargo Bank	\$280 million	22	WS January 11, 1990
September 1989	Dreyfus Corp.	Bank of New York	\$790 million	21	AB September 20, 1989
October 1989	First City Bancorporation	Bank of New York	\$552 million	24	AB October 19, 1989
December 1989	Bank South	Society National	\$41 million	24	AB December 27, 1989
December 1989	Bank of Boston	Chase Manhattan	\$625 million	23	AB January 5, 1990
December 1989	Investors Savings Bank	Chase Manhattan	\$24 million	25	AB January 5, 1990
January 1990	Bank of New England	Citicorp	\$652 million	27	NY January 30, 1990
February 1990	Colonial National Bank	Household Bank	\$50 million	20	AB March 7, 1990
April 1990	Fleet/Norstar	Norwest	\$200 million	20	AB April 3, 1990

Sources: WS = *Wall Street Journal*; NY = *The New York Times*; AB = *The American Banker*; KP = Kidder Peabody (Anderson and Deans, 1989).

equilibrating process toward the long run, the theory would tolerate discrepancies from par but firmly predicts that resale prices will monotonically converge toward par. However, a systematic failure of competition in the credit card market (as suggested by the profit figures in the previous sections) would require, to the contrary, that interbank transactions persistently occur at substantial premia. Fortunately, there exist real data against which to test these two divergent predictions.

The premia paid by banks in credit card deals during the years between 1984 and

early 1990 are compiled in Table 9. All 27 such interbank transactions for which I could find a public disclosure of the premium are reported. The average premium in Table 9 equals 20 percent; all transactions occurred at premia between 3 percent and 27 percent. There is no tendency for the premia to vanish monotonically; if anything, the largest premia are associated with the most recent transactions.

The resale data clearly suggest that, at this writing in 1990, and throughout the period of 1984–1988, the *ex ante* expected economic profits (adjusted for risk) on existing credit card accounts were substantially positive. The premium that is theoretically justified for credit card accounts depends on a number of parameters for which I possess no data. However, Table 10 presents the premia that are justified for a

model of perfect competition, customers inexorably gravitate to the low-priced firm; the phenomenon of "captive" or "loyal" customers does not exist. Thus, an existing base of customers, by itself, should draw no premium.

TABLE 10—PREMIA IN RESALE OF CREDIT CARD ACCOUNTS JUSTIFIED BY VARIOUS EXPECTED LIFETIMES OF ACCOUNTS, ANNUAL GROWTH RATES OF OUTSTANDINGS PER ACCOUNT, AND CREDIT CARD PROFITABILITY (AS A MULTIPLE OF ORDINARY RATE OF RETURN)

Expected lifetime (years)	Multiple of ordinary rate of return	Premia (percentage)			
		10-percent growth	20-percent growth	30-percent growth	40-percent growth
2	1	0.00	0.00	0.00	0.00
	2	2.40	2.51	2.62	2.73
	3	4.80	5.02	5.24	5.45
	4	7.20	7.53	7.85	8.18
	5	9.60	10.04	10.47	10.91
4	1	0.00	0.00	0.00	0.00
	2	4.80	5.50	6.27	7.15
	3	9.60	10.99	12.55	14.29
	4	14.40	16.49	18.82	21.44
	5	19.20	21.98	25.10	28.58
6	1	0.00	0.00	0.00	0.00
	2	7.20	9.05	11.38	14.30
	3	14.40	18.10	22.76	28.60
	4	21.60	27.15	34.15	42.90
	5	28.80	36.19	45.53	57.20

Calculations: For N = expected lifetime of credit card accounts, g = annual growth rate of outstandings per account (during lifetime of account), $r = 0.10$ = interest rate used by bank in discounting, ROA_{cc} = return on assets from credit cards, $ROA_{ord} = 0.012$ = ordinary return on assets in banking, and Φ = premium in resale of credit card accounts (as proportion of outstanding balances at time of sale),

$$\Phi = (ROA_{cc} - ROA_{ord}) \sum_{K=0}^{N-1} \left(\frac{1+g}{1+r} \right)^K$$

number of sets of assumptions. The expected "lifetime" of an account represents the number of years that a bank anticipates that the consumer will continue to maintain his credit card account, under the same borrowing patterns and the same rate of profitability. The growth rate represents the rate at which a bank believes that the outstanding balances on the acquired credit card accounts will increase during their lifetime; meanwhile, I assume that the bank discounts using a 10-percent interest rate. The ordinary rate of return in banking is taken, as above, to be a 1.20-percent annual pretax return on assets. The calculations in Table 10 implicitly assume that the seller of credit card accounts receives all of the gains from trade; if (as one may reasonably expect) the buyer also obtains some gains, then the indicated premia require still higher rates of return from credit cards. Thus, these should only be taken as lower bounds on implied profitability.

As Table 10 indicates, it is difficult to justify the recent flurry of premia in the range of 23–27 percent unless returns equaling at least three times the ordinary rate of return in banking are expected to persist. Even with the optimistic³⁵ assumptions that the typical account will be maintained for six years after the acquisition and that the outstanding balances will grow at an overly fast 40 percent per year during that period, profits at three times the ordinary rate of return lead to a premium of only 28.60 percent. The more typical premium of 20 percent, in conjunction with reasonable projections of lifetime and

³⁵For example, at the date of the First RepublicBank transaction, First Republic's average outstanding balance per active account equaled about \$1,000, roughly the national average. A 40-percent growth rate for five years would increase the average outstanding balance by more than a factor of five, justifying the adjective "optimistic."

growth, still requires profitability of three or more times the ordinary rate of return in banking. Finally, it should be observed that one of the lowest reported premia (Colonial National Bank, at 11 percent) involved credit cards with a mean outstanding balance per active account equaling \$2,000, or about twice the national average. It would be rather unrealistic to project growth of more than 10 percent per year on these balances, which still suggests profitability about three times the ordinary rate.

I will make three final notes on *ex ante* profitability. First, the reader may still worry that, since credit card debts are unsecured, charge-off rates will jump and profitability will plummet in the next recession. Some historical data should allay these concerns. In Tables 4 and 8, one may trace back net charge-offs through the last recession. One finds, for these samples, that charge-offs in the early 1980's increased only fractionally above prior years and peaked at only about 2.5 percent of outstandings. Independently, Visa system-wide data traces back credit losses through the last two recessions, and finds (annualized) quarterly charge-off rates peaking at 3 percent in 1974 and again in 1980.³⁶ Solicitation of new accounts, and not cyclical phenomena, are the important contributors to credit card charge-offs (see also Section II-B, above).

Second, the reader may have noted that substantial premia (although not as large as for credit card accounts) have also been reported in sales of regional banks. If anything, this makes the credit card premia even more surprising. The premia for regional banks represent "goodwill," which economists should interpret as economic rents derived from local monopolies in banking. By way of contrast, the national market for credit cards has no local monopolies, so the competitive model predicts that "goodwill" should equal zero.³⁷

³⁶The source of system-wide net charge-offs is Standard & Poor's *Asset-Backed Securitization CreditReview*, March 16, 1987, p. 19.

³⁷In addition, a regional bank may own appreciated real estate whose book value equals historic cost, also contributing to reported premia over book value. The

Third, the magnitude of resale premia may be taken as clear evidence that players within the industry itself attach little credence to the possibility that the credit card market will begin to behave competitively in the years immediately following 1990. (If, for example, it were believed that competition would drive economic profits to zero in two years, this would be the same as using an expected "lifetime" in Table 10 of two years.) Data in the previous section showed that the zero-profit prediction failed in the years 1983-1988. If bankers have had rational expectations in their acquisitions of accounts, then supranormal profits should persist for at least the period 1990-1993. Credit card profits will then have equaled three times the ordinary rate of return for more than an entire decade, certainly an extended adjustment period to the long run!

VI. Theoretical Explanations for the Failure of Competition

In this section, I briefly outline some theoretical models that lead to predictions of price stickiness and positive economic profits. I also discuss some empirical evidence related to these theories. Formal modeling details are available in Ausubel (1988), the working-paper precursor of this article.

A. Search/Switch Cost Theories

One of the common explanations offered for high credit card interest rates is that consumers find it difficult to locate banks offering favorable terms. Indeed, the U.S. Congress enacted legislation in October 1988 that requires all issuers to disclose their interest rates, fees, and grace periods on solicitations and applications; supporters of the bill articulated the rationale of enabling consumers to shop around for the least expensive card, (i.e., of reducing consumer search costs).

Models with search costs may plausibly lead to sticky interest rates and positive

credit card transactions typically do not involve any real assets that have appreciated in value.

profits. While other explanations also exist for price stickiness (e.g., menu costs; see e.g., Julio J. Rotemberg and Garth Saloner, 1987), there is good reason to focus on search/switch costs in the credit card market. Banks have recently begun to use marketing techniques that are consistent with this type of story. Issuers frequently waive the annual fee for a fixed period of time and, in a few cases, offer "to pay you up to \$100 when you transfer your other credit card balances" to their MasterCard or Visa accounts.³⁸ The focus of federal regulation on disclosure provides additional support for the search-cost explanation.

In models that are thematically related to that of Peter Diamond (1971) and subsequent papers, there may exist a continuum of symmetric equilibrium prices that are consistent with any given marginal cost.³⁹ Therefore, the historical price may continue to be an equilibrium even after a change in marginal cost. That is, price stickiness may be consistent with equilibrium. (Detailed analysis of a straightforward model that yields this conclusion is provided in the working-paper version of this paper. It should also be noted that a formal model of switch costs [see e.g., Ausubel, 1984; Joseph Farrell and Carl Shapiro, 1987; Paul Klemperer, 1987] can result in conclusions similar to those from search-cost models.)

Such models also provide a reason why supranormal profits may not be competed away. If prices remain sticky when costs drop, firms begin to earn supranormal profits. Profits continue at high levels until prices unstick, costs rise again, or the customer base is sufficiently eroded. The logic is that, if consumers face search costs in locating (or face switch costs in moving to) lower-priced firms, then higher-priced firms can hold onto many of their (captive) customers despite their high prices. As suggested

above, competitors may try to defeat this inertia by offering sign-up bonuses to new customers, but to the extent that such devices are limited in their effectiveness and practicality, firms may derive supranormal profits from their existing customer base. Finally, observe that this story enables a firm with a base of "loyal customers" to earn supranormal profits despite competition both from other existing firms (who want to increase their own customer bases) and from new entrants (who want to establish customer bases).

The credit card industry is a business where both search costs and switch costs are likely to be especially prevalent. They include: (a) the information cost of discovering which banks are offering lower interest rates; (b) the cost in time, effort, and emotional energy in filling out an application for a new card (and possibly getting rejected); (c) the fact that the card fee is usually billed on an annual basis, so that if one switches banks at the wrong time, one forgoes some money; (d) the perception that one acquires a better credit rating or a higher credit limit by holding the same bank's card for a long time; and (e) the time lag between applying for a card and receiving one.

While credit card consumers undoubtedly face some positive level of search costs and switch costs (and this gives entirely rational justification for the observed market behavior), there remains an empirical question as to whether the actual search/switch costs are of sufficient magnitude to justify what is observed. A typical credit card account in the late 1980's had an outstanding balance slightly over \$1,000 (see Section VI-C and Table 11, below). The prevailing premium on resales of these accounts (see Section V and Table 9) then translates to almost \$250 per account. In a search/switch cost equilibrium, one would expect the resale premium to equal the search or switch cost; yet it is hard to imagine that the costs enumerated in the previous paragraph are the monetary equivalent of \$250! Given this caveat, it is not at all clear that search or switch costs could provide a full explanation of observed market behavior; it would be valuable for future empirical work (using data at

³⁸The quotation is taken from a direct-mailed solicitation, dated April 1989, from Imperial Savings (approximately the fifth-largest S&L issuer of credit cards).

³⁹Mitchell Berlin and Loretta J. Mester (1988) tested and rejected a (very different) model, in which consumer search costs were used to try to explain price dispersion in credit card interest rates.

TABLE 11—PERCENTAGE OF CUSTOMERS WHO AVOID FINANCE CHARGES AND AVERAGE OUTSTANDING BALANCES PER ACTIVE ACCOUNT

Year	Percentage of customers who avoid finance charges	Number of banks reporting percentage of customers	Average outstanding balance of active account	Number of banks reporting outstanding balance
1979	31.8	6	\$523	7
1980	28.7	6	\$590	8
1981	21.9	6	\$660	8
1982	21.0	6	\$726	9
1983	22.8	8	\$711	10
1984	21.9	10	\$852	10
1985	21.4	12	\$1,014	12
1986	24.6	14	\$1,018	17
1987	27.6	9	\$1,038	10

Source: Author's bank credit card survey (Appendix A, Table A1, question 8).

the customer level) to examine this question.

B. *A New Adverse-Selection Theory*

I now propose an adverse-selection theory that relies on a very specific form of irrationality (which will be given some indirect empirical support in the following subsection). Since a credit card is really quite an expensive medium on which to borrow, I posit a class of consumers who do not intend to borrow on their accounts but find themselves doing so anyway.⁴⁰ Consumers in this first class are precisely the best customers from a (rational) bank's viewpoint: they borrow at high interest rates, yet they eventually (in most cases) repay their loans. At the same time, these consumers are unlikely to be responsive to any interest rate cut by a bank, as they do not intend to borrow at the outset.

I also assume that there is a second class of consumers who fully intend to borrow on their credit card accounts. These are the consumers who are bad credit risks and thus lack less expensive alternatives; bank cards are their best sources of credit. Consumers in the second class are less than ideal from

a bank's perspective: they borrow large sums but often default. Insidiously, these customers are more likely to comparison shop on interest rates than the better credit risks, as they actually plan to be paying substantial finance charges. (There is also a third class of consumers, the "convenience" users, whom I can neglect in this discussion. They never borrow on their credit cards and, thus [rationally], are completely unresponsive to interest rate differentials.)

Given this environment of consumers, banks will be hesitant to compete in the interest-rate dimension, as a lower price on credit would disproportionately draw the class of consumers who plan to utilize their credit lines. If consumer behavior along these lines is superimposed on a search-cost model, the tendency toward interest-rate stickiness that was described in the preceding subsection becomes magnified (see Ausubel [1988], the working-paper precursor of this article, for a formalization of this story).

Such reasoning additionally provides an explanation for the apparent cross-subsidy from the transaction function to the credit function of the bank card.⁴¹ Banks only face adverse selection when they compete on the

⁴⁰It may be possible to rationalize these consumers' behavior by assuming that they face a commitment problem: consumers cannot commit their future selves not to borrow.

⁴¹Credit card issuers appear, at best, to break even on their "convenience" users and, perhaps, lose money on them. Meanwhile, issuers earn supranormal profits on consumers who borrow on their cards.

credit-sensitive portions of prices; they do not face adverse selection when they unilaterally improve the terms facing customers who charge purchases on their credit cards but do not borrow beyond the due date on their bills. This would seem to be a powerful explanation why essentially all large issuers offer a substantial grace period on new purchases (provided that the previous balance was paid in full). It also suggests why issuers hardly ever impose transaction charges, often ask for rather small (and, sometimes, zero) annual fees, and occasionally offer transaction subsidies (for example, rebates on purchases or frequent-flyer miles). At the same time, issuers may install punitive prices for bad credit risks: for example, disproportionately high fees for missing a minimum required payment. Since such large proportions of revenues are derived from finance charges, while the adverse-selection argument implies that the interest rate should not be used as an instrument for competition, it becomes much more difficult for credit card issuers to compete away profits. Thus, adverse selection helps to explain the observed extraordinary profits.

Finally, the present adverse-selection theory may be compared with that of Joseph E. Stiglitz and Andrew Weiss (1981). Stiglitz and Weiss argue that, if all banks are charging the same interest rate, no one bank will unilaterally deviate and charge a higher interest rate. The explanation is that the only consumer who would borrow at such a high interest rate is one who probably will not repay the debt (i.e., he is undertaking a very risky project). In contrast, if all banks are earning positive economic profits, the Stiglitz-Weiss effect would quicken the banks' tendencies to cut prices. A lower interest rate draws not only more customers but also better customers. Thus, Stiglitz and Weiss predict that interest rates are "upward-sticky" when costs rise and, if anything, interest rates are "downward-quick" in their model.

This is hardly a good description of real-world credit markets. Empirically, interest rates on loans have an asymmetric response to the cost of funds: they are quicker to

move upward in response to increases in the cost of funds than to move downward in response to decreases in the cost of funds. (Marcelle Arak et al. [1983] detected an asymmetric response in movements of the prime rate, and in work in progress, I have found an asymmetric response in many consumer credit markets.)

My adverse-selection theory is a *reverse* Stiglitz-Weiss effect: it creates reluctance to cut interest rates. Thus, it is a completely different and new adverse-selection theory, which may also be useful in explaining other credit markets.

C. Evidence of Consumer Irrationality

The adverse-selection theory of the previous section crucially relies on the assumption that there are consumers who do not intend to borrow but continuously do so. (Many other forms of irrationality would also render consumers insensitive to credit card interest rates.⁴²) In this subsection, I indicate some formal and anecdotal evidence of this and other forms of consumer irrationality in this market.

First, in the author's bank credit card survey, banks were asked for the percentage of their customers who pay off their full outstanding balances (and so are not subject to finance charges) and for the average outstanding balance (see question 8 in Table A1 for the exact text). The responses, summarized in Table 11, reveal that significant finance charges are being paid on the majority of credit card accounts. Despite interest rates exceeding 18 percent per year, typically *three-quarters* of active credit card accounts at major banks are incurring these high finance charges (on balances averaging over \$1,000) at any moment in time.⁴³ The proclivity of consumers to borrow at these

⁴²For example, many consumers may not understand how interest rates work and underestimate the consequences of borrowing.

⁴³The three-quarters figure should not come as a complete surprise. It would certainly have to be in this range, in order for typically 90 percent of a credit card issuer's outstanding balances to be accruing interest. See also footnote 20.

high rates suggests a substantial breakdown in optimizing behavior among credit card holders.⁴⁴ Moreover, the percentages in Table 11 are based on reliable bank data yet contradict the authoritative University of Michigan consumer survey. According to Glenn B. Canner and James T. Fergus (1987 table 3), the 1983 Michigan survey found that 47 percent of all families that use bank or retail cards "nearly always pay in full," 26 percent "sometimes pay in full," and only 27 percent "hardly ever pay in full." Unless this is evidence of a bad consumer survey, it suggests that a sizeable proportion of consumers who borrow on credit cards are unaware of how frequently they do it or, more likely, deny (to themselves and others) that they do it.⁴⁵ In this sense, the data provide indirect empirical confirmation of the presence of consumers who act as though they do not intend to borrow but who continuously do so.

Second, the experience of credit card marketers is that consumers are much more sensitive to increases in the annual fee than to commensurate increases in the interest rate, despite the fact that the majority of cardholders pay significant finance charges. This is behavior that is difficult to rationalize and is again consistent with the presence of consumers who do not intend to borrow but do so anyway.

Third, if advertising campaigns predicated on price are ineffective, it may be wondered what does attract new customers. One notable recent success has been the "Elvis card," which despite a 17.88-percent interest rate (about average) and \$36 annual fee (extremely high for a standard bank card) generated three times the response rate normally experienced by direct mail.⁴⁶

⁴⁴One would expect that optimizing behavior would lead many consumers to (a) shop around for lower-priced credit cards, (b) shift into different modes of borrowing (e.g., home equity loans), or (c) rearrange their intertemporal stream of consumption (i.e., not borrow).

⁴⁵It is possible that consumers who borrow also hold more charge accounts than those who do not borrow; but multiple accounts cannot nearly fully explain the statistical discrepancy.

⁴⁶*Credit Card News*, October 1, 1988.

Fourth, anecdotal evidence suggests that credit card consumers behave significantly different from the ideal of *Homo economicus*. This author's favorite story (heard twice, independently) involves consumers who immerse their credit cards in trays of water and place them in the freezer. The purpose of entombing the card in ice is to precommit to not making impulsive purchases.

Finally, these observations are not specifically confined to the credit card market and, in fact, are consistent with earlier work that has been done in other areas of consumer credit. One of the most surprising such articles is a study by James J. White and Frank W. Munger (1971) which found that recipients of new car loans were extremely insensitive to interest rates. It would be reasonable to expect that consumers are relatively more price sensitive in seeking out automobile loans than credit cards, as the large dollar amount would justify greater search or switch behavior. Nevertheless, White and Munger report that roughly half of the borrowers from the high-cost providers of auto loans in the Michigan locality they studied would have qualified for loans from low-cost providers. Many consumers who apparently could have borrowed at appreciably lower interest rates failed to do so. Moreover, 29 percent of the borrowers from the high-cost providers were specifically aware of at least one nearby lender who charged a lower interest rate, leading White and Munger to conclude that lack of knowledge of lower interest rates was not the principal deterrent to obtaining cheaper loans.

VII. Calculation of a "Competitive" Interest Rate

This article has thus far focused on the discrepancy between the predictions of the competitive model and actual observed behavior in the bank credit card market, while Section VIII will discuss the relative merits of regulating this market. As a bridge between these two strands of thought, this section will briefly inquire as to "competitive" interest rates: what level of interest rates would have been consistent with ordi-

TABLE 12—IMPLIED DIFFERENTIAL BETWEEN "COMPETITIVE" CREDIT CARD INTEREST RATE AND ACTUAL RATE

Year	Number of banks in sample	Adjusted return on assets (percentage)	Implied actual minus "competitive" interest rate (percentage)
1983	6	4.44	3.60
1984	13	4.94	4.16
1985	14	6.23	5.59
1986	15	6.37	5.74
1987	13	5.72	5.02
1988	10	4.72	3.91
Average:	—	5.59	4.88

Notes: Adjusted return on assets is calculated by pooling the banks in Tables 6 and 7 for each year and calculating the arithmetic average of ROA (adjusted). The number of banks in the sample reflects one overlap in the years 1984–1988.

nary returns in the credit card market in the late 1980's?⁴⁷

Suppose an explicit calculation is to be done for the year 1987. Above, I have reported the average adjusted return on assets to be 6.31 percent in the BCCS data (seven banks) and 5.13 percent in the call-report data (seven banks, with one overlap). For the following calculation, I will take 5.72 percent (the arithmetic average for the two samples) to be the actual pretax return on assets. Recall that 1.20 percent has been taken to be the ordinary pretax return on assets in the banking industry. Subtracting and taking "assets" to be equivalent to "outstanding balances," one could conclude that the excess revenues in 1987 were 4.52 percent of outstanding balances. Also recall that, typically, about 90 percent of an issuer's outstanding balances actually accrue interest. This suggests that, if interest rates had been approximately five percent-

age points lower (i.e., 4.52/0.9) in 1987, the top 50 credit card issuers would have still earned the ordinary rate of return in banking. Given that the average annual percentage interest rate for banks in this sample equaled 18.67 percent in 1987, this would imply a "competitive" interest rate of just 13.65 percent. Given that the average one-year Treasury bill yield equaled 7.52 percent in 1987, this also suggests an approximate rule of thumb that, at 1987 levels of annual fees and credit losses and with current usage patterns, the break-even point is roughly approximated by the one-year Treasury bill yield plus slightly more than six percentage points.

Analogous calculations for the period 1983–1988 are displayed in Table 12. Obviously, these calculations are sensitive to the estimate of credit card profitability. However, even using the much more conservative FCA profitability data (see Table 8), one would still find that credit card interest rates in 1987 were three percentage points above the break-even level.

VIII. Implications for Regulation

While this article has argued that the bank credit card market does not mirror the predictions of the model of perfect competition, neither does it necessarily lead to the conclusion that usury ceilings on credit card interest rates should be reestablished. As experience in many industries (e.g., airlines,

⁴⁷Obviously, this is precisely the same question that would have to be asked if the government were to choose to regulate the bank credit card market. Please note that the calculation provided here is meant only to be illustrative and would not be suitable for inclusion in any future statute without further refinement. Note that the calculation assumes, for simplicity, that credit card borrowing is perfectly inelastic in the interest rate (although this may not be a bad approximation of reality). Also note that the calculation assumes a continuous 20-percent return on equity; in fact, one would expect some degree of variation over the business cycle.

trucking, railroads, and banking itself) has demonstrated, it is often difficult to formulate a regulatory rule that unambiguously improves industrial performance. In the industry in question, the particular hazard associated with price controls is the possibility that they would impair the ability of some individuals to obtain credit cards, which are virtual necessities in certain aspects of modern life (such as renting an automobile or ordering by telephone). This section discusses the trade-offs between regulated and unregulated interest rates.

Even if this article does not criticize the recent outcome of the legislative process (i.e., rejecting the reimposition of credit card interest rate ceilings), it does at least argue that the terms of debate have been flawed.⁴⁸ Underpinning the antiregulation argument has been the market description of the credit card business (as presented in the first paragraph of this paper) and the implication that such an industrial structure inexorably leads to the perfectly competitive outcome (with all its desirable efficiency properties). For example, Martha R. Seger, a Governor of the Federal Reserve System, concluded her recent Congressional testimony on the subject by stating:

I would like to reemphasize the Board's conviction that financial markets distribute credit most efficiently and productively when interest rates are determined without artificial restraints, insofar as possible. In the credit card business, the balance of the evidence suggests that reasonably competitive conditions exist, notwithstanding the lack of variation in

⁴⁸Possible reregulation of credit card interest rates has been the subject of controversy in recent years. In the 1987 Congressional session, no fewer than five bills dealing with credit cards were introduced: Senate Bill S.241 (mandating certain disclosures), S.242 (setting a national ceiling of four percent above the Internal Revenue Service's interest rate), S.616 (disclosure), S.674 (a ceiling of six percent above the Federal Reserve's discount rate), and House Bill H.R.515 (a ceiling eight percent above the one-year Treasury bill rate). In 1987-1988, Congress rejected all proposed bills and amendments setting credit card interest rate ceilings but enacted a mandatory disclosure bill.

finance rates. Furthermore, recent developments have reflected some tendency for credit card rates to decline.⁴⁹

A similar strand of thought is reflected in a recent *Wall Street Journal* editorial: "Credit-card interest almost certainly will come down. It will come down without rate ceilings. Nothing does it like competition."⁵⁰

Such arguments are insufficient. One cannot implicitly rely on the model of perfect competition as the principal defense for laissez-faire, given that the data cast severe doubt on the predictions of zero economic profits and cost-based pricing in this industry.

In order to make a cogent argument against regulation, one must proceed in a much more sophisticated fashion. First, it must be recognized that the behavior of the unregulated credit card market of the 1980's deviates in systematic ways from competitive predictions. The price of credit far exceeds its fundamental marginal cost, and the industry expects this situation to persist for some time. While nonprice competition has so far failed to impair firms' profits seriously, it appears to be steadily escalating, meaning that one can envision a day in the not-too-distant future when economic profits from new customers would be completely competed away via nonprice means. (Banks might still earn significant economic rents from their existing "captive" customers.)

Second, it should equally be recognized that regulation has only a limited potential to improve the outcome. The principal difficulty is that consumers occupy a spectrum of levels of credit-worthiness. Let ρ_n denote the bank's best estimate of the n th con-

⁴⁹"Credit Card Interest Rates," Hearing before the Subcommittee on Consumer Affairs and Coinage of the Committee on Banking, Finance, and Urban Affairs, House of Representatives, Ninety-Ninth Congress, First Session, on H.R. 1197 and H.R. 3408 (October 29, 1985), Serial No. 99-44, U.S. Government Printing Office, Washington, 1986, page 39; also see *Federal Reserve Bulletin*, March 1986, p. 184.

⁵⁰*Wall Street Journal*, March 16, 1987, editorial page.

sumer's probability of default and let c denote the marginal cost of lending funds to a consumer (exclusive of default risk). Then, the social optimum has every consumer paying his own, individualized interest rate: consumer n holds a credit card bearing a finance charge of $(\rho_n + c)$.⁵¹ Since conventional usury laws do not set interest rates according to the individual's default risk, ρ_n , they necessarily lead to outcomes that fall short of the optimum. The regulation is typically written: no bank is permitted to charge an interest rate greater than r^* . Under such a regulatory regime, no consumer whose default risk (to an external observer) exceeds $(r^* - c)$ will be serviced. Thus, if r^* is sufficiently low to ameliorate excess profits, it will also generally create deadweight loss by depriving individuals of the opportunity to hold credit cards. Moreover, it has been widely observed that, in an environment with price ceilings, there is a tendency for all firms to charge *exactly* the price ceiling. Hence, one could expect further deviation from the ideal, individualized interest rates: all consumers with default risks less than $(r^* - c)$ may end up paying interest rates equaling r^* .

A decision regarding the advisability of regulation thus involves a comparison of two less-than-ideal alternatives. The case for laissez-faire is strongest when one is only interested in efficiency and when non-interest-rate competition exclusively takes the form of recycling revenues to consumers. It has already been observed that credit card borrowers are highly interest-rate inelastic. Thus, high interest rates may not appreciably reduce the quantity borrowed, and so there may be little efficiency loss arising directly from excessive interest rates. The primary avenue for social loss is then the nonprice competition. However, to the extent that competition takes the form of frequent-flyer miles, cash rebates, or other relatively efficient means of recycling rev-

enues to consumers, there is still no appreciable social loss.

The case for regulation is strongest when one is upset by redistribution away from consumers or when nonprice competition expends substantial resources. I have already observed that high interest rates may be essentially neutral from an efficiency point of view. However, they presumably have a strongly undesirable redistributive effect from the comparatively poor (consumers who borrow on credit cards) to the comparatively rich (owners of bank stock). Moreover, there is a true (and potentially large) deadweight loss when nonprice competition takes the form of advertising.⁵² Some banks' reported noninterest expenses increased significantly from 1983 to 1988 even as the intrinsic cost of servicing accounts declined (e.g., Citibank, which advertises on national television); much of the additional expense probably represents marketing, and some fraction of this constitutes social loss.

IX. Conclusion

Despite the presence of 4,000 competitors, the bank credit card market of the 1980's behaved widely at variance with the predictions of a competitive model in continuous spot-market equilibrium. Interest rates approximated constancy, at levels around 18 percent per year, in the face of wide changes in banks' marginal costs. Profits persistently equaled three or more times the ordinary return on banking equity, with no sign of abatement. A breakdown of the optimizing consumer behavior so basic to the model of perfect competition may be an important element in the story.

The facts of the market are roughly consistent with a model of adverse selection in which many consumers are insensitive to

⁵¹ Either some banks could offer a spectrum of interest rates to different consumers, or banks could each offer just a single interest rate but specialize in consumers of different qualities of credit-worthiness.

⁵² The direct-mail credit card solicitations which I received at the rate of one per week while writing the article inspired this observation. One important, additional aspect of this problem is that the large interest-rate spread (see Section II-B) encourages banks to market cards in an aggressive way that makes them susceptible to fraud losses.

interest-rate differentials because they believe they will pay within the grace period (although they repeatedly fail to do so). This hypothesis is lent some empirical support by the finding that, assurances to the contrary, three-quarters of consumers pay finance charges on their outstanding credit card balances. Given the presence of such consumers, any bank that unilaterally reduced its credit card interest rate would disproportionately draw customers who actually do intend to borrow (i.e., the worst credit risks). Thus, the finance charges remain at high levels and become the main contributors to supranormal profits.

The facts of the market appear to be inconsistent with the predominance of well-informed consumers who are attempting to minimize their borrowing costs. There is no evidence that consumers are generally offered competitive interest rates on bank card balances, nor that most consumers respond to lower interest rates when they are offered.

The empirical findings of this article suggest a broader question: is it that the bank credit card market of the 1980's was uniquely pathological, or can one identify other markets whose structures seem equally conducive to the competitive model but whose empirical outcomes are similarly noncompetitive? This would seem to be a ripe area for further research.

APPENDIX A: THE BANK CREDIT CARD SURVEY

In May 1986, a pilot survey was mailed to 32 banks which were believed to be among the 50 largest bank issuers of credit cards. Five responses were received. The bank credit card survey (BCCS) was formed by using these responses to refine the questions asked. The BCCS was mailed in November 1986 to each of the 50 largest bank issuers of credit cards, as ranked in the *Nilson Report* (Number 371, January 1986), plus five banks ranked numbers 51-60. (The BCCS was not sent to the five banks that had responded to the pilot survey.) Following reminder letters in December 1986 and March 1987, as well as reminder telephone calls, 16 responses to the BCCS were received. Thus, the pilot survey and BCCS together elicited a total of 21 responses from a sample consisting of the following 58 banks:

Associates National Bank
Avco National Bank

BancOhio
Bank of America
Bank of New York
Bank One
Barnett Bank
Beneficial National Bank
Chase Manhattan Bank
Chemical Bank
Citibank
Citizens & Southern National Bank
Comerica Bank
Commerce Bank
Connecticut Bank and Trust Co.
CoreStates Bank of Delaware
Crocker National Bank
European American Bank
First City Bank
First Interstate Bank
First National Bank of Atlanta
First National Bank of Boston
First National Bank of Chicago
First National Bank of Omaha
First Omni Bank
First Tennessee Bank
First Wisconsin National Bank
Harris Trust and Savings Bank
Indiana National Bank
InterFirst Bank
Manufacturers Hanover Trust Co.
Marine Midland Bank
Maryland Bank
MBank
Mellon Bank
Mercantile Trust Co.
Michigan National Bank
National Bank of Detroit
National Westminster Bank
NCNB
Norwest Bank
PNC National Bank
Rainier National Bank
RepublicBank Dallas
Rocky Mountain Bankcard System
Seattle First National Bank
Security Bank and Trust Co.
Security Pacific National Bank
Signet Bank
Southeast Bank
Sovran Bank
State Street Bank and Trust Co.
Sun Bank
United Bank of Denver
United States National Bank
United Virginia Bank
Valley National Bank
Wells Fargo Bank

Several of the listed banks had ceased to exist as credit card issuers by the relevant time period, due to merger of the banks or acquisition of their portfolios. Seventeen responses included full interest rate series for the years 1982-1986 (see Table 2 for sizes), extended

TABLE A1—BANK CREDIT CARD SURVEY

1. Please indicate the interest rate, beginning in 1976 and through the present, on your most widely issued bank credit card:

Name of Card: _____

Year	February	May	August	November
1976	_____	_____	_____	_____
...
1986	_____	_____	_____	_____

Any additional information (for example, a different rate on premium cards, a floating-rate formula which you currently use, etc.):

2. Same as 1, for annual fee.
3. Please briefly describe the method your bank uses to compute bank card finance charges (include grace periods, etc.):
4. Please list charges other than annual fees (e.g., transaction charges, late fees, minimum finance charges, etc.) which your bank has charged between 1976 and the present. Please indicate relevant dollar amounts and dates:
5. Please list all major state and federal regulations (e.g., interest rate ceilings, laws prohibiting annual fees, etc.) which have hampered your operations between January 1976 and the present, indicating effective dates:
6. If your bank has any statement or position paper on credit card regulation, please enclose it with the completed survey.
7. Please indicate your number of total accounts, number of active accounts, total outstanding balances (at June 30 of each year, or another standardized date), annual charge volume, and charge-off rate:

Year	Number of total accounts	Number of active accounts	Outstanding balances	Annual charge volume	Charge-off rate
1976	_____	_____	_____	_____	_____
...
1986	_____	_____	_____	_____	_____

8. Please provide the following information about your cardholders, indicating for each column which of two possible pieces of information you are providing. [If both are available, please provide (A).]

Column 1:

- _____ (A) In an average month, what percent of your active accounts pay off their full outstanding balances (and so are not subject to a finance charge on those balances)?
- _____ (B) What percent of your active accounts pay off their full outstanding balances at least 11 months per year (and so are only subject to a finance charge on their balances at most one month per year)?

Column 2:

- _____ (A) Of your active accounts with outstanding balances, what is the average outstanding balance?
- _____ (B) Of all active accounts, what is the average outstanding balance?

Year	Percent who pay in full	Average outstanding balance
1976	_____	_____
...
1986	_____	_____

9. Please enclose a copy of the credit card application/solicitation(s) your bank uses most.
10. Please indicate which, if any, of the following factors you emphasize in the marketing of your cards.
- _____ Our high credit limit
- _____ New customers can transfer their existing credit card balances onto our account
- _____ New customers are waived our first year's annual fee
- _____ Our interest rate is lower than our competitors'
- _____ Our annual fee is lower than our competitors'
- _____ Our card gives "bonus dollars" with each dollar charged, for discounts on merchandise
- _____ Pre-approved credit card applications
- _____ Free airline insurance
- _____ Other freebies—list them:
- _____ Other factors—list them:
11. Feel free to include any additional comments, either below or on separate sheets of paper.

TABLE A2—FOLLOW-UP BANK CREDIT CARD SURVEY (AND FOLLOW-UP SURVEY II)

	1984	...	1987 (1988)
1. 1987 (1988) updates of Questions 1 and 2 from Bank Credit Card Survey.			
2. 1987 (1988) updates of Question 7 from Bank Credit Card Survey.			
3. 1987 (1988) updates of Question 8 from Bank Credit Card Survey.			
4. Please enter all available dollar figures for your bank's <i>credit card business only</i> . [Question 4 was patterned after the Federal Reserve System's <i>Functional Cost Analysis</i> . A xerox copy of p. 38 of the 1986 report was enclosed.]			
1. Average total outstanding balances:	\$ _____	...	\$ _____
Income:			
2. Finance charge interest and customer fees (including annual fee):	\$ _____	...	\$ _____
3. Merchant discount, interchange fees, and other income:	\$ _____	...	\$ _____
4. Total income (2 + 3):	\$ _____	...	\$ _____
Operating expenses:			
5. Marketing and advertising:	\$ _____	...	\$ _____
6. Enhancements and affinity program expenses:	\$ _____	...	\$ _____
7. All other expenses (including salaries, fringe benefits, data services, processing, franchise fees; excluding items below):	\$ _____	...	\$ _____
8. Total operating expenses (5 + 6 + 7):	\$ _____	...	\$ _____
Earnings:			
9. Net earnings before losses (4 - 8):	\$ _____	...	\$ _____
10. Net credit losses:	\$ _____	...	\$ _____
11. Net fraud losses:	\$ _____	...	\$ _____
12. Net earnings (9 - 10 - 11):	\$ _____	...	\$ _____
Memoranda:			
13. Cost of funds:	\$ _____	...	\$ _____
14. Net earnings (pretax) after cost of funds (12 - 13):	\$ _____	...	\$ _____

through 1987 by contemporaneous telephone calls. Respondents were promised anonymity.

The follow-up bank credit card survey was mailed to the 21 initial respondents in January 1988, requesting both 1987 updates of data that the original survey had elicited and direct reports of credit card profits. Follow-up survey II was mailed to the 21 respondents in February and July 1989, requesting both 1988 updates of data that the original survey had elicited and direct reports of credit card profits. Following reminder letters, 11 responses were received, seven of which contained data on profits for 1984-1987 (see Table 2 for sizes) and five also for 1988. The profit reports of Bank F and all 1988 profit reports were completed by banks after the working-paper precursor of this article was made available to the banks. Respondents were again promised anonymity. The BCCS and follow-up BCCS are reprinted in Tables A1 and A2 in condensed form.

APPENDIX B: PROFITABILITY CALCULATIONS

Bank Credit Card Survey Data

COST OF FUNDS is defined by taking the one-year Treasury-bill yield plus 0.75 percent, averaged over the calendar year, and multiplying by 0.94. The Treasury-bill yield is taken from the *Federal Reserve Bulletin*, April 1990, table 1.35, line 21 (and previous issues). The number 0.75 represents the spread between yields on Treasury securities and yields on credit-card-backed securities. The number 0.94 represents 1 minus the banking system's capital requirement of 6 percent.

The numbers reported in Table 6 were constructed as follows (see also Table A2):

$$\text{ROA (reported)} = \text{BCCS Line 14} / \text{BCCS Line 1}$$

$$\text{ROA (adjusted)} = (\text{BCCS Line 14} + \text{BCCS Line 13} - \text{COST OF FUNDS} \times \text{BCCS Line 1}) / \text{BCCS Line 1}$$

$$\text{ROE (adjusted)} = \text{ROA (adjusted)} / 0.06.$$

Call Report Data for Credit Card Banks

The calculations reported in Table 7 are based on the quarterly consolidated reports of condition and income ("call reports") which "credit card banks" filed with the FDIC. Included in the sample were all commercial banks that met both of the following criteria:

- 1) credit card balances constituted at least 75 percent of the bank's total assets (so that the bank's profits are a good proxy for profits attributable to the credit card business);
- 2) the bank's balance sheet was not seriously marred by credit card securitizations or portfolio acquisitions.

For example, Maryland Bank was excluded from the sample in 1988, because that bank's credit card balances averaged \$3.1 billion in that year, while only \$1.7 billion appeared on the bank's Report of Condition (the remainder having been securitized). Typically, for banks in Table 7, credit card balances constituted 97 percent or more of total assets.

In the description immediately below, the December 31, 1987 call report for Citibank (South Dakota), N.A., is used to standardize line numbers. The following data were extracted from credit card banks' call reports:

AVERAGE TOTAL ASSETS = Schedule RC-K, line 9 [Total Assets] - Schedule RC, line 10 [Intangible Assets] (this calculation is performed for each of the March 31, June 30, September 30, and December 31 reports; I work with the arithmetic average of the four numbers);

TOTAL EQUITY PREVIOUS YEAR = Schedule RI-A, line 3 [Amended Balance End of Previous Calendar Year];

INCOME BEFORE TAXES = Schedule RI, line 8 [Income Before Income Taxes and Extraordinary Items];

PROVISION FOR LOAN LOSS = Schedule RI, line 4A [Provision for Loan and Lease Losses];

NET CHARGEOFFS = Schedule RI-B, line 9, column A [Total Charge-Offs] - Schedule RI-B, line 9, column B [Total Recoveries];

INTEREST EXPENSE = Schedule RI, line 2F [Total Interest Expense];

COST OF FUNDS = as in first paragraph of this appendix;

AMORTIZATION EXPENSE OF PREMIA = Schedule RI-E, line 2A [Amortization Expense of Intangible Assets].

The numbers reported in Table 7 were then constructed as follows:

ROA (reported) = (INCOME BEFORE TAXES + PROVISION FOR LOAN LOSS - NET CHARGEOFFS) / AVERAGE TOTAL ASSETS;

ROE (actual cap) = (INCOME BEFORE TAXES + PROVISION FOR LOAN LOSS - NET CHARGEOFFS) / TOTAL EQUITY PREVIOUS YEAR;

ROA (adjusted) = (INCOME BEFORE TAXES + PROVISION FOR LOAN LOSS - NET CHARGEOFFS + INTEREST EXPENSE - COST OF FUNDS) × AVERAGE TOTAL ASSETS + AMORTIZATION EXPENSE OF PREMIA / AVERAGE TOTAL ASSETS;

ROE (adjusted) = ROA (adjusted) / 0.06.

Prospectus Data

The calculations reported in Section III-D are based on information contained in prospectuses and registration statements filed with the SEC in connection with all public credit card securitizations by commercial banks from 1987 to early 1990. The following is a complete list of the banks and the prospectuses used.

- 1) BancOhio (National City Corporation): National City Credit Card Trust 1990-A, registration statement dated January 2, 1990, pp. 17, 23;
- 2) Bank of America: California Credit Card Trust 1987-A, prospectus dated February 25, 1987, pp. 10, 14; California Credit Card Trust 1987-B, prospectus dated June 19, 1987, pp. 11, 14;
- 3) Chemical Bank: Chemical Bank Credit Card Trust 1988-A, prospectus dated August 16, 1988, pp. 14, 15; Chemical Bank Credit Card Trust 1989-A, prospectus dated October 30, 1989, pp. 16, 19;
- 4) Citibank (South Dakota)/Citibank (Nevada): Money Market Credit Card Trust 1989-1, prospectus dated January 25, 1990, pp. 21, 23;
- 5) Colonial National Bank U.S.A.: Colonial Credit Card Trust 1988-A, preliminary prospectus dated March 23, 1988, pp. 18, 23;
- 6) First National Bank of Chicago/FCC National Bank: First Chicago CARDS Trust 1987-1, prospectus dated September 29, 1987, pp. 13, 15; First Chicago Master Trust, registration statement dated November 16, 1989, pp. 16, 17;
- 7) Lomas Bank U.S.A.: Lomas Credit Card Trust 1989-A, registration statement dated July 3, 1989, pp. 17, 24;
- 8) Manufacturers Hanover Trust Company: MHARCCS Trust 1988-1, prospectus dated June 21, 1988, pp. 17, 18 (1988 only through March 31);
- 9) Maryland Bank, N.A.: MBNA Credit Card Trust 1988-B, prospectus dated September 9, 1988, pp. 16, 21; MBNA Credit Card Trust 1989-B, registration statement dated November 8, 1989, pp. 16, 20;
- 10) RepublicBank Delaware: securitization of January 16, 1987, as summarized in *Standard & Poor's Asset-Backed Securitization CreditReview*, March 16, 1987, pp. 21, 22;
- 11) Southeast Bank: Southeast Bank Credit Card Trust 1990-A, registration statement dated January 29, 1990, pp. 17, 22.

Premia Paid for Credit Card Portfolios

Table 9, the list of premia paid for credit card portfolios, reflects manual and computerized searches of national newspaper indexes over the period January 1984–April 1990. In order to be included, a transaction was required to meet all of the following criteria:

- 1) the transaction was reported in the *Wall Street Journal*, *The New York Times*, *The American Banker*, or the Kidder, Peabody & Co. report (Kristina E. Andersson and Alison A. Deans, 1989);
- 2) the exact premium, the parties to the transaction, the approximate date of the transaction, and the approximate size of the portfolio were reported;
- 3) the transaction was essentially an unbundled sale of credit card accounts and nothing else.

In the event of conflicting reports, the conflict was resolved using the best available information.

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