



**Credit  
Research  
Center**

**REPRINT No. 3**

**Subsidies in the Use of Revolving Credit**

**1976**

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## Subsidies in the Use of Revolving Credit

This paper deals with the measurement of subsidies in the use of consumer retail revolving credit under current legal and institutional arrangements. The possibility of subsidies among credit users stems from three basic sources: (i) legal restrictions on rates, the size of credit extensions, billing methods; (ii) the demand for this type of credit and the resulting use patterns; (iii) the "production" and pricing aspects of revolving credit. Based upon data from several surveys, estimates of credit costs and revenues based on twelve-month account histories of credit use are calculated for each member of a sample of credit users. These estimates are then employed in a multivariate model to determine the nature and extent of subsidies present. The implications of these findings for public policy in the area of consumer credit are set forth in the final section.

### BACKGROUND

The type of credit dealt with in this paper is normally associated with the credit card, although a small number of retail stores continue to provide this service in the form of the "30-day" charge accounts commonly used ten or twenty years ago. To distinguish it from the bulk of consumer credit, it is frequently called "open-end" credit, as there is no fixed obligation, no maturity date, and no specified payment schedule. Rather, the consumer may add to the total amount owed at any time (up to a prespecified limit) and may pay on the account monthly, subject to a minimum payment constraint. In this sense, revolving credit is essentially a line of credit that can be used to purchase any type of commodity or service offered by a retailer accepting a card. Credit cards could provide a line of credit amounting to a thousand dollars or more. Thus, the credit card offers several services: (i) cash management,<sup>1</sup> (ii) a flexible way to alter the amount of debt held in the portfolio, (iii) a way to insulate liquid assets from irregular, large expenditures, (iv) the usual benefits associated with credit relating to consumption smoothing and the ability to acquire durables for less costly production of some

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\* This research was partially supported by a grant from the National Commission on Consumer Finance. The cooperation of the California Retailers Association and its member businesses is gratefully acknowledged.

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<sup>1</sup> The value of credit card use is indicated by statistics comparing debt holdings to credit card use by income groups for a national sample early in 1970. Data are from the 1970 Survey of Consumer Finances, Survey Research Center, University of Michigan [10].

Income Groups	Owe Installment Debt (percent)	Use Credit Cards (percent)
Under \$3,000	19	17
\$ 3,000- 4,999	31	24
\$ 5,000- 7,499	52	40
\$ 7,500- 9,999	61	54
\$10,000-14,999	65	66
\$15,000-19,999	49	74
\$20,000-24,999	49	84
\$25,000 or more	49	81

In the higher-income groups, many fewer consumers owe installment debt than use credit cards. The reverse is true for lower-income groups.

services, (v) savings in transactions costs related to the financing of large purchases (i.e., the elimination of the need to secure outside financing and the related time and transportation costs).<sup>2</sup>

Typically, the user of this kind of credit is Assessed a finance charge at a nominal annual rate of 18 percent on unpaid balances.<sup>3</sup> The effective rate paid depends on the timing and magnitude of purchases and payments. Under current billing practices, there may be a delay of as long as thirty days between the time a purchase is made and a bill received by the consumer. Once the bill is received, the entire amount can be paid without penalty within a grace period of up to an additional thirty days. Thus, it is possible to finance transactions with up to sixty days of "free" credit.

Within the current framework for extending this type of credit, two basic subsidies are possible. First, a subsidy may arise from differences in use patterns. All users are charged the same nominal rate for use of the revolving option on their credit cards. But, under current billing methods, it is possible to use credit extensively without paying any finance charges, generating costs associated with the provision of credit but contributing no revenues.<sup>4</sup> If particular groups of consumers use this option to significantly different degrees, subsidies may appear among groups. Assuming that the credit operation breaks even, these costs are made up by those using the revolving options and paying finance charges.

This argument is frequently used to demonstrate that lower-income credit users (who, it is asserted, usually pay finance charges) subsidize the credit use of higher income families (asserted to be "free riders"). However, the issue is more complicated than this, as the argument ignores differences in costs generated by various income groups in their use of credit. This paper will show that lower-income credit card users are subsidized by higher income credit card users, primarily because of the higher incidence of collection problems among lower-income families.

Second, a subsidy may arise between those who use credit cards and those who do not. Several studies provide evidence that credit card operations of retailers barely break even in terms of revenues generated from finance charges and the costs of providing credit [14, 17]. In this case, cash buyers are subsidizing credit card users if the deficit on credit operations is made up in the selling price of goods in order to earn a normal return on all invested capital.<sup>5</sup>

Whether all low-income families (or more generally, all cash buyers) subsidize credit users is a separate issue that is not rigorously examined here. If cash buyers are disproportionately lower-income families, then a subsidy from low- to high-income groups may exist. This would have to be "netted" against the subsidy received by low-income credit users to assess the overall direction and size of subsidies in the use of retail credit.

The recent wave of consumer interest has brought with it a large volume of proposed legislation at the federal and state level (along with large numbers of litigative efforts) with the objective of altering the existing legal and institutional environment in which consumer credit is currently extended. The intent of all this is to benefit the consumer, but unless the industries providing this credit are earning excess profits, the effect of most

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<sup>2</sup> Of about \$100 billion of outstanding consumer credit (excluding mortgages), credit card balances account for about ten percent. Major retailers report 40 to 50 percent of their volume charged on credit cards, and this type of credit has a high rate of turnover.

<sup>3</sup> At the time of writing, five states have lower legal rates, one at 15 percent, two at 12 percent, and 2 at 10 percent. Several other states are considering the lowering of the legal maximum from 18 percent to 12 percent, at least for retail establishments.

<sup>4</sup> Given use patterns, the billing method also affects the actual amount paid. For a comparison of billing methods and estimates of actual yields for alternative methods, see McAllister's [12] simulations on a sample of credit and card accounts.

<sup>5</sup> Banks do not have the same flexibility in raising the price of "other" goods and services to cover deficits in the credit card operation over time, but they can raise the discount fees charged to the retailer. Bankcards were not included in this study.

proposed changes can only be income redistribution among consumers. This being the case, it is important to examine the likely incidence of any redistribution that might take place and to test the arguments used to support or reject proposed legislation. This paper contributes some evidence to that end, examining the current use of open-end credit in terms of the characteristics of credit users and the costs and revenues they generate.

## ACCOUNT USE PATTERNS AND USER CHARACTERISTICS

A study of account use patterns and associated costs and revenues requires knowledge about the characteristics of credit card users and information about how accounts are used. A random sample of account holders from the account lists of major California retailers with their own credit systems provided the base for the study. Some of the smaller retailers did not participate in the study, but it is estimated that their sales account for less than 20 percent of total credit sales in California. For each account in the sample, an one-year account history was constructed, showing purchases, credits, payments, and finance charge assessments made each month. Each account holder (577 total) was asked to cooperate in the study by filling out a questionnaire revealing various demographic and financial data as well as information about the ownership and frequency of use of credit cards.<sup>6</sup> Nearly 70 percent (383 out of 561) of those contacted returned the questionnaire.

Table I presents a summary of the account histories by income groups in the sample. The first panel of the table shows the distribution of income groups in the sample and annual average account data for each group. If the two lowest income groups are averaged together, there are few differences among the groups in average sales except for the very highest income group, which charged substantially more than the other groups.

A major difference can be seen in the use of the revolving credit option. The lower-income groups (under \$7,500) and the highest-income groups (over \$20,000) revolved about 55 percent of their net sales, while the income groups between \$7,500 and \$20,000 revolved from 64 to 81 percent of their net sales. The average number of months with revolving balances was also higher for these income groups, suggesting that they took longer to pay them off (lower panel of Table 1). This can also be seen in the comparison of the share of net sales and the share of finance charges paid for each income group in the middle panel of Table 1.

Table 2 shows the same data by number of credit cards owned. Users with a large number of cards clearly used their accounts as a cash substitute, revolving the lowest proportion of sales. This is further evidence that credit cards provide a broader service than just a source of debt.<sup>7</sup>

Overall, the results indicate that the lowest- and highest-income credit users (as defined in the preceding discussion) had a lower share of finance charges than of total sales. If associated credit costs per dollar of credit sales were constant for all groups, this would suggest that the middle-income credit users were subsidizing the low- and high-income credit users. The data also indicate that the lowest-income credit users were not the most frequent users of the revolving credit option, although the next highest income group (\$7,501 to \$10,000) showed the highest fraction of net sales revolved.

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<sup>6</sup> Each account owner was sent a questionnaire requesting the following information: number of department store, gasoline, bank (Master Charge, Bank Americard, etc.), travel and entertainment (like American Express) and other types of credit cards owned; ownership of savings and checking accounts; sources of past loans (banks, credit unions, finance company, etc.); years worked for present employer; marital status; the number of dependents; housing status; education; age; personal salary and total family income, sources of additional income; sex of respondent; occupation; the number of times per month that credit cards or accounts are used. The basic results of the study are reported in National Commission on Consumer Finance Working Papers, Vol. 6 (Washington, D.C.: G.P.O., 1973).

<sup>7</sup> Similar tables for other characteristics of account users (such as age, education) can be found in the appendix of an earlier version of this paper, Graduate School of Business Research Paper #191, Stanford University, 1973.

**TABLE 1**

**Account Data by Family Income Groups**

Account Averages (12 Month Period)

<b>Total Household Income</b>	<b>N*</b>	<b>Percentage Distribution</b>	<b>Total Sales</b>	<b>Net Sales†</b>	<b>Net Revolving Sales</b>	<b>Finance Charges</b>
\$ 5,000 or under	21 (24)	4.1	\$80	\$74	\$43	\$4.30
\$ 5,001-\$ 7,500	53 (26)	10.3	226	200	104	8.20
\$ 7,501-\$10,000	137 (45)	26.5	156	151	122	12.60
\$10,001-\$15,000	126 (87)	24.4	200	194	124	15.90
\$15,001-\$20,000	67 (79)	12.9	176	164	105	15.90
\$20,001-\$25,000	56 (63)	10.8	166	157	85	7.50
\$25,001 or over	57 (52)	11.0	294	272	158	11.50
All	517(376)	100.0	\$190	\$179	\$112	11.60

Ratio of Finance Charge Revenue to:

<b>Total Household Income</b>	<b>Share of Net Sales (percent)</b>	<b>Share of Finance Charges (percent)</b>	<b>Net Sales (percent)</b>	<b>Revolving Sales (percent)</b>
\$ 5,000 or under	2.3	2.1	5.8	10.1
\$ 5,001-\$ 7,500	6.1	3.9	4.1	7.9
\$ 7,501-\$10,000	12.1	15.5	8.3	10.3
\$10,001-\$15,000	26.5	26.5	6.5	10.1
\$15,001-\$20,000	19.4	29.0	9.7	15.2
\$20,001-\$25,000	13.8	10.2	4.8	8.8
\$25,001 or over	19.7	12.8	4.2	7.3
All	100.0	100.0	6.5	10.3

<b>Total Household Income</b>	<b>Percent of Net Sales That Were Revolving</b>	<b>Number of Revolving Months</b>	<b>Average ° Net Sales Per Month</b>
\$ 5,000 or under	58.0	3.0	\$6.20
\$ 5,001-\$ 7,500	52.3	3.3	16.70
\$ 7,501-\$10,000	80.6	5.3	13.30
\$10,001-\$15,000	64.1	3.9	16.90
\$15,001-\$20,000	63.9	4.0	15.50
\$20,001-\$25,000	54.2	2.4	13.40
\$25,001 or over	58.2	3.3	24.00
All	62.6	3.7	\$15.50

\*Data weighted by relative store share of credit sales in California. Actual number of accounts in parentheses.

†Net sales = total sales less returns and allowances.

°Based on month's accounts were open.

**TABLE 2**

**Account Data by Number of Credit Cards Used\***

**Account Averages (12 Month Period)**

<b>Total Number of Credit Cards</b>	<b>N*</b>	<b>Percentage Distribution</b>	<b>Total Sales</b>	<b>Net Sales †</b>	<b>Net Revolving Sales</b>	<b>Finance Charges</b>
Under 5	156	30.2	\$166	\$155	\$101	\$11.10
5-9	191	36.9	186	179	117	12.70
10-14	144	27.9	201	187	111	11.70
15 or more	26	5.0	292	281	146	5.80
All	517	100.0	\$190	\$179	\$112	\$11.60

<b>Total Number of Credit Cards</b>	<b>Percentage Share of Net Sales</b>	<b>Total Share of Finance Charges</b>	<b>Net Sales (percent)</b>	<b>Revolving Sales (percent)</b>
Under 5	26.0	28.9	7.2	11.0
5-9	36.9	40.5	7.1	10.8
10-14	29.2	28.1	6.2	10.5
15 or more	7.9	2.5	2.1	4.0
All	100.0	100.0	6.5	10.3

<b>Total Number of Credit Cards</b>	<b>Percentage of Net Sales That Were Revolving</b>	<b>Number of Revolving Months</b>	<b>Average Net Sales Per Month °</b>
Under 5	26.0	28.9	7.2
5-9	36.9	40.5	7.1
10-14	29.2	28.1	6.2
15 or more	7.9	2.5	2.1
All	100.0	100.0	6.5

\*Data weighted by relative store share of credit sales in California. Includes department store, bank, gas, travel and entertainment (American Express, Diners Club, etc.), and other cards (airlines, rent-a-car, etc.).

†Net sales = total sales less returns and allowances.

°Based on month's accounts were open.

## A FRAMEWORK FOR THE SUBSIDY ANALYSIS

Before a more formal analysis of the subsidy issue is presented, it may be useful to review three basic patterns of account use and the costs and revenues associated with each. For simplicity, a two-period model is assumed, so that finance charge revenues and associated capital and billing costs on balances revolved beyond two periods are not shown.

	CREDIT ACCOUNT USERS		
	(A) Cash Customer	(B) Balance Revolved	(C) Balance Paid; No Finance Charges Paid
Revenues			
Net on sales	g	g	g
Finance charges (on balances)		f	
Costs		k	k
Capital Processing		p	p
Collection		c	c
Net contribution (two periods)	g	g+f-k-p-c	g-k-p-c

The example shows the approximate structure of costs and revenues for three different consumers over two periods, each making a one-dollar purchase at the beginning of the first period. The first (A) pays cash, and the net profit before taxes is  $g$ , the profit rate on sales. B and C charge their purchases, and, at the end of the period, each receives a bill giving him till the end of the second period to pay the amount in full without penalty, or to make a minimum payment and revolve the balance. Consumer B makes the minimum payment, revolving the balance and adding finance charge revenues of  $f$  for the second period (which are collected later, technically with some uncertainty). The first period is "free." Costs incurred are the cost of capital for the two periods  $k$ ; the cost of processing the charge, the payment and mailing the bill  $p$ ; and collection costs  $c$  (an expected value per dollar of credit sales as not all users generate collection problems). The third consumer (C) pays off the obligation at the end of the second period and incurs no finance charge, generating revenues of  $g$  and costs of  $k + p + c$ .

Both credit card users generate much the same costs in the two periods: the cost of processing the charge, the cost of billing, the expected collection cost (zero for (C), given that the amount has already been paid, but positive over the two periods), the cost of processing a payment (partial for one, in full for the other) and the cost of capital for two periods. Revenues differ by  $f$ , finance charges paid. Combined, these elements of cost and revenue determine the net contribution of each consumer to the operation of the retailer for two periods, and it is this measure in a multi-period context that will be related to the characteristics of the user of credit accounts.

## THE MEASUREMENT OF NET CONTRIBUTION

A measure of the net contribution of each account to the operation of the firm can be calculated for a twelve-month period based on the model presented above. The measure will include revenues from the sale of goods as well as from the credit function per se, since the relative profitability per customer depends on how much he buys as well as how he makes those purchases and pays for them (the number of charge slips, payments, free rides, etc.). Net contribution for the  $i$ th account is defined as follows:

$$NC_i = g \cdot NS_i + FC_i - k \cdot AOB_i - p \cdot N_i - C_i$$

where

$NC_i$	=net contribution (before taxes) of the $i$ th account
$NS_i$	=net sales
$g$	=profit rate (before taxes) on net sales
$FC_i$	=reported finance charge revenue
$AOB_i$	=the average outstanding balance owed
$k$	=the cost of capital (before taxes) to the lender
$p$	=handling and processing costs per slip for each purchase, payment, and credit
$N_i$	=total number of charge slips, payments, and credit slips
$C_i$	=the expected value of collection costs for problem accounts, based on the probability of becoming a problem account and estimated collection costs.

Two revenue sources were identified in the analysis. Revenues from finance charges assessed on balances that were revolved for one month or longer were taken as reported in the account history study. Net profit on goods sold was approximated as 6 percent of sales net of returns and credits.<sup>8</sup> It is possible that consumers purchase different mixes of commodities that yield significantly different profit rates on net sales, but information needed to make this distinction was not available.

No direct measures of costs are easily attainable from the data. Cost figures are not routinely kept on an account basis as are records of charges and payments. Consequently, costs had to be approximated. There are four major cost items that must be quantified in constructing a measure of net contribution. The first includes all costs associated with regular billings, such as processing payments, mailing bills, and processing returns. The number of each of these is known for the twelve-month period studies, and a cost of 50 per item was assigned in determining processing costs. Although returns require a great deal of staff time for making adjustments, these costs are not included. It is assumed that these costs are the same for cash and for credit card buyers and further that credit card users and cash customers make returns at the same rate.

The second cost element depends on the number and size of transactions, given the total volume of sales. A single fifty-dollar sale costs less to process than ten five-dollar charges. The number of transactions was not available, and an average sale of ten dollars per slip was assumed. This yields a cost rate of \$.005 on gross sales for the cost of processing sales slips, assuming a processing cost of 5¢ per slip.

The third factor considered is the cost of capital tied up in the financing of receivables. For each account, this depends on the volume of transactions and the actual number of days between purchases and payments. The

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<sup>8</sup> This paper examines the overall contribution made by each account based on the twelvemonth account history study. Cash purchases made by these individuals were not identified and could not be included. No judgment is made regarding the appropriateness of allocating profits on goods sold to any of the identifiable merchandising functions. Some proponents of lower ceiling rates for finance charges argue that profits on goods sold on the credit card should be allocated to the credit function, making returns higher than those estimated in accounting studies of the problem. This, however, is a complex issue, and should encompass the following considerations. (i) Not all goods sold on a credit card are credit purchases. As a convenience (cash substitute), charges are made and then paid off promptly. Most of these sales would likely be made on a cash basis in the absence of the credit card. (ii) No firm can sell more goods (have a competitive advantage) because it offers credit if all its competitors offer (or could offer) credit plans. (iii) A consumer does not, over his lifetime, spend more than he earns. Consumers do not "buy more" because credit is available but they do purchase at different times and buy a different mix of goods (more durables, less non-durables) than they would in the absence of credit. Consumers can "earn" more (and thus have more to spend) if they have access to capital markets. (iv) Any firm unilaterally withdrawing credit would likely lose a substantial volume of sales. In this limited sense, as a competitive device, credit is "profitable." (v) The introduction of credit (or an increase in its availability) if used by consumers to accelerate purchases can raise the growth path of national income, providing a one-shot increase in income and output (if capacity is available).

marginal cost of funds for financing the receivables was set at 5.4 percent, an average of several appropriate rates prevailing over the period of study. This figure is an approximation of the cost of marginal borrowed funds for this function and is not an adequate representation of the cost of capital to the firm.

The amount of capital tied up in receivables was taken to be the average amount outstanding on the credit account. This includes the cost of sales to the firm but also recognizes that to deliver the merchandise to the consumer, the firm must pay for sales and management salaries, floor space, financing of the inventory (auto dealers, for example), utilities, etc. Thus, the amount advanced to the consumer far exceeds the simple cost of goods sold. Profit on goods sold is also not immediately realized, requiring the firm, at the margin, to use other sources of working capital. Some types of retailers receive short-term trade credit from suppliers. However, unless all inventory is sold when received, it is difficult to argue that this is a significant offset to the cost of capital, especially since it is tied only to the cost of goods to the retailer.

The fourth category of costs is that associated with the collection activity required to run a credit operation. Past due accounts require immediate work by the collections staff. Small overdue accounts require the same amount of effort (at least initially) as do large ones. This includes telephone calls, letters, personal visits, skip traces, and similar activities. Legal action may be required. These costs are substantial, making up over 20 percent of the costs of providing credit.<sup>9</sup> For the purpose of this study, a "problem" account is any account that is two months past due on any payment normally expected based on the credit card agreement. These accounts are singled out for immediate attention in an attempt to prevent more serious delinquency. Each step represents a cost (primarily staff time) to the firm incurred in an attempt to collect the overdue or unpaid account.

Policies for dealing with problem accounts (and indeed the definition of a "problem" account) vary from firm to firm and frequently within firms. The data presented in this part of the study are not a representative sample of California "problem" accounts as they were drawn from one regional credit office of one firm. The firm is among the largest retailers nationally, but the customers sampled were only those living in northern California. Still, the diversity of socioeconomic status is quite wide, and it is hoped that a reasonably representative relationship between collection difficulties and user characteristics can be established from this firm's experience. Firms differ in their reliance on collection programs, but the cost of this activity is probably inversely related to uncollectable account expense.

A sample of 427 "problem accounts" was drawn (about one-fifth of all the problem accounts at the center). The collection record of each account was transformed into a framework for assigning costs to the collection effort.<sup>10</sup> Table 3 displays the basic findings of the problem account study. The overall results suggest

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<sup>9</sup> See [14]. Total credit costs were found to be about 8 percent of credit sales while collection costs were about 2 percent of credit sales (p. 5 3).

<sup>10</sup> The following types of activities were identified:

- a. Total number of entries on the account record. Each entry represents staff time taken to deal with the problem account.
- b. Total number of phone calls made: (a) reached party, (b) no answer. The differentiation was made because less time is required by staff if the party did not answer.
- c. Total number of letters sent. Standard letters are generally used so that the cost includes postage and a minimal amount of staff time.
- d. Skip trace. Account holders that cannot be located may be traced through specialized agencies or extensive tracing. Generally, this is a fairly expensive proposition.
- e. Contact representative sent. Frequently, a staff member is sent to the account holder's address to facilitate the collection of an overdue account.
- f. Repossession attempts. These are very expensive and frequently more than one visit is required.

that there was little if any difference in collection effort by income group, including those accounts for which income was not known.<sup>11</sup> The more expensive aspects of the collection effort did seem to occur more frequently among the lower-income groups (in particular, the use of location traces and the use of credit agents making calls on the residence of the delinquent account). There were only 9 repossession attempts in the sample. With so few occurrences, little can be said about their distribution. For the company involved, repossession was clearly an infrequently used method of account settlement.

Estimates of the cost of each type of collection effort were made by the firm providing the sample data, based on estimated time involved and average salary figures. The costs of extending credit can be allocated to each income (or other characteristic) class based on the survey of physical activity and the cost estimates for units of each activity. The cost of some activities (such as repossession and charges for information used in a skip trace) were more easily estimated, since their prices were set exogenously for the firm and involved no estimates of average time requirements. No fixed costs were allocated, nor were costs of materials, telephone services, and other similar factors explicitly included.

Table 4 presents the collection activity data converted to cost figures for each income group.<sup>12</sup> Skip traces, supervisor entries, the use of credit representatives, and repossessions generated noticeably higher costs for the two lowest-income groups, resulting in average costs considerably in excess of all groups except that for which income was not ascertained. Write-off expenses were also highest in these two groups, with the exception of the \$15,000-20,000 income group and the group for which income was not ascertained. The combination of write-off expense and other collection costs yields a per account expense that was higher for the lowest income groups, with the \$15,000-20,000 group next highest in expense. These figures represent average costs per account once they become a "problem."

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- g. Number of supervisor/management notations. Accounts that present complex or unique problems may require the attention of more highly paid members of the staff.
  - h. Disposition of the account. The choices were as follows (more than one being applicable):
    - 1. Write off
    - 2. Account collected, paid off
    - 3. Claim and delivery action
    - 4. Wage attachment (or other legal action)
    - 5. Small claims action
    - 6. Bankrupt
    - 7. Skip
    - 8. Fraud
    - 9. In process
  - i. The amount in question and the amount finally written off as uncollectable, if any.

<sup>11</sup> Income data were not available for many reasons: the account may have been established a considerable number of years ago when such information was not collected, or the account may have been transferred into the area, in which case the original application is not available or granted based on credit references. Although statistics on this group tend to be more like those on the lower-income groups, it would be dangerous to assume that most or this entire group was low-income families.

<sup>12</sup> Each entry requires time to make on the record. In addition, the various activities that generate the information for the entries must also be included (although some of the record keeping may be done simultaneously, such as writing while on the phone). Calls that reach the party obviously take more staff time than those that do not. A skip trace is perhaps the most variable of the efforts, sometimes involving many hours and calls too many information sources in an effort to locate a delinquent account holder. Use of a credit representative is billed out at a fixed rate, and sheriff fees for repossession attempts are fixed regardless of time involved. Supervisor notations are separated due to the differential hourly wages associated with their activities and the likelihood that these are the more difficult and time consuming problems.

**TABLE 3**  
**Problem Account Collection Activity by Income Groups**

Annual Account Averages									
Income Group	Dist.	Total Number of Entries	Reached	Not Reached	Letters	Skip Trace*	Credit Rep. †	Repossession Attempts	Supervisor Notations
\$ 5,000 or under	4.4%	37	7	6	5	.2	1.6	.11	6
\$ 5,001-\$ 7,500	17.1	34	6	8	6	.9	1.3	.02	2
\$ 7,501-\$10,000	17.8	32	8	9	7	.1	1.1	.01	2
\$10,001-\$15,000	22.1	32	9	6	5	.1	1.1	.02	2
\$15,001-\$20,000	5.4	31	7	5	5	.1	.7	0	1
\$20,001- over	4.2	26	5	7	4	0	.9	0	1
Not ascertained	29.0	36	8	8	6	.8	1.1	.02	2
All	100.0%	33	8	8	6	.5	1.1	.02	2

Income Group Shares									
Income Group	Dist.	Total Number of Entries	Reached	Not Reached	Letters	Skip Trace*	Credit Rep. †	Repossession Attempts	Supervisor Notations
\$ 5,000 or under	4.4%	5.0%	4.3%	3.6%	3.4%	2.0%	6.5%	22.2%	13.7%
\$ 5,001-\$ 7,500	17.1	17.6	13.4	18.0	18.3	34.8	19.5	22.2	17.2
\$ 7,501-\$10,000	17.8	17.2	19.0	21.2	19.8	4.0	16.8	11.2	15.0
\$10,001-\$15,000	22.1	21.0	25.1	18.0	20.2	5.1	22.2	22.2	20.3
\$15,001-\$20,000	5.4	4.9	5.3	3.3	4.3	1.0	3.6	0	3.9
\$20,001- over	4.2	3.3	2.7	4.1	3.0	0	3.3	0	2.9
Not ascertained	29.0	31.0	30.2	31.8	31.0	53.1	28.1	22.2	27.0
All	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Physical Counts									
Income Group	Dist.	Total Number of Entries	Reached	Not Reached	Letters	Skip Trace*	Credit Rep. †	Repossession Attempts	Supervisor Notations
\$ 5,000 or under	19	711	140	118	88	4	31	2	110
\$ 5,001-\$ 7,500	73	2511	431	592	468	69	93	2	138
\$ 7,501-\$10,000	76	2459	613	698	506	8	80	1	120
\$10,001-\$15,000	94	2987	811	590	515	10	106	2	163
\$15,001-\$20,000	23	706	172	108	109	2	17	0	31
\$20,001- over	18	471	86	134	76	0	16	0	23
Not ascertained	124	4421	975	1046	790	105	134	2	217
All	427	14266	3228	3286	2552	198	477	9	802

\*Effort to locate delinquent account holder.

†Representative of the firm that functions a through central information agencies a collection agent.

**TABLE 4**

**Average Cost Per Problem Account for Collection Activities**

	Annual Income of Account Holder						
	<b>Under \$5,000 (4.4%)</b>	<b>\$5,000- \$7,500 (17.1%)</b>	<b>\$7,501- \$10,000 (17.8%)</b>	<b>\$10,001- \$15,000 (27.1%)</b>	<b>\$15,001- \$20,000 (5.4%)</b>	<b>\$20,001- or over (4.2%)</b>	<b>Not Ascertained (29.0%)</b>
Entries	\$9.50	\$9.75	\$9.23	\$8.87	\$8.80	\$7.47	\$9.43
Calls reached	\$2.58	\$2.07	\$2.82	\$2.98	\$2.62	\$1.67	\$2.64
Called not reached	\$0.05	\$0.41	\$0.46	\$0.30	\$0.23	\$0.37	\$0.38
Letters	\$1.39	\$1.92	\$2.00	\$1.65	\$1.42	\$1.27	\$1.79
Skip traces*	\$4.42	\$19.85	\$2.21	\$2.26	\$1.83	\$0.00	\$9.76
Credit reps.†	\$3.26	\$2.55	\$2.11	\$2.28	\$1.48	\$1.78	\$2.24
Repossession attempts	\$2.10	\$0.55	\$0.26	\$0.43	\$0.00	\$0.00	\$0.42
Supervisor entries‡	\$6.36	\$2.08	\$1.74	\$1.83	\$1.48	\$1.41	\$2.05
<b>TOTAL COST</b>	<b>\$31.74</b>	<b>\$42.51</b>	<b>\$22.51</b>	<b>\$23.74</b>	<b>\$20.43</b>	<b>\$15.60</b>	<b>\$32.53</b>
Write-off	\$45.47	\$32.62	\$28.72	\$22.99	\$51.96	\$24.17	\$37.02
Size of delinquent balance	\$212.90	\$256.49	\$250.91	\$275.09	\$360.61	\$226.67	\$261.52
<b>TOTAL</b>	<b>\$77.21</b>	<b>\$75.13</b>	<b>\$51.23</b>	<b>\$46.73</b>	<b>\$72.39</b>	<b>\$39.77</b>	<b>\$69.55</b>

\*Efforts to locate delinquent account holders through central information agencies.

†The firm sends one of its own representatives to try to collect the account.

‡Since supervisor salaries are higher, their time is counted separately.

The relationship of collection costs to individual attributes was determined by regressing the measure of individual account collection cost on the characteristics (in dummy variable form) of problem account owners. The results are presented in Table 5. Only 221 cases had enough information available for this estimation. All group means were relatively unaffected by this reduction in sample size except for the lowest income group (\$5,000 and under). Here, the group average fell from \$77 in Table 4 to \$19 in Table 5 (column 2). This may have produced the relatively low problem account expense estimated for this income group, given the effects of other variables in the regression. Few of the categories of problem account characteristics explained significant differences in account collection costs.

Estimates of per account collection costs for the regular account sample were made by using the results in Table 5 to generate the expected collection cost for each member of the regular account sample, based on the demographic characteristics of the account holder. These values were then multiplied by the probability of becoming a problem account for a consumer with given characteristics. For simplicity (and due to sample-size considerations), probabilities were assigned by income group only.

The probability of becoming a problem account was constructed as a function of the income distribution for the regular account sample and the problem account sample.<sup>13</sup> This procedure assigns a problem account

<sup>13</sup> The probability of collection costs was inferred from the joint distributions of income in the sample of account users and in the special sample of problem accounts. About 30 percent of the regular sample did not respond to the questionnaire, and income data were not available for about one-third of the problem account sample. No serious income bias was evident in the regular sample based on income figures from applications for those not responding to the survey. Since no information was available for the problem

cost to each account holder regardless of his payment record. However, it does assign the proper amount of cost to each income group as determined by the sample of problem accounts and the regular account sample. Probabilities inferred from the two sample distributions were as follows:

Income	Probability of Becoming A “Problem Account”
\$ 5,000 and under	.044
\$ 5,001- 7,500	.175
\$ 7,501-10,000	.070
\$10,001-15,000	.051
\$15,001-20,000	.012
\$20,000/ or more	.008

The group means for simulated problem account expenses are shown in Table 6. Overall, it appears that group differences in cost depend more on differences in the probability of becoming a problem account than on the costs of collecting a delinquent account. The data in Table 4 suggest that once an account becomes a collection problem, differences in costs may not be as great as might have been thought. But, fewer high-income consumers become collection problems. A few cells have a negative expected collection cost. No constraint was imposed on the estimation to insure that estimated costs were not negative, but such values were assumed to be a value of zero in the analysis of net contribution.

In summary, the net contribution of an account holder depends on sales and finance charge revenues and the costs of providing goods and the credit service. Operationally, net contribution will be determined as follows, incorporating an approximation for the number of charge slips processed based on gross sales:

$$NC_i = g * N_{Si} + FC_i - p * N_i^* - (p/l_0) * S_i - k * AOB - C_i$$

where  $N_i^*$  is the number of payments and returns and  $S_i$  is gross sales. The other variables are as defined earlier; cost parameters were assumed to have the following values:  $g = .06$ ,  $p = .05$ , and  $k = .054$ .

account study, it was assumed that the data available represent the income distribution of all problem account owners. The probabilities were constructed as follows, taking the overall incidence of problem accounts in a year at 4 percent:

Income Groups	Income Distribution	Income Distribution in the Problem Account Sample	Probability of Problem, Given Income Group
\$ 5,000 and under	.058	.063	.044
\$ 5,001- 7,500	.055	.241	.175
\$ 7,501-10,000	.143	.251	.070
\$10,001-15,000	.245	.310	.051
\$15,001-20,000	.212	.076	.012
\$20,001 and over	.287	.059	.008
	1.000	1.000	
	p(bi)	p(bi/a)	p(a/bi)

The probabilities were calculated using the multiplication rule of probability theory:

$$p(a/bi) = \frac{p(bi/a) * p(a)}{p(bi)}$$

where  $p(a)$  is the probability of an account becoming a problem account .04.,  $p(bi)$  is the probability of an account being in the  $i$ th income group,  $p(bi/a)$  is the probability of being in the  $i$ th income group given that the account is a problem account, and  $p(a/bi)$  is the probability of an account being a problem account given that the account is in the  $i$ th income group.

**TABLE 5**  
**Problem Account Expense**

	N	Univariate Group Mean	Coeff.*	Std. Error
<b>Income</b>				
\$ 5,000 and under	7	\$19	\$-7.6	55.2
\$ 5,001- 7,500	50	80	28.2	25.4
\$ 7,501-10,000	57	49	-2.0	23.1
\$10,001-15,000	74	42	-	-
\$15,001-20,000	19	80	43.6	34.6
\$20,001 and over	14	47	27.5	40.2
<b>Age</b>				
Under 25	14	145	37.5	42.6
25-34	79	65	13.7	21.6
35-44	72	51	-	-
45-54	45	28	-13.3	24.3
55-64	8	16	-54.1	48.2
65 and over	3	3	-46.5	90.9
<b>Years with Present Employer</b>				
Under 1	39	55	27.4	29.9
1-2	36	116	67.4	30.6
3-5	46	52	9.7	28.5
6-10	51	31	8.7	26.1
11 or more	49	39	-	-
<b>Marital Status</b>				
Married	201	49	-	-
Single	7	268	153.8	54.4
Separated	1	4	-36.2	127.5
Divorced	10	39	-22.4	44.7
Widowed	2	13	-35.8	91.9
<b>Housing Status</b>				
Own home	118	40	-	-
Rent; other	103	73	14.3	18.7
<b>Sex of Respondent</b>				
Male	205	50	-	-
Female	16	121	31.0	41.5
<b>Occupation</b>				
Professional	13	14	-	-
Technical; scientific	30	54	49.7	42.8
Supervisors; self-employed	45	90	92.8	41.8
Clerical & Sales	30	78	37.6	45.7
Craftsmen; foremen	48	23	22.6	43.9
Service workers	20	75	69.6	49.3
Operatives; unskilled	34	42	25.9	46.4
Students; housewives, retired	1	4	84.3	167.4
N/Mean/Constant Term	221	55	-36.1	

\*R2 = .20; S.E.E. = 123.2.

## NET CONTRIBUTION AND ITS RELATION TO USER CHARACTERISTICS

Table 7 shows the relationship between calculated net contribution and the characteristics of users as reported in the survey of consumer characteristics. Column 1 of the table indicates the number of cases in each group, and column 2 shows the simple group mean value for the net contribution measure. Columns 3 and 4 present the results of the regression of net contribution on the user characteristic. Column 5 shows the F-statistic for each dummy variable used.

Column 6 presents the regression coefficients as they would be estimated if the weighted sum of the regression coefficients for each predictor had been constrained to add to zero rather than imposing the usual constraint on the set of dummy variables (see Dunkelberg [2] ). This has the advantage of explicitly showing a coefficient for each dummy variable and yields the mean of the dependent variable as the constant term of the regression. Coefficients are then deviations from the overall mean and can be compared to deviations of univariate group means from the sample mean of the dependent variable.

With respect to the subsidy issue, the results make it clear that with other things (in the regression) equal, the lowest-income groups generate relatively more cost than revenue in their use of credit accounts.<sup>14</sup> These results alone should not necessarily be viewed as evidence that lower-income families actually contribute less to revenues than costs, as some of the values of the parameters could well have been set too low or too high (such as the profit rate on goods sold). More important are the relative differences among groups, and these are insensitive to wide variations in the values of the assumptions made (see Table 8). The results indicate that the low-income credit user gets a subsidy from other credit card users in that his net contribution to the profitability of the firm is considerably less than that of other income groups. The heaviest contributors are the users with \*incomes between \$10,001 and \$20,000. The highest-income group makes a modest contribution, primarily through its high sales volume, as finance charge revenues are disproportionately low for this group.<sup>15</sup>

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<sup>14</sup> Observed differences by user characteristics are affected by selection rules used to grant credit. For example, if women were systematically denied credit, estimates of the effect of sex might be obscured. In addition, the sex of the respondent to the questionnaire is probably not in a one-to-one correspondence with the sex of the credit card applicant. Occupation may be similarly affected. Thus, the results reflect differences by characteristics after an evaluation of credit worthiness has been made and cannot be extended to the population as a whole.

<sup>15</sup> These data do not reveal how all-available sources of credit are used by the families sampled. Since users typically own more than one card, some with a high degree of substitutability (like Master Charge and Bank Americard), it is possible that one account is used in such a way as to generate little or no net revenue, while another is associated with heavy activity. A sample of accounts provides little insight into this problem. It is likely, given income, that the larger the number of cards owned, the lower the probability that card use will be associated with a high net contribution.

**TABLE 6**  
**Simulated Problem Account Expense**

	N	Univariate Group Mean
<b>Income</b>		
\$ 5,000 and under	14	\$-.2
\$ 5,001- 7,500	17	29.6
\$ 7,501-10,000	59	3.1
\$10,001-15,000	108	.9
\$15,001-20,000	102	.8
\$20,001 and over	162	.4
<b>Age</b>		
Under 25	7	35.9
25-34	89	3.7
35-44	120	2.5
45-54	145	.6
55-64	64	-1.3
65 and over	14	-.1
<b>Years with Present Employer</b>		
Under 1	55	4.7
1-2	40	6.8
3-5	72	2.8
6-10	67	.7
11 or more	204	.6
<b>Marital Status</b>		
Married	350	.7
Single	32	19.0
Separated	7	-.4
Divorced	29	2.3
Widowed	20	-.1
<b>Housing Status</b>		
Own home	333	.9
Rent; other	106	5.6
<b>Sex of Respondent</b>		
Male	363	1.1
Female	76	6.7
<b>Occupation</b>		
Professional	104	1.0
Technical; scientific	49	1.0
Supervisors; self-employed	110	2.2
Clerical & Sales	44	5.5
Craftsmen; foremen	63	0
Service workers	28	7.6
Operatives; unskilled	33	1.4
Students; housewives, retired	9	1.2
N/Mean/Constant Term	439	2.1

\*Cell sizes and group mean for predicted value of problem account cost in a sample of 336 regular credit card users. Predicted values were generated using the regression results described in Table 5. Costs were assigned using the predicted value times the probability of becoming a problem account, .044, .175, .070, .051, .012, .008 for the six income groups respectively. Twenty-two cases where the respondent was retired were omitted since it was not possible to construct problem account cost for this group.

**TABLE 7**  
**Determinant of Net Total Contribution**

	(1) N	(2) Sub-group Mean	(3) Coeff. (\$)	(4) Std. Error	(5) F	(6) Adj. Coff.	(7) Cell Mean Dev.
<b>Income</b>							
\$ 5,000 and under	14	\$ 4.2	-15.7	8.4	3.5	-15.0	-12.5
\$ 5,001- 7,500	17	-12.3	-29.8	8.2	13.3	-29.1	-29.0
\$ 7,501-10,000	59	15.2	-3.4	4.6	.6	-2.7	-1.5
\$10,001-15,000	110	17.7	-	-	-	.7	1.0
\$15,001-20,000	102	21.1	4.2	3.6	1.2	4.9	4.4
\$20,001 and over	137	18.5	1.4	3.5	.2	2.1	1.8
<b>Age</b>							
Under 25	7	2.2	1.5	11.1	0	4.8	-14.5
25-34	89	13.7	-4.7	3.9	1.5	-1.4	-3.0
35-44	120	20.4	-	-	-	3.3	3.7
45-54	145	15.7	-7.3	3.3	5.0	-4.0	-1.0
55-64	64	17.6	-.7	4.3	0	2.6	.9
65 and over	14	20.6	4.5	8.8	.3	7.8	3.9
<b>Years with Present Employer</b>							
Under 1	55	16.3	1.7	4.1	.2	2.6	-.4
1-2	40	3.7	-11.8	4.8	6.2	-10.9	-13.0
3-5	72	20.3	4.2	3.7	1.3	5.1	3.6
6-10	67	15.4	-4.7	3.9	1.5	-3.8	-1.3
11 or more	204	18.6	-	-	-	.9	1.9
<b>Marital Status</b>							
Married	350	18.8	-	-	-	-.4	2.1
Single	32	4.6	-.2	6.0	0	-.6	-12.1
Separated	7	17.0	3.0	9.9	.1	2.6	.3
Divorced	29	9.4	5.7	6.2	.9	5.3	-7.3
Widowed	20	11.4	-.2	6.6	0	-.6	-5.3
<b>Housing Status</b>							
Own home	333	18.7	-	-	-	1.2	2.0
Rent; other	106	10.6	-5.1	3.6	2.0	-3.9	-6.1
<b>Sex of Respondent</b>							
Male	363	18.5	-	-	-	1.1	1.8
Female	76	8.3	-6.4	4.4	2.1	-5.3	-8.4
<b>Occupation</b>							
Professional	103	18.5	-	-	-	1.7	1.8
Technical; scientific	49	20.1	-4.5	4.7	.9	-2.8	3.4
Supervisors; self-employed	110	15.0	-6.0	3.7	2.6	-4.3	-1.7
Clerical & Sales	44	15.1	6.2	5.2	1.4	7.9	-1.6
Craftsmen; foremen	63	19.0	-.9	4.3	0	.8	2.3
Service workers	28	11.3	-3.5	5.7	.4	-1.8	-5.4
Operatives; unskilled	33	16.7	2.2	5.4	.2	3.9	0
Students; housewives, retired	9	9.9	-5.2	11.1	.2	-3.5	-6.8
N/Mean/Constant Term	439	16.7	25.0				

\*Twenty-two retired cases omitted due to nonconforming data. It was not possible to construct problem account cost for this group.

**TABLE 8**  
**Sensitivity Analysis of Cost and Revenue Assumptions**

	Specific Alterations (Other Parameters Unchanged)										
	All Parameters To make net Contribution			Profit Rate (.06)		Capital Cost (.054)		Processing Cost (.05)		Scaling of Prob. Of Collection Difficulty	
	Basic Run	Low*	High*	.09.	.03	.08	.03	.025	.075	1.5	.5
<b>Income</b>											
\$ 5,000 and under	\$-15.7	-7.4	-23.1	-20.9	-10.5	-13.8	-17.4	-16.2	-15.1	-15.6	-15.7
\$ 5,001- 7,500	-29.8	-33.8	-25.3	-33.9	-25.7	-28.6	-30.8	-30.2	-29.4	-39.9	-19.7
\$ 7,501-10,000	-3.4	-2.1	-4.5	-4.4	-2.5	-2.9	-3.9	-3.6	-3.3	-3.9	-3.0
\$10,001-15,000	-	-	-	-	-	-	-	-	-	-	-
\$15,001-20,000	4.1	3.0	4.9	4.6	3.6	3.6	4.5	4.1	4.0	4.3	3.8
\$20,001 and over	1.4	.7	2.2	2.6	.2	1.6	1.2	1.5	1.3	1.7	1.1
<b>Age</b>											
Under 25	1.5	-14.5	17.1	7.9	-4.9	.7	2.2	2.0	1.0	-6.5	9.5
25-34	-4.7	-3.0	-6.4	-6.5	-2.9	-4.5	-4.9	-4.9	-4.6	-5.2	-4.3
35-44	-	-	-	-	-	-	-	-	-	-	-
45-54	-7.3	-3.4	-10.7	-9.4	-5.2	-6.4	-8.2	-7.6	-7.1	-7.1	-7.6
55-64	-.7	1.9	-3.1	-1.7	.4	-.4	-.9	-.7	-.6	.4	-1.8
65 and over	4.5	3.0	6.2	7.0	2.1	5.0	4.1	4.8	4.3	5.1	3.9
<b>Years with Present Employer</b>											
Under 1	1.7	.1	3.2	2.7	.7	1.5	1.9	1.8	1.6	1.5	1.9
1-2	-11.8	-8.6	-14.3	-13.4	-10.2	-10.1	-13.4	-12.0	-11.6	-12.6	-10.9
3-5	4.2	2.1	6.1	5.9	2.4	3.9	4.4	4.4	4.0	4.4	3.9
6-10	-4.7	-2.0	-7.1	-6.0	-3.5	-4.0	-5.4	-4.8	-4.6	-4.4	-5.1
11 or more	-	-	-	-	-	-	-	-	-	-	-
<b>Marital Status</b>											
Married	-	-	-	-	-	-	-	-	-	-	-
Single	-.2	-10.2	9.2	3.1	-3.4	-1.6	1.2	.1	-.4	-4.7	4.4
Separated	3.0	1.4	4.7	SA	.6	3.4	2.7	3.1	2.9	3.5	2.5
Divorced	5.7	5.8	5.4	6.7	4.8	5.3	6.1	3.8	5.7	7.4	4.1
Widowed	-.2	.1	-.4	.3	-.7	0	-.3	-.3	-.1	.2	-.6
<b>Housing Status</b>											
Own home	-	-	-	-	-	-	-	-	-	-	-
Rent; other	-5.1	-3.0	-7.0	-7.1	-3.0	-4.9	-5.2	-5.2	-4.9	-5.5	-4.7
<b>Sex of Respondent</b>											
Male	-	-	-	-	-	-	-	-	-	-	-
Female	-6.4	-4.4	-8.0	-7.5	-5.3	-5.4	-7.3	-6.5	-6.2	-6.9	-5.9
<b>Occupation</b>											
Professional	-	-	-	-	-	-	-	-	-	-	-
Technical; scientific	-4.5	-3.7	-5.1	-5.5	-3.6	-4.2	-4.9	-4.6	-4.4	-5.3	-3.8
Supervisors; self-employed	-5.9	-5.5	-6.3	-7.3	-4.5	-5.8	-6.0	-6.0	-5.8	-7.1	-4.6
Clerical & Sales	6.2	2.1	10.0	8.9	3.6	5.4	7.0	6.5	6.0	6.2	6.3
Craftsmen; foremen	-.9	.4	-2.4	-2.8	1.0	-1.3	-.4	-1.1	-.7	-1.0	-.7
Service workers	-3.5	-4.4	-2.6	-3.5	-3.5	-3.3	-3.8	-3.4	-3.6	-4.7	-2.4
Operatives; unskilled	2.2	1.3	2.7	1.9	2.4	1.6	2.7	2.2	2.2	1.9	2.4
Students; housewives, retired	-5.2	-3.6	-7.0	-7.7	-2.7	-5.6	-4.9	-5.5	-5.0	-5.8	-4.6
Constant	25.0	12.8	36.4	33.2	17.4	22.5	27.9	26.2	24.4	25.5	25.1
Mean	16.7	6.0	25.6	22.9	10.6	14.6	18.7	17.5	16.0	15.7	17.8
R2	.13	.38	.08	.10	.18	.14	.12	.12	.13	.19	.09

\*Parameters chosen from single parameter simulations shown to make net contribution high or low. For example, low parameters would be 3 percent on sales, 8 percent capital cost, .075 processing cost and 1.5 scaling on default probability.

## CONCLUSIONS

These findings suggest that the popular notion that the low-income credit user subsidizes the higher-income users of retail credit is not true. The data indicate that the lower-income credit user probably receives a substantial subsidy from higher income credit users. The highest-income group's net contribution is surprisingly small, a result of relatively higher-than-expected collection costs and heavier use of the credit card as a single payment convenience (incurring no finance charge).

Part of the observed subsidy is a direct result of regulatory and institutional arrangements established for the extension of this credit. Elimination of the free period (by using an average daily balance method of finance charge calculation, for example) would remove subsidies due to differential use of the free time. It would also likely alter the use of the card since convenience use would then have a positive price attached to it. Other measures such as annual fees for cards would improve the matching of costs and revenues.

Differences on the cost side also affect net contribution. Charges for each charge slip, payment, and return processed and for each bill sent would not be unrealistic and could help insure that those using the service of the credit card paid for it. However, collection costs are a major source of differences in contribution and are not easily allocated to the users. Differential finance charges based initially on the consumers characteristics (a proxy for expected collection difficulties) and later modified by experience might be one answer to this problem. However, the cost of keeping such an information system operable and current (to keep consumers rates in line with changing financial and demographic characteristics) may cost the consumer much more than it benefits him.<sup>16</sup>

Reducing the maximum rate charged may also reduce these differences but would do so by eliminating the lower-income user as credit is more carefully rationed, rather than by eliminating the subsidy. Forcing lower-income consumers to use more expensive credit sources or denying them access to a legal credit market would not seem to be a desirable path to follow. Furthermore, if overall credit revenues are deficient and cash prices are increased as an alternative to some or all credit rationing, cash buyers (disproportionately low-income customers in numbers, although not necessarily in expenditure volume) may end up providing subsidies (or larger ones) to credit users.

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<sup>16</sup> Several studies have shown that a major reason for defaults or difficulties with payments schedules is variability in income receipts. Thus, individuals that are highly leveraged, regardless of their incomes, may experience payment difficulties when incomes decline or grow more slowly than expected. For consumers at the lower end of the income or wealth distribution, this is a particular problem as they are typically most affected by cyclical swings in the economy and are probably least able to anticipate economic slowdowns. A tax program that added stability to the income of consumers (like the negative income tax) might well substantially reduce the risk factor generally associated with lower-income consumers.

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