Risk and The Democratization of Credit Cards

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June 25, 1998

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1. Introduction

The United States has become a nation of card holders. The 1983 Survey of Consumer Finances found that only 42 percent of households had a general purpose credit card, such as a MasterCard or Visa. The most recent survey found that two-thirds of Americans, the large majority, had one.

This wider distribution of credit cards, what some have called the Democratization of credit, surely has benefits.[2] The new card holders get a convenient form of payment and a line of credit, while the banks earn fees and interest. Democratization may have a downside, however: higher risk.

Bank are now writing off credit card loans at the highest rate in 25 years (Chart 1). At the beginning of 1995, banks charged off just 3.5 percent of their credit card loans per year. The charge-off rate is now near 6 percent. The high rate of charge-offs is out of line with the state of the economy (Chart 2). While job growth did slow in 1995, charge-offs rose far out of proportion and continued rising even after job growth rebounded in 1996. Even the slowdown in 1989, which ended in a recession, did not create as much bad debt as the relatively mild slowdown in 1995. It is this steep rise in bad debt, right in middle of an expansion, that makes us think the new borrowers applying for and receiving credit cards are somehow riskier.

This paper investigates how the mix of credit card holders has changed in recent years and how those changes affect the risk of delinquency. Our data are from the Survey of Consumer Finances, which is conducted by the Federal Reserve Board every three years. We use the

[2] Lawrence Lindsey (1997), a former Governor of the Federal Reserve Board, uses this term.

surveys from 1989 and 1995, the most recent. Data from 1995 may seem outdated, but it is actually ideal for our purposes. Credit card loans need to "season" about 18 months before they go bad, so the charge-offs this year and last year partly reflect the risk characteristics of the 1995 vintage of borrowers. Economic conditions were also very similar 1989 and 1995 (Chart 2), which reduces the risk that any differences we find are due to business cycle effects.[3] The period between 1989 and 1995 was also one in which banks were marketing their cards especially aggressively, so we want to know if the borrowers taking them up were riskier (Chart 3).

We find that the new card holders are different, and potentially riskier. They tend to earn less, and as result, they owe more relative to income. They are also more likely to work at relatively unskilled blue-collar occupations. Personal characteristics have also changed; the new card holders are more likely to be single, more likely to rent rather than own their home, and have slightly less seniority at their current job. Even attitudes have changed; card holders are more willing to borrow for vacation or cover living expenses when their income is cut.

Which of these changes translate into higher risk? To answer that, we estimate how a household's profile affects the probability that they were delinquent on any payment in the year before they were surveyed. We find, not surprisingly, that debt burdens are very important in predicting delinquency risk. More surprising is that occupation also matters; delinquency rates are higher among unskilled blue-collar workers, possibly because those occupations are more cyclical. Some of the personal characteristics and attitudes that have changed, such as marital status and job tenure, also imply somewhat higher risk.

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[3] We do not use the surveys from 1983 and 1992 because they were near the troughs of the recessions in 1980-1982 and in 1990-1991 recession.

Before we start, we want to note the goal of this paper is to assess the risk of the new borrowers, not to take credit from them, or from the banks willing to lend to them. Our analysis is positive, not normative. As long as banks raise spreads to cover any extra risks they are taking, and as long as borrowers understand the price they are paying, both the lender and borrower benefit from the new credit.

I. A Profile of Card Holders

A sample of one of the credit card applications banks have been sending out is a simple way to identify some variables that lenders think affect credit risk and that we should include in our profile (Appendix). Some of the information that lenders solicit is clearly correlated with risk. Income determines a borrower's capacity to service his debt. Assets are also important, particularly safe, liquid assets which can buffer against fluctuations in income.[4] A borrower's total monthly loan payment is a key determinant of risk; the more borrowers owe, the smaller the income shock necessary to cause delinquency or distress.

Lenders also ask applicants about their work, perhaps because income is more variable in some occupations than in others. Construction workers, for example, are highly exposed to wage cuts and layoffs because the housing industry is highly cyclical and interest rate sensitive. Services, on the other hand, are relatively stable because services, unlike goods, cannot be stored. Job tenure, or seniority, also seems important if employers follow "last hired-first fired" practices.

Some of the personal characteristics that lenders ask about are less obviously correlated

[4] The collateral value of assets is probably less important to credit card lenders, whose loans are not usually secured.

with risk, although a connection is possible. Long-term residents and homeowners may be less likely to move simply to avoid creditors. Older borrowers may be more settled, or simply more responsible. We include these types of characteristics in the profile below not because we think these connections are necessarily strong, but because lenders seem to care about these characteristics.

II. Meet the New Borrowers

We use the Survey of Consumer Finances to investigate whether the *average* card holder has become riskier.[5] We are really interested in the *marginal* borrowers, the households that did not qualify for a card in 1989 but had one in 1995, but we cannot identify the marginal borrower directly because the surveys in those years do not include the same set of households. However, if the average borrower is riskier, that suggests that the new borrowers joining the pool were also riskier.

For our purposes, a bank card holder is a household with at least one Visa, MasterCard, or some other general purpose bank credit card, such as Optima or Discover.[6] We begin with some basic facts about card holding and borrowing, then we examine the profile of card holders

[5] The SCF comprises a repeated cross section of about 4000 households. The sample is chosen to represent the wealth and financial characteristics of the U.S. population as a whole. The survey include contains five observations for each household in order to attempt to impute missing values without understating standard errors. As is common, we use only the first implicate of the data. Our estimates will be unbiased, but their variance will be somewhat understated (Montalto and Sung 1996). As a precaution, we use a more conservative five percent significance cut off rule, rather than the usual ten percent rule.

[6] We do not count gas cards, or cards issued by department stores. We also excluded American Express Cards because they are a charge-card, not a credit card, so they have less bearing on risk.

from several angles, including their personal characteristics, their income and balance sheets, their occupations, and their attitudes.

Card holding and borrowing

"More" and "higher" summarize the changes in card holding and borrowing between 1989 and 1995; more cards, higher limits, and more borrowing (Table 1). Over two-thirds of all households had a bank card by 1995, up from only 56 percent in 1989. Two is still the median number of cards per household, but three and even five cards are increasingly common.

Credit limits are also higher. The median limit available per card increased by $900 dollars, roughly a third. The total limit available on all cards increased even more, by 44 percent, because more households are carrying more than two cards.

Card holders took advantage of the expanded limits by borrowing more on their cards. The median balance is still relatively low, though rising, because many households still carry a low or zero credit card balance. The mean credit card balance is much higher because a relatively small number of households carry disproportionately large balances.

Personal Characteristics

The personal profile of card holders seems riskier (Table 2). Card holders are less likely to be married, and they are also less likely to own their home. The change in residency and job tenure depends on whether we look at the mean or median of the distribution. The mean number of years card holders had spent at their current address did not change significantly, but the median fell by a third. Conversely, the mean number of years card holders had spent at the current job declined significantly, though slightly, while the median number of years did not

change.[7]

The distribution of card holders across education levels has become more concentrated in the middle. The share at the top (post graduate) and bottom (no high school diploma or equivalent) dropped, while the share at all the levels in between increased.

Income, Assets, and Debt

The income and balance sheets of card holders also seem weaker (table 3). Median, annual income of all card holders dropped by $4,700. The drop in median income reflects a shift in the income distribution of card holders from the top toward the bottom. In 1989, 41 percent of card holders earned $50,000 or more a year, and only 22 percent earned less than $25,000. By 1995, only 36 percent of card holders were in earning the top two income brackets while 28 percent of card holders fell in the bottom two brackets.

Card holders had fewer liquid assets, but more stocks and bonds on average. The decline in liquid assets may matter more in terms of risk, because liquid assets are also safer, and because half of all card holders do not own any stocks and bonds.

Debt burdens among card holders have also risen. Total debt did not increase, but because card holders have lower income, debt relative to income has risen. The ratio of total debt rose from 48 percent to 55 percent. The ratio of debt *payments* to income rose from 0.12 to 0.17.

[7] The median age of heads of households with bank cards actually increased by a year, which seemed at odds with reports that card holders are targeting younger, college-age borrowers. In fact, households headed by college age students are more likely to have a bank cards; 45.5 percent of households headed by 18-24 year olds had a bank card in 1995, compared to 33.7 percent in 1989. The difference was statistically significant at below 5 percent.

Occupations

Card holders are increasingly likely to work in relatively unskilled blue-collar occupations with more cyclical income streams (Table 4).[8] Executives and managers still make up the largest share of card holders, but their share declined by 5.7 percent. Most of the slack was taken up by operators and laborers, whose share of card holders rose by 5.2 percent. Income in these relatively unskilled blue-collar occupations is not only lower, but may be more cyclical due to wage cuts, reductions in hours, and even layoffs.

The occupations of debt holders, as opposed to card holders, may matter more for explaining the rise in bad debt. If unskilled blue-collar workers were merely acquiring cards for convenience, but not to borrow, the occupation shift would not matter. In fact, however, debt holding has shifted across occupations in much the same way as card holding (Table 5). The share of all bank card debt held by executives and managers declined by 7.5 percent, while the share held by operators and laborers rose 6.3 percent.

Attitudes

We conclude the profile with a look at attitudes toward credit usage. Participants in the Survey of Consumer Finances are asked whether they think it is "all right for someone like yourself" to borrow for specific purposes. The responses of card holders are shown in Table 6.[9]

Card holders seem to have a clear notion of what is a legitimate use of credit and what is

[8] Of the two categories of blue-collar workers, precision production and repair workers are considered relatively skilled while operators and laborers are considered less skilled.

[9] Since "all right" can indicate different degrees of approval to different people, the responses to a given question in a given year may not be meaningful. The differences across categories and time, however, should eliminate those biases.

not. Most card holders approve of borrowing to finance a car purchase or educational expenses, but disapprove of borrowing to take a vacation or to purchase furs and jewelry. Card holders were roughly split over whether it was all right to borrow to cover living expenses.

Attitudes appear to have relaxed some between 1989 and 1995, as card holders became more likely to approve of borrowing for a vacation and to cover living expenses after a cut in income. We would not want to push too hard on this point, but the change in attitudes could imply higher risk. Card holders approve of more uses of credit, which means more borrowing and higher debt burdens overall. Moreover, the specific types of borrowing that card holders are more inclined toward, vacation and income smoothing, are especially risky since neither credit produces an asset.[10]

What this profile reveals is that the new borrowers are different, and potentially riskier, in several ways. They are more indebted, so smaller shocks can cause financial distress, and they are more likely to work in relatively unskilled blue-collar jobs, where income shocks and layoffs may be more likely. They are also less likely to be married, more likely to rent, and have less work experience. And they seem more willing to borrow. But which of these changes have contributed to the rise in charge-offs? The rising debt burdens is clearly important, but what about the other changes. Are renters really riskier? Do occupations matter? Do attitudes?

II. Profiles and Delinquency Risk

To determine how the risk of delinquency depends on a card holder's profile, we estimate the following equation:

[10] Education loans produce *human* capital, which is attachable through wage garnishing.

$$Delinquent_i = \alpha + \beta * Profile_i + \epsilon_i$$

Delinquent equals one if household *i* reported it was delinquent on any payment in the year before the survey, and zero if not. Charge-offs and delinquency are not the same thing, of course, but since charge-offs are usually preceded by a period of delinquency, the factors that lead to higher delinquency today should tell us something about the risk of charge-offs down the road. $Profile_i$ includes the full list of characteristics we just discussed. We estimate the equation over the full sample of households in both years, not just the sample of card holders. Estimating over just the sample of card holders would waste valuable information about the link between risk and household characteristics. The estimates in table 7 indicate the percentage change in the probability of delinquency risk associated with a small change in each of the independent variables, holding all the other variables constant.[11]

The household debt burden is a crucial determinant of delinquency risk. Both measures of the debt burden are statistically significant, but the ratio of debt payments to income seems more important; households whose ratio of debt payments to income is one percent higher than average are 9.7 percent more likely to be delinquent.[12] Liquid assets also reduce the risk of delinquency, but the impact is small; $100,000 more in liquid assets reduces delinquency risk by only 5.6 percent. The *positive* relationship between income and delinquency risk is surprising;

[11] The impact is not linear, so the change is measured around the mean of the characteristic (appendix b). The coefficients associated with discrete variables, such as occupation, indicate the impact of shift from the excluded category (executives/managers) to another occupation.

[12] Overall, the equation does reasonably well in explaining delinquency risk; 16.5 percent households had been delinquent and the equation predicts 13.4 percent

given debt burdens and assets, we expected no relationship between income and risk, or possibly a negative relationship, since higher income households may carry more insurance.[13]

Personal characteristics of a household affect risk in much the way we would expect. Older, more educated households appear to be better risks, although those characteristics have not changed systematically among card holders. Marital status, which has changed, also seems to matter; the delinquency rate among unmarried households is about 2 percent higher, although the difference is statistically significant only at about the six percent level. Job tenure also matters, but not much; one year less than average on the job increases delinquency risk by only 0.28 percent.

The delinquency rate among operators and laborers, the workers who are taking up more bank cards and debt, is 3.8 percent higher than among executives and managers. What makes these workers riskier? They earn less, but we are controlling for income. Their income may be more volatile, however, if wages and employment in that sector are more cyclical. Farber (1997) reports that the probability of job loss averaged 14.8 percent among blue-collar workers between 1989 and 1995 compared with only 8.9 percent for executives/managers. Note also that the delinquency rate is *lower* among service workers, although the difference is not quite significant. Services are among the least cyclical sector in the economy, so this difference reinforces the idea that occupations are picking up income variability.[14]

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[13] The positive income-delinquency relationship may reflect that higher income households are more likely to have a credit card and other types of debt, so they simply have more payments to keep up with. Consistent with that reasoning, we found that the positive income effect disappears when we estimate the regression for bank card holders only.

[14] An obvious question is whether shift toward blue collar occupations reflects an increased supply of (or demand for) credit cards to those occupations, or simply an overall shift in the labor force. Kennickell et al. (1997) noted that the share of machine operators and laborers increased between 1992 and 1995, as the recovery from the 1990-91 recession accelerated. Whether the

To investigate whether occupations are a proxy for income variability, we added an interaction term to the delinquency regression: *occupation * debt-payments/income.* If operator/laborers are riskier because their wages or hours are more variable, the difference in delinquency rates should be more pronounced the more indebted the households. Consistent with that reasoning, the coefficient on *operators/laborers*debt-payment/income* was 13.2 percent and was significantly different from zero at below 5 percent. None of the other interaction terms were statistically significant.[15]

III. Conclusion

The new credit card carriers seem different, and riskier, in several ways. They are less likely to be married, they have slightly less experience at their job, and they approve of more, potentially riskier types of credit, such as borrowing for vacation. Although these characteristics and attitudes are positively correlated with delinquency risk, we suspect that these changes are secondary simply because they have a weaker impact on delinquency risk or because the changes were not very large to begin with.

The other changes we find seem more important. The new borrowers earn less and as result, they owe more relative to income. They are also more likely to work in relatively unskilled blue-collar jobs, where income may be more cyclical. Both of these changes may help explain why credit card charge-offs are so high now, in the midst of an expansion. The higher debt burden

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occupation shift is occurring economy wide, or only in the credit card market, is secondary for our purposes, since the pool of borrowers may be riskier either way.

[15] The coefficient on *services x debt-payment/income* was 9.6 percent, but was not quite significant. The coefficient on (i.e. impact of) *operators/laborers* was 0.5 percent, but was not significantly different from zero. The impact of *services* was - 4.6 percent and was significant at below 5 percent. There were no other notable changes from the results in Table 7.

seems foremost, since debt burdens are a crucial determinant of delinquency risk. The shift toward unskilled blue-collar workers may add another piece to the puzzle, however. Delinquency rates are higher in those occupations, particularly among the more indebted households in these occupations. The combination of higher debt burdens among more cyclical workers helps explain why a relatively mild slowdown back in 1995 could have driven charge-offs so high today.

While our paper has focussed on risk, the Democratization of credit that is underway clearly has rewards. Unskilled blue-collar workers may be riskier because their income is more cyclical, but for the same reason, credit may be worth more to them because it lets them smooth their standard of living. As long as the lenders understand the risks they are taking and the borrowers understand the price they are paying, both parties can benefit from the exchange. The greater risks, in other words, may imply greater rewards.

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TABLE 1
BANK CARD HOLDING AND BORROWING

	1989	1995
Percent of households with card(s)	55.8	66.5**
Median number of bank cards	2	2
Percent with three or more bank cards	28.7	40.2**
Percent with five or more bank cards	7.8	11.2
Median limit per card	$3,109	$4,000
Median limit all cards	$6,098	$8,800
Median interest rate on highest balance	NA	15.0%
Median balance	$122	$200
Mean balance	$1,157	$1,671

Source: Federal Reserve Survey of Consumer Finances.
Notes: Number of observations: 2107 in 1989; 3257 in 1995.
Bank credit cards include cards such as VISA/MasterCard/Optima/Discover only.

** Significantly differerent from value in 1989 at 1 percent level.
* Significantly differerent from value in 1989 at 5 percent level.

TABLE 2
PERSONAL CHARACTERISTICS OF BANK CARD HOLDERS[1]

	1989	1995
Median age	45	46
Percent married	66.7	61.0**
Percent homeowners	70.7	67.3**
Mean years at current address	11.6	11.1
Median years at current address	9	6
Mean years at job	7.9	7.4*
Median years at job	4	4
Percent self-employed	12.7	11.7
Education[2] (% of bank credit card holders)		
No diploma/GED	12.6	9.7**
Diploma/GED	28.5	29.3
Some college	23.1	25.8
College degree	18.4	19.9
Post-graduate	17.3	15.4**

Source: Federal Reserve Survey of Consumer Finances.
Notes: Number of observations: 2107 in 1989; 3257 in 1995.
[1]Bank credit cards include cards such as VISA/MasterCard/Optima/Discover only.
[2]Some college represents less than four years of college while college degree represents four years of college.

** Significantly differerent from value in 1989 at 1 percent level.
* Significantly differerent from value in 1989 at 5 percent level.

TABLE 3
INCOME, ASSETS, AND DEBT OF BANK CARD HOLDERS[1]
(1995 dollars)

	1989	1995
Median family income	$42,683	$38,000
Income class (percent of card holders in each class)		
$10,000 or less	4.7	6.6**
$10,000-24,999	17.5	21.3**
$25,000-49,999	36.4	35.3
$50,000-99,999	29.4	27.4*
$100,000 or more	12.0	9.4**
Median stocks and bonds	0	0
Mean stocks and bonds	$19,583	$28,577
Median liquid assets[2]	$6,468	$4,700
Median total debt	$20,829	$21,000
Median debt to income	0.48	0.55
Median debt payments to income[3]	0.12	0.17
Percent with debt payments to income greater than 40%	7.6	13.9

Source: Federal Reserve Survey of Consumer Finances.
Notes: Number of observations: 2107 in 1989; 3257 in 1995.
[1]Bank credit cards include cards such as VISA/MasterCard/Optima/Discover only.
[2]Includes balances in checking accounts, savings accounts, call accounts at brokerages, CDS, and mutual funds.

** Significantly differerent from value in 1989 at 1 percent level.
* Significantly differerent from value in 1989 at 5 percent level.

TABLE 4
OCCUPATIONS OF BANK CARD HOLDERS[1]

	1989	1995
Percent of card holders in each occupation:		
Executive/Manager	31.5	25.8**
Sales/Administrative support	19.6	19.3
Service	4.5	6.3**
Precision production/Repair	11.9	9.9*
Operators/Laborers	7.3	12.5**
Farmers	1.3	1.6
Retired	16.9	18.1
Other not working	6.9	6.5

Source: Federal Reserve Survey of Consumer Finances.
Notes: Number of observations: 2107 in 1989; 3257 in 1995.
[1]Bank credit cards include cards such as VISA/MasterCard/Optima/Discover only.

** Significantly differerent from value in 1989 at 1 percent level.
* Significantly differerent from value in 1989 at 5 percent level.

TABLE 5
Distribution of Bank Card Debt by Occupation

	1989	1995
Percent of debt in each occupation:		
Executive/Manager	38.25	30.78
Administrative Support	28.10	22.55
Service	4.60	6.41
Precision Production/Repair	12.17	13.43
Operators/Laborers	7.60	13.30
Farmers	0.32	1.12
Not Working	8.96	12.40

Source: Survey of Consumer Finances

TABLE 6
ATTITUDES OF BANK CARD HOLDERS

	1989	1995
Percent of Card Holders Who Think It Is "All Right" to Borrow For:		
Vacation	13.3	17.3**
Living expenses when income is cut	40.1	44.0**
Fur or jewelry purchase	7.0	7.6
Car purchase	86.3	85.8
Educational expenses	85.4	85.5
Number of observations	2107	3257

**Significantly differerent from value in 1989 at 1 percent level.

TABLE 7

WHAT DETERMINES DELINQUENCY RISK?

Probit regression estimates for all households in Surveys in 1989 and 1995. Dependent variable equals 100 if individual was late on any payment in year before survey. "Impact" is the percentage change in delinquency risk associated with small change in independent variables (around their means) or a change from zero to one in discrete variables.

	IMPACT	STANDARD ERROR
Income, assets, and debt		
Log Income	2.63**	0.67
Stocks and Bonds ($100,000)	-0.19	0.49
Liquid Assets ($100,000)	-5.64**	1.11
Debt Payments/Income	9.05**	2.05
Total Debt/Income	0.72*	0.36
Occupations (relative to managers/professionals)		
Sales/Administrative Support	1.18	1.31
Service	-2.87	1.48
Precision production/Repair	1.69	1.57
Operators/Laborers	3.52*	1.67
Farmers	-0.86	2.70
Attitudes (consider it "all right" to borrow for purpose below)		
Vacation	-1.60	1.06
Living expenses when income is cut	1.91*	0.82
Fur or jewelry purchase	-1.79	1.47
Car purchase	4.09**	1.05
Educational	0.38	1.23
Personal Characteristics		
Age	-0.23**	0.04
Education	-0.54**	0.19
Homeowner	-0.83	1.00
Years at address	-0.01	0.01
Years at job	-0.28**	0.06
Self-employed	1.37	1.39
Married	-1.78	0.95
Number of Observations	7314	
Pseudo-R^2	0.10	

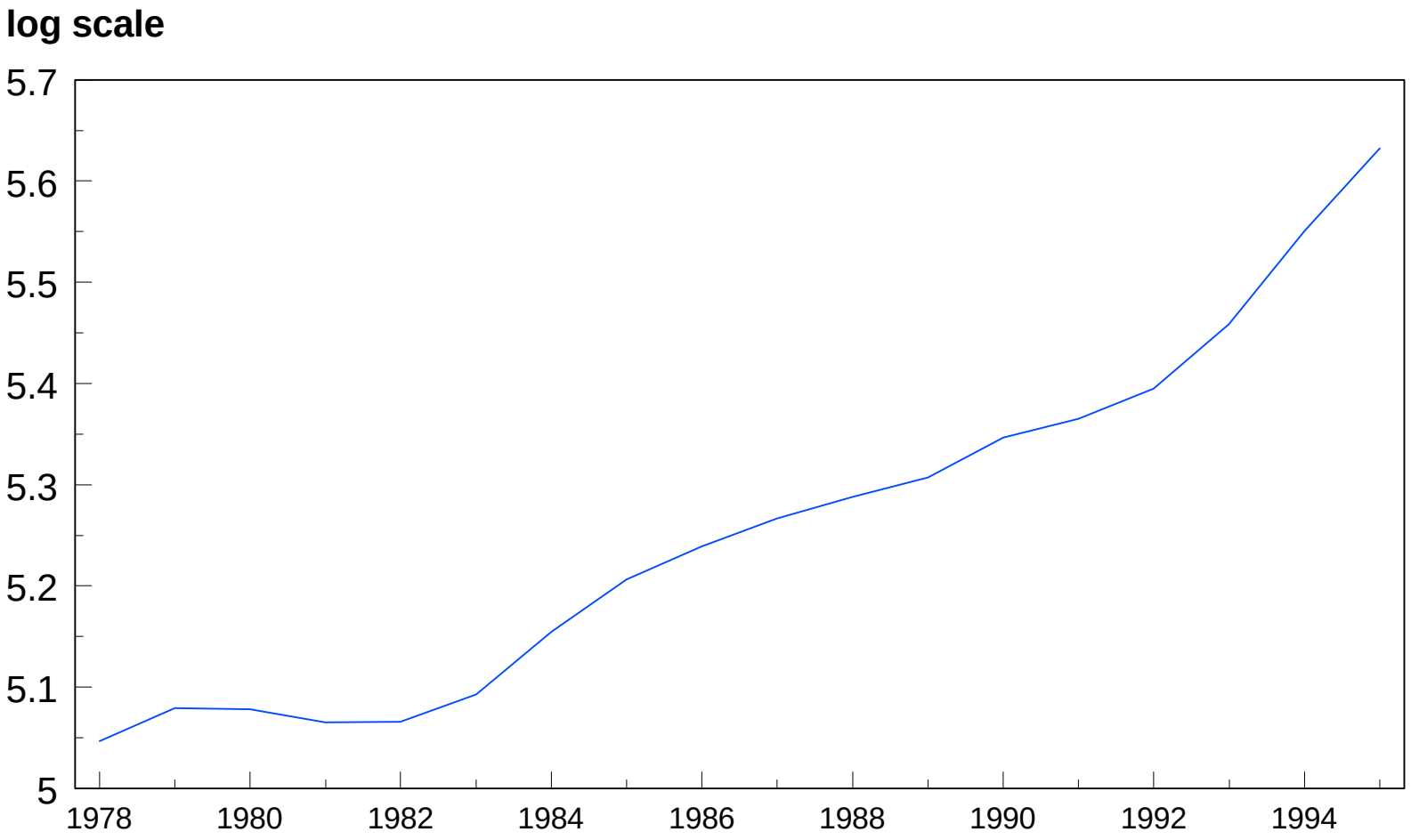
Notes: Regression also control for year, whether individual is retired, otherwise not working, and race.
**Significant at 1% level.
*Significant at 5% level.

Appendix B
Means for full sample (1989 & 1995)
(dollar amounts in 1995 dollars)

	Mean	Standard Deviation
Dependent Variables:		
Debt payment delinquency	0.165	0.37
Income, assets, and debt		
Log income	10.22	0.99
Stocks and bonds	15,907	354,687
Liquid assets	28,970	264,100
Debt payments/Income	0.213	0.25
Total debt/Income	0.789	1.32
Occupation of Head		
Manager/Professionals	0.208	0.41
Sales/Administrative support	0.163	0.37
Service	0.075	0.26
Precision production/Repair	0.108	0.31
Operators/Laborers	0.112	0.32
Farmers	0.021	0.14
Attitudes (consider it "all right" to borrow for the purpose below)		
Vacation	0.143	0.35
Living expenses when income is cut	0.451	0.50
Fur or jewlry purchase	0.061	0.24
Car purchase	0.804	0.40
Education	0.821	0.38
Personal Characteristics		
Age	48.2	17.34
Education	12.8	2.89
Homeowner	0.571	0.49
Years at address	11.08	31.24
Years at job	6.25	8.86
Self-employed	0.105	0.31
Married	0.540	0.50

Source: Federal Reserve Survey of Consumer Finances.
Notes: Number of observations: 7314.

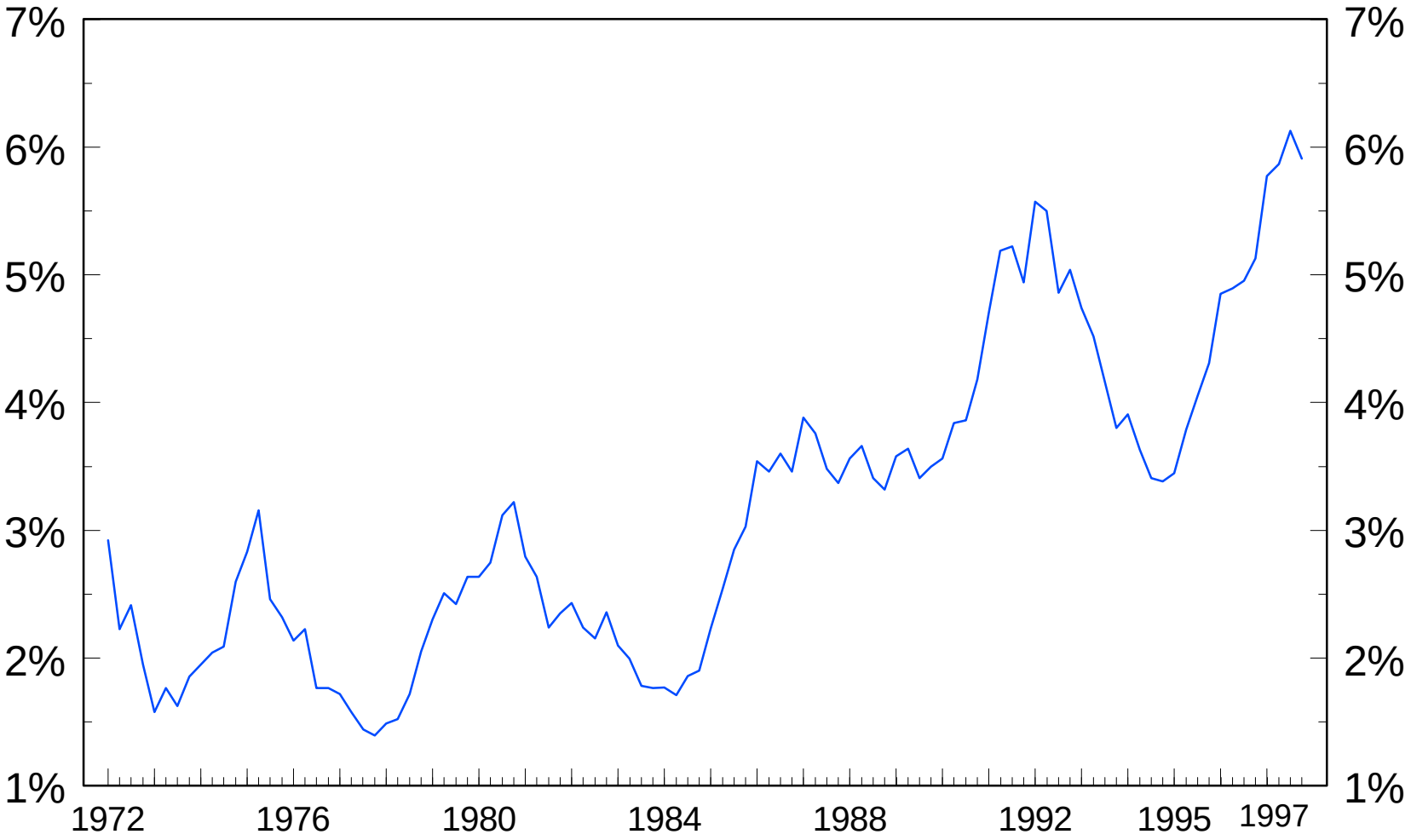
Log of Credit Card Debit



Sources: Retail Bank Credit Report, Bank Credit Report, American Bankers Association.

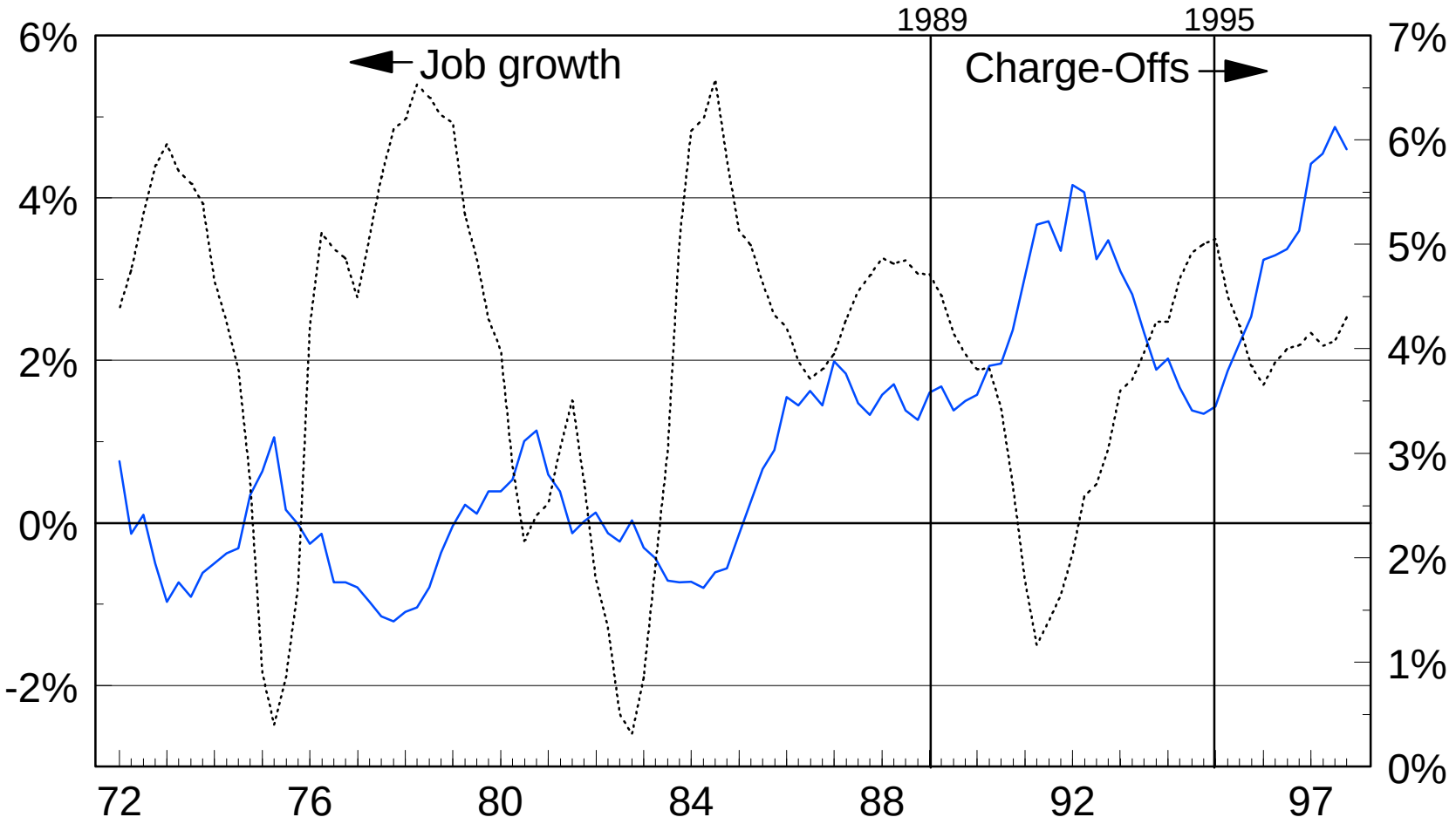
Chart 1
Credit Card Charge-Off Rate (Gross)

(percent of credit card loans)



Source: 1972-1983: Ausubel(1995). 1984-1997: Consolidated Reports of Condition and Income.

Chart 2
Credit Card Charge-Offs and Job Growth (annual rate)



Source: Job growth from Bureau of Labor Statistics. See Chart 1 for source of charge-offs.