

SESSION TOPIC: MONEY AND CAPITAL MARKETS

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FACTORS AFFECTING THE GROWTH OF BANK CREDIT CARD
AND CHECK CREDIT

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I. INTRODUCTION

BANK CREDIT-CARD and check-credit are of interest because they are extended on credit lines and have grown explosively over the last decade, as shown in Table 1.

The purpose of this study is to update previous studies ([1], [2], [3], [4], [5], [7], [8]) using new data where possible and updated data series to resolve open issues relating to the regulatory and economic determinants of credit-card and check-credit usage, and to the impact of periods of general credit restraint on check-credit and credit-card growth. Since bank credit-card and check-credit programs are more mature than formerly, the influence of fundamental economic factors can be better isolated from temporary aberrations affecting credit-card and check-credit growth.

TABLE 1

GROWTH OF BANK CREDIT AND CHECK CREDIT PLANS: 1967-75*

Year	Credit Card Outstandings			Check Credit Outstandings		
	Number of Banks	Amount (millions)	% Change from Previous year	Number of Banks	Amount	% Change from Previous year
1967	390	\$ 828		732	\$ 522	
1968	510	1312	58.4%	975	798	52.9%
1969	1207	2639	101.1	1128	1081	35.5
1970	1432	3792	43.7	1228	1336	23.6
1971	1535	4490	18.4	1387	1462	9.4
1972	1631	5408	20.4	1621	1775	21.4
1973	1765	6838	26.4	1910	2254	27.0
1974	1912	8281	21.1	2274	2797	24.1
1975	2029	9537	15.2	2555	2827	1.1

* Based on year-end Call Reports.

II. THE NATURE OF BANK CREDIT-CARD AND CHECK-CREDIT PLANS

Bank credit-card plans provide consumers with a line of credit that can be used to purchase goods from cooperating merchants or obtain cash advances from par-

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ticipating banks. In addition, some banks let consumers charge demand deposit overdrafts to their credit-card accounts.

Check-credit plans are more varied. Some let consumers write special checks against prearranged credit lines. Others initiate loans automatically whenever a customer's checking account would otherwise be overdrawn. Finally, some allow travel and entertainment (T and E) card users to revolve their unpaid balances.

Permissible rates of charge on bank-card and check-credit balances are usually regulated by state statutes. While most states allow finance charges of $1\frac{1}{2}$ percent per month (18 percent APR) eight restrict rates to 15 percent (APR) or less on bank-card balances of \$500. Check credit rates in 12 states are restricted to one percent (12 percent APR) or less regardless of the size of the balance.

The effect of rate ceilings in general on the offering of a card credit line is lessened since banks can supplement their income on such plans through "merchant discounts," and assorted fees and charges. Furthermore, the more restrictive legal rate ceilings for check-credit may not seriously affect that form of credit. In particular, check-credit plans can realize greater net yields from a given finance rate, *per se*, than credit card plans as they typically (i) do not provide customers with an interest-free grace period, (ii) have larger average balances outstanding and (iii) require that fewer transactions be processed (and thus have lower service costs per account). Thus, even when unconstrained by rate ceilings, many banks have offered check credit at a 12 percent, or even lower, annual percentage rate. Hence, it is an empirical question whether present legal rate ceilings affect either bank card or check credit.

Other state laws may also affect bank incentives to offer credit-card and check-credit plans. E.g., restrictive rate ceilings on personal loans or other-consumer-goods credit may induce banks to make more loans on bank-card and check-credit lines—where service costs are lower per transaction. In addition, state branch banking laws may affect credit-card development. For instance, in a branch banking state, it is easier for a bank to obtain quickly the economies of scale needed for a successful credit-card operation by issuing cards at all its branches, than it is for a bank in a unit-banking state to sign up "agent banks" to help distribute its credit-card services. On the other hand, banks located in states that prohibit branching may adopt credit-card plans in order to extend their market areas—by signing up agent banks, participating merchants, and customers in remote geographic locations. Consumers might also favor such plans in unit banking states as they provide convenient access to credit, cash, and possibly other bank services in states where direct consumer access to banks may be somewhat limited.

A number of factors have been identified as contributing to bank credit-card use. They include income [3], [5], the age structure of the population [6], and the historical standard deviation of unemployment rates in various states [6]. Income is presumably positively related to credit-card use because higher income individuals have a higher opportunity cost of time and, therefore, a greater appreciation for the convenience (time-savings) inherent in credit acquisition through the use of credit cards and check credit. Also, banks are more likely to extend such credit to relatively high income individuals as they may have greater prospects of extensive

card use, prompt repayment, and low default rates. Presumably, the 20-45 year old segment of the population [6] is positively associated with card use as people in that age group are more likely to acquire debt than individuals in other stages of their life cycle. Finally, individuals living in states that experience marked economic fluctuations may be reluctant to acquire debt due to possible future adversity and/or banks located in such states may be cautious about granting credit lines.

In addition to the above, statewide income concentration may be positively associated with bank revolving credit use as such credit is most commonly used by higher income individuals, while certain (overdraft) forms may appeal to lower income individuals as well.

A number of factors may also affect the growth of bank check-credit and credit-card plans. Banks with relatively high employee wage rates should be more willing to offer such plans because the labor cost savings inherent in processing multiple consumer uses of a credit line, as opposed to processing multiple consumer loan applications, will be more valuable to them. Due to the high start-up and over-head costs associated with acquiring the computer facilities, specialized personnel etc., required for the operation of credit card plans, larger banks—which could expect to spread these costs over a larger volume of business—are more likely to establish such plans than small banks. However, small banks may participate in such plans through agent arrangements, whereby they sign up merchants and solicit cardholders but do not engage in extensive processing for credit-card plans. In the realm of check-credit, small banks may find it easier to establish their own plans than is the case with credit cards, as national, local, and intra-bank check clearing and posting facilities already in place can be used to process credit extensions under such plans. Finally, credit-card plans are likely to be more widespread in urban rather than rural locations. Urban locations more readily provide the extensive merchant and cardholder bases needed to induce merchants and consumers to join such plans and to generate sufficient volume to justify bank investment in credit card processing facilities.

III. DETERMINANTS OF INTERSTATE DIFFERENCES IN BANK CREDIT-CARD AND CHECK-CREDIT HOLDINGS PER CAPITA

Analysis of interstate differences in credit-card and check-credit holdings is useful for highlighting regulatory and economic factors that affect the development of bank credit-card and check-credit plans. To pursue such an analysis, estimates of statewide bank check-credit (CHKPC) and credit-card (CCPC) holdings per capita (at year-end 1974) were used as dependent variables.

Independent variables were selected to test the hypotheses developed above. They included estimates of (i) PDI_d, statewide average per capita personal income (deflated by the average wage rate in manufacturing to control for interstate wage and cost-of-living differences), (ii) P18-45, the proportion of the population in each state from 18-45, (iii) UN_s_d, the standard deviation of historical state unemployment rates, (iv) YCN70, income concentration, based on 1970 Census data, (v) WBE, the average wage rate of bank employees in the state, (vi) NEPB, the average number of employees per bank (as a measure of bank size) and (vii) FIS, the share of farm income in total state income (as a proxy for the degree of urbanization of

the state). In addition, dummy variables were constructed to indicate unit (UNBK), limited, and statewide branching (SWBR) states, as defined by Goldberg [5].

Finally, three dummy variables were introduced to assess the effect of loan rate ceilings. The first (CDREST) took the value of one in states where bank credit-card plans were limited to a 15 percent or lower APR on outstanding balances of \$500. Because the interest free "float" on bank-card plans reduces the net yield by 20 to 35 percent, such a ceiling would likely generate a finance charge yield below 12 percent. The second (PLMRCD) took a value of one if the rate ceiling on \$1000 bank personal loans was "restrictive" (i.e., less than 12.68 percent on \$1000 balances) and credit-card ceilings were not (i.e., CDREST \neq 1). The third (CKMRCD) took the value of one in states where check-credit rate ceilings were 12 percent or less but CDREST \neq 1.

Equation 1 of Table 2 presents regression results obtained when bank credit card outstandings per capita for all 50 states and the District of Columbia were regressed on the variables defined above. As hypothesized, it indicates that per capita holdings of credit card receivables are significantly positively associated with the 18-45 year-old segment of the population, bank employees' statewide average wage, and the "real" statewide average level of personal income per capita.

Interestingly, strong income effects became apparent only when the level of personal income per capita was deflated to control for wage and possible cost-of-living differences. This suggests that bank-card credit is used more intensively by those on the upper portions of the local relative income scales—and that absolute income differences are not as important in determining credit card use due to inter-state wage and cost-of-living differences. Nonetheless, bank-card use is not so concentrated that the income concentration variable was significant, or even of the expected sign.

Variables that were significantly negatively associated with bank credit card outstandings per capita, as hypothesized, included the farm income share of statewide personal income and unemployment variance.

The regulatory dummy variables provided some interesting results. For instance PLMRCD indicates that bank credit card holdings were markedly enhanced when personal loan rate ceilings were restrictive and credit card rate ceilings were not. Apparently, restrictions on personal loan yields encourage banks to extend more bank-card credit (where either a higher nominal finance rate, card holder fees, or merchant discounts provide a relatively more attractive rate of return).

Another rate ceiling finding was that (as noted previously [5], [8]), restrictive credit-card rate ceilings (CDREST) did not affect bank-card holdings significantly. This probably results from the fact that all states with restrictive ceilings on bank-card credit also imposed restrictive ceilings on all other consumer credit. In such states, bank incentives to offer card credit would be reduced by low rate ceilings, *per se*. However, bank-card credit—with its low service costs per loan and capability of generating merchant discounts, cardholder fees, etc.—might remain more profitable than many other forms of credit. Thus, some banks might offer bank-card credit in preference to other forms of consumer credit in those states.

TABLE 2

DETERMINANTS OF INTERSTATE DIFFERENCES IN CREDIT CARD AND CHECK CREDIT
OUTSTANDINGS PER CAPITA

	EQUATION			
	1	2	3	4
Dependent Var./Mean	CCPC	CHKPC	CHKPC	CHKPC
Independent Vars.	(33.12)	(9.30)	(9.30)	(9.30)
P18-45	512.30 (120.54)*	96.70 (68.67)	-58.53 (72.74)	N.E.
WBE	9.04 (4.16)*	5.67 (2.35)*	2.47 (2.20)	N.E.
PCId	29.05 (11.80)*	11.91 (6.65)*	N.E.	N.E.
FIS	-77.18 (34.57)*	-25.58 (18.32)	N.E.	N.E.
UNsd	-11.97 (6.18)*	-8.23 (3.52)*	-4.84 (3.20)	-5.77 (2.27)*
NEPB	-0.01 (0.02)	-0.03 (0.01)*	-0.02 (0.01)*	-0.02 (0.01)*
YCN70	-.94 (1.03)	0.65 (0.58)	0.83 (0.52)	N.E.
CDREST	-1.66 (6.83)	N.I.	N.I.	N.I.
CHKRES	N.I.	4.33 (4.29)	4.14 (3.86)	3.63 (3.20)
CKMRCD	-13.86 (8.96)	-11.62 (6.17)*	-10.90 (5.46)*	-8.99 (4.19)*
PLMRCD	17.11 (6.48)*	N.I.	N.I.	N.I.
PLMRCK	N.I.	N.E.	-4.64 (3.56)	-3.74 (2.89)
SWBR	5.33 (6.65)	7.99 (3.64)*	8.09 (3.24)*	5.82 (2.50)*
UNBK	11.41 (6.70)*	N.E.	N.E.	N.E.
CCPC	N.I.	N.I.	0.28 (0.07)*	0.23 (0.05)*
BPLPC	N.I.	N.I.	N.I.	0.18 (0.04)*
CONST.	-221.17 (71.45)*	-97.84 (40.00)*	-21.13 (39.40)	-2.94 (3.77)
R ² /Std. dev.	.58 (16.11)	.33 (9.30)	.46 (8.35)	.60 (6.97)
F/No. of ob's.	4.44* (51)	1.95* (51)	3.30* (51)	7.98* (51)

*Indicates significance at the 90% level, N.I. indicates variables not included in the regression, N.E. indicates variables excluded by the stepwise regression because their coefficient was less than their standard deviation.

The net effect of simultaneously restrictive rate ceilings on bankcard credit availability, then, might be indeterminant—as shown in Equation 1.

The coefficient on CKMRCD is unexpectedly negative, as is the sign on the average bank size variable. However, neither result is statistically significant.¹

Finally, the state branching law variables indicated that credit-card holdings were positively associated with unit banking (as opposed to limited branching) laws, after other variables had been taken into account. Statewide branching did not have an effect significantly different from limited branching.

This result is different from Goldberg's findings [5]—for two possible reasons. First, the June 1972 data that Goldberg used were sufficiently removed in time from this study that credit-card holdings may have evened out more over the country in the interim. For instance, Brimmer [4] noted that credit cards initially grew more rapidly in the Far West and Northeast (plus Chicago) Reserve Districts with evidence, by late 1971, that such growth was reaching a point of market saturation while credit-card growth in general continued at a modest pace. Since the Far West and (to a lesser extent) Northeast contain a large proportion of statewide branching states, it is not coincidental that Goldberg found that credit-card growth proceeded more rapidly in such states—as large statewide branching banks probably found it easier to initiate credit-card systems. However, if unit bank programs, through agent arrangements, have been able to grow relatively more rapidly since mid-1972, while credit-card programs in statewide branching states have approached maturity, this relationship may no longer hold.

Second, the regressions in Table 2 controlled for interstate differences in the farm-income share and other variables that may be correlated with unit banking and credit-card credit availability in various states. Once that was done, the influence of unit banking, *per se*, appears to be positive, as might be expected once initial coordination cost barriers to the establishment of credit-card plans had been overcome.

Regarding check-credit holdings, it was hypothesized that they would be determined by the same forces as credit-card holdings. However, in the check-credit equations CHKRES (which equalled one only if check-credit rate ceilings were 12 percent or less for every size balance) and PLMRCK (which equalled 1 if \$1000 bank personal loan rate ceilings were below 12.68 percent and $\text{CHKRES} \neq 1$) were substituted for CDREST and PLMRCD.

When check-credit outstandings per capita were regressed on all variables indicated above, the F-test for the indicated equation showed it to be insignificant as some variables contributed less to the explanatory power of the equation than would have been expected by chance. To get around this problem, step-wise ordinary least squares regression techniques were employed and the procedure was stopped when the most important explanatory variables had been selected. The

1. In another regression, an additional rate ceiling variable was constructed but, unsurprisingly, also found to be insignificant. In that equation, the added dummy variable took the value of 1 in states where retail credit rate ceilings were restrictive, and bank card rate ceilings were less so. In theory, some shifting of retail credit to bank card plans might occur under such circumstances. However, possibly because the new variable applied only to two states, it was not significant and interacted with other variables in the equation. Thus, it was not included in Equation 1.

results of that approach are presented in Equation 2 of Table 2. They indicate that check-credit holdings were significantly positively associated with per capita personal income (deflated), the average wage of bank employees, and statewide branching, and negatively associated with unemployment instability, the number of employees per bank, and greater restrictions on check-credit than credit-card rate ceilings. They also indicate that positive, but not statistically significant, relationships existed between check-credit use and restrictive check-credit rates, the farm income share, the age structure, and the degree of income concentration of the population.

All the results in Equation 2 were equivalent in sign to the results of Equation 1—with the exception of income concentration (which was insignificant in both). Thus, considerable similarity in the determining factors for bank check-credit and credit-card holdings was observed. However, the insignificance of the population variable indicates that the 18-45 age group is a less important determinant of check-credit than credit-card use. Possibly users of executive credit and travel and entertainment card related check-credit plans are older than the average bank card user. Also, in contrast with credit-card credit, farm-oriented states did not have significantly lower check-credit holdings than other states. Probably this is so because check-credit plans do not require the economies of scale in merchant and cardholder bases that banks obtain most easily for their card plans in urbanized areas. In addition, the significant negative sign on NEPB indicates that check-credit holdings are greater in states with smaller banks, on average, once other factors have been taken into account—most likely because they provide a way that smaller banks can offer their own revolving credit plans without incurring significant start-up and overhead costs.

Regarding the rate ceiling variables, the significant negative sign on CKMRCD suggests that check credit supplies may be discouraged relative to credit-card supplies where rate ceilings on check-credit are restrictive and those on bank-card credit are not. However, the insignificance of CHKRES does not support the hypothesis that 12 percent check-credit rate ceilings, *per se*, significantly reduce check credit availability.

Ten of the 12 states with restrictive check credit rates also had restrictive personal loan rates and six of those states had restrictive credit-card rate ceilings as well. Thus, it is possible that substitutions of check credit (with its low costs of administration) for personal loans and possibly card credit in states with simultaneously restrictive ceilings may have accounted for the insignificance of CHKRES. Nonetheless, if that were so, one would expect PLMRCK to enter the equation with a significant positive sign, and it failed to enter at all. Hence, it is unlikely that simultaneously restrictive check-credit and personal loan rate ceilings account for the insignificance of CHKRES.

Finally, Equation 2 differs from Equation 1 in that statewide branching appears to be positively associated with check credit use once other factors are taken into account. This may result from the fact that such credit and statewide branching are most extensive in the Far West and Northeast. It also appears to be affected by the specification of the regression, as it did not come close to entering the stepwise regression until NEPB entered. Thus, it mainly appears to indicate that large banks

in statewide branching states extend more check credit than would be expected in a state with equally large (based on average size) limited branching or unit banks.

To obtain a more satisfactory explanation of interstate differences in check credit and credit-card use, following Brimer's observation ([4], p. 16) that check-credit and credit-card use might be complementary, not substitutable, CCPC was added as an additional explanatory variable. If the demand for credit is adequately controlled for by the other variables in the equation, this procedure lets one test whether the two types of credit are substitutes, as a negative sign on CCPC would be expected in that case. It also lets one identify influences that affect check-credit outstandings more or less strongly than bank-card outstandings.

Equation 3 presents the results of that test. It does not support the hypothesis that check credit and bank-card credit are substitutes. Indeed, probably because users of both plans are somewhat similar and also because banks that offer check-credit usually directly or indirectly supply credit card credit as well (see [8], p. 649), check-credit and bank card use are positively related.

Equation 3 also indicates that check credit is significantly and inversely related to statewide average bank size (once credit card holdings and other variables are taken into account) and reinforces the rate ceiling and statewide branching results of Equation 2. However, no other variables of Equation 2 retained their significance, probably because the basic determinants of check-credit and credit-card supply and demand are highly similar; thus, once CCPC was included in the check-credit equation, most other variables lost their significance.²

Because check-credit has attributes of personal loans as well as attributes of revolving credit, it was hypothesized that the demand for and supply of bank personal loans and check-credit might be inter-related. Thus, a measure of outstanding bank personal loans per capita (BPLPC) was added to Equation 3 and it was reestimated as Equation 4.

The results of Equation 4 suggest that the same demand and/or supply factors that influence bank personal loan outstandings, also influence bank check-credit. Other results are similar to those of Equations 2 and 3.

IV. CYCLICAL CHANGES IN BANK CREDIT-CARD AND CHECK CREDIT

Cursory analysis of Table 1 indicates that credit-card credit grew more rapidly in both 1969 and 1973-74 than in preceding years. In both periods, interest rates were relatively high and money was "tight." In 1973-74 check-credit outstandings also grew more rapidly than in preceding or subsequent years. Furthermore, additional work indicates that the bank credit-card and check-credit share of consumer credit extensions has risen faster during periods of general credit restraint than at other times [7].

2. However, in the early stages of the stepwise regression run, the income concentration variable carried a significant positive sign, which became non-significant only when the unemployment variance variable was added to the regression. This suggests that check credit plans may have greater relative appeal for the lower (overdraft) or higher (executive credit plan) ends of the income distribution than bank credit cards.

The most likely explanation for these observations is that during periods of restraint, many consumer creditors try to increase effective yields on instalment contracts either by raising rates or by reducing credit availability to reduce risk. Credit on consumer lines then becomes relatively more attractive as it typically is instantly available at predetermined rates up to authorized limits. Also, during periods of restraint more merchants may join bank-card plans to reduce the cost of receivables financing.

Because greater use of consumer credit lines during periods of restraint could put pressure on bank liquidity, partially insulate consumers from policies of restraint, and complicate problems of monetary control, it is useful to determine whether consumers do draw more heavily on their lines during such periods.

Unfortunately, only two major periods of restraint have occurred since data on bank revolving credit have become generally available. Thus, existing aggregate data may be of limited help in determining whether observed changes in consumer credit use during such periods result from aberrations in the growth curve of credit-line credit or from the operation of fundamental economic forces.

However, Brimmer ([2], [3], [4]) has noted that credit card credit growth across the country has not been uniform and that such credit may have approached maturity faster in some parts of the country than in others. This suggests that it would be easier to isolate the effects of restraint from aberrant growth patterns in check-credit and credit-card credit if regional data were used. Thus, monthly data on credit-card and check-credit extensions, repayments, and outstanding balances in each Federal Reserve District were obtained for further analysis.

After seasonal adjustment, the data on credit outstandings and extensions for each district were analyzed to see if percentage growth rates varied systematically over the 1968-74 period. The credit-card data generally exhibited slower (percentage) growth rates after 1970. It is unclear whether 1970 prohibitions on unsolicited credit-card mailings, high early loss experiences for new credit-card plans, or maturation of the industry accounted for the observed slackening in growth. Because prohibitions on unsolicited credit-card mailings and knowledge of losses suffered by banks in the early stages of credit-card development would affect banks in all Districts, it was assumed that year-end 1970 provided a good dividing point for analysis of growth in all Districts. For check-credit, highly disparate growth rates were not observed before and after 1970. However, Table 1 suggests that growth in check-credit outstandings, in the aggregate, slowed after 1970. Thus, in all subsequent analysis, regressions were run both over the entire 1968-74 period and over the 1968-70 and 1971-74 subperiods.

The basic research design used in this part of the study assumed that credit-card and check credit would tend to grow at a constant percentage rate over time, except when disturbed by aberrations in growth patterns associated with the initiation or maturation of these credit forms and by shocks caused by changes in general credit conditions. With the exception of 1970, it was assumed that aberrations in growth patterns would likely operate at different times in different Federal Reserve Districts. In contrast, it was assumed that policies of restraint would operate simultaneously in all Districts.

Thus, it was posited that during periods of restraint, credit-card and check credit extensions and outstandings would tend to grow more rapidly than usual, except when basically random deviations in growth patterns particular to a limited number of Districts tended to offset the effects of monetary restraint. As an alternative hypothesis, it was assumed that, if monetary policy had no effect on the growth rate of bank credit card and revolving credit during restraint, deviations from long term growth trends in each District would tend to be symmetrically distributed around zero.

To test these hypotheses, monthly check-credit or credit-card extensions and outstandings (for each Federal Reserve District) were regressed on a time trend and a dummy variable that represented periods of general credit restraint, for 1968-70, 1971-74, and 1968-74. Based on published data on policy actions (see [7]), the monetary dummy was defined to equal 1 in 1969 and the first half of 1970, and in 1973 and 1974. Table 3 summarizes the results of these regressions.

Analysis of Table 3 shows that in the 1968-74 and 1971-74 periods, the impact of the monetary dummy on credit-card outstandings was basically symmetric. However, in the 1968-70 period, the growth rate of credit-card credit in most Districts was elevated during restraint. Analysis of growth in credit-card extensions, however, indicates that, while growth rates in extensions over 1968-74 were equally likely to lie above as below their long term growth trends during periods of restraint, when the data were divided into the 1968-70 and 1971-74 subperiods, in most Districts extensions grew faster during restraint.

Thus credit-card extensions appear to grow significantly faster during periods of restraint, while outstanding credit balances are much less responsive. One explanation for this is that outstanding credit-card balances respond more slowly to altered credit conditions than credit extensions because they measure an accumulated stock of outstanding debt. Thus, when the monetary variable was lagged five months in the credit-card outstandings equations, in both periods of restraint it acquired significantly positive coefficients in nine Districts and the nation as a whole.

The check-credit equations suggest that both check credit extensions and outstandings respond promptly and grow faster during periods of restraint. During restraint, no Districts exhibited significantly slower growth in either check-credit extensions or outstandings, and a majority showed significant increases in growth. Furthermore, these results would likely have been even more pronounced if 1975 data had been included, as the aggregate growth rate of check credit fell markedly from 1974 to 1975 (see Table 1). Finally, a relatively prompt response of check credit to altered monetary conditions is evidenced by the fact that the responses noted above were much more consistent, especially for check-credit extensions, when the monetary dummy was unlagged.

Overall, the evidence suggests that bank check-credit extensions and outstandings growth accelerates significantly during periods of restraint, and that credit-card extensions do likewise. Because check-credit rates are often 12 percent or less and check-credit lines are relatively large, they may provide borrowers with a significant source of relatively low cost funds during periods of restraint. Bank-card credit, which typically carries an 18 percent APR and is usually extended on

TABLE 3

T-STATISTICS ASSOCIATED WITH DUMMY VARIABLES FOR PERIOD OF GENERAL CREDIT
 RESTRAINT IN EQUATIONS OF THE FORM $\text{LOG}(Y) = \alpha + \beta_1 \text{TIME} + \beta_2 \text{MDUM} + \epsilon$

Dependent Variable	Period	Credit Card					
		Outstandings			Extensions		
F.R. Districts		68-74	68-70	71-74	68-74	68-70	71-74
	1	-1.73	.96	1.38	.17	2.16*	2.89*
	2	-.72	8.17*	4.08*	.77	5.56*	2.08*
	3	-7.22*	-2.93*	-2.79*	-7.03*	-5.35*	2.66*
	4	-1.96	1.88	.21	-.06	4.56*	3.70*
	5	.70	7.21*	1.48	3.55*	6.63*	3.77*
	6	-.39	6.28*	-.88	2.05*	7.05*	3.43*
	7	-3.84*	-6.52*	-.69	-3.01*	-2.78*	1.50
	8	1.11	7.83*	1.32	2.73*	4.18*	.98
	9	.30	5.06*	1.43	-1.29+	.77+	-.66+
	10	-.28	11.27*	2.33*	.03	5.33*	3.14*
	11	-3.46*	-.96	-.07	-1.59	1.06	2.73*
	12	2.43*	3.68*	-1.18	-3.09*	-2.17*	.70
	All	-1.08	4.95*	1.47	0.77	6.77*	4.09*
Number of +	*	1	8	2	3	8	9
Number of -	*	3	2	1	3	2	0
For MDUM lagged 5 months							
Number of +	*	3	10	10	6	8	5
Number of -	*	1	2	1	1	0	1
		Check Credit					
F.R. Districts	1	14.23*	8.65*	6.29*	6.21*	4.51*	1.40
	2	.19	6.47*	-1.85	4.22*	6.19*	-1.25
	3	-.48	2.80*	.83	.80	-1.13	3.14*
	4	8.25*	7.26*	1.57	2.28*	1.61	.13
	5	5.36*	6.21*	1.18	2.89*	1.07	.58
	6	6.33*	1.20	4.51*	2.62*°	-1.34°	.94°
	7	.57	4.29*	3.36*	3.08*	2.40*	2.79*
	8	5.54*	3.76*	-1.37	5.20*	2.99*	2.21*
	9	2.25*	4.63*	.28	2.57*	2.08*	-1.88
	10	4.42*	6.59*	1.26	4.94*	3.35*	-.96
	11	7.29*	7.43*	-1.27	3.04*	1.91	.49
	12	6.49*	5.29*	4.89*	8.15*	3.24*	3.30*
	All	4.04*	7.81*	2.73*	9.91*	4.01*	3.28*
Number of +	*	10	12	5	12	8	5
Number of -	*	0	0	0	0	0	0
For MDUM lagged 5 months							
Number of +	*	10	7	8	5	4	0
Number of -	+	0	0	0	0	2	0

* Means significantly different from zero at the 95% confidence level.

+ Due to missing data, data for 1968 were deleted, and these data were omitted from "All Districts" category.

° Due to missing data, data for the first half of 1968 were deleted, and these data were omitted from the "All Districts" category.

Note: all dependent variables were seasonally adjusted.

smaller lines, apparently does not respond as quickly to changes in general credit availability as check credit. Even though a consistent response in the growth rate of credit-card extensions can be documented, the expected response in credit-card outstandings appears only with a lag.³

V. CONCLUSIONS

The empirical work in this study supports a number of hypotheses about the determinants of credit-card and check-credit use—many of which have not been previously confirmed. They suggest that credit-card and check-credit outstandings per capita are elevated in states where consumer real income and bank wages are high and unemployment variance is low. In addition, credit cards are used more intensively where a large proportion of the population is between 18 and 45 and less intensively in states which derive a large proportion of their income from farming, while check-credit is used relatively more intensively in states with smaller banks, *ceteris paribus*. Regulatory influences on credit-card and check-credit use are mixed: credit-card balances per capita are higher in states with strict bank personal loan rate ceilings, while check-credit use is lower in states where check-credit rate ceilings are restrictive and credit-card rate ceilings are not. However, possibly due to the comprehensive nature of most legal rate restrictions and the fact that non-finance rate revenues can be earned on card plans, neither check-credit nor credit-card outstandings appeared to be discouraged by restrictive legal rate ceilings, *per se*. Finally, credit-card outstandings tended to be elevated in unit banking states while check-credit outstandings per capita are higher in statewide branching states, *ceteris paribus*.

Additional tests indicated that both check-credit and credit-card extensions and balances grew more quickly during periods of general credit restraint, with check-credit balances being more quickly and uniformly sensitive to such restraint than card credit.

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3. Since lagged responses of the economy to credit restraint could also affect credit-card use with a lag, the quicker response of check-credit outstandings could indicate that purely financial motives have relatively more influence on consumer use of check credit than credit-card credit.

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