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An Analysis of the Portfolio Behavior of Black-Owned Commercial Banks

TIMOTHY BATES and WILLIAM BRADFORD*

I. Introduction

THE SUBSTANTIAL INCREASE in the number of Black-owned commercial banks over the past 15 years has stimulated a great deal of interest regarding the viability of these institutions. In 1976, 50 Black-owned banks were operating in the U.S.; 40 of these banks had been formed during the 14-year period ending December 31, 1976. The viability of Black banks appears to be firmly established by Boorman and Kwast's findings [4] that those banks chartered in the 1963–1965 period were operating (in the early 1970's) as efficiently as comparable non-minority banks. Less adequately understood is the degree to which Black banks can serve as vehicles for financing their communities. Indeed, Brimmer [6] has stated that "Black banks as a group appear to possess very little potential as instruments of urban economic development." Much of Brimmer's conclusion [7] is based upon his observation that Black banks hold relatively large proportions of their assets in liquid forms, particularly U.S. government securities and federal funds.

Data analyzed in this study do not support this pessimistic view of Black banks. These institutions face a number of problems that are completely unrelated to the presence or absence of management risk aversion. Specifically, the newer institutions face the start-up problems of running a bank, undercapitalization resulting from rapid deposit growth that has outstripped bank capital growth, and deposit instability that arises from several sources. Black banks have lower average deposit account sizes than non-minority banks and the variability of these deposits is substantial. Because of extreme deposit volatility, Black banks must hold relatively more liquid assets than their non-minority counterparts if they are to meet the withdrawals of their depositors. In addition, Black banks hold U.S. government deposits that are a relatively large proportion of their total deposits. Because government regulations require that these deposits be invested largely in liquid forms, the greater liquidity of Black banks is partially accounted for by their heavier reliance upon the U.S. government as a source of funds. When such traits as deposit structure and bank age are controlled for, our findings show that Black bank holdings of liquid assets are essentially the same as those

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of non-minority banks of the same size, type, and geographic location. Our conclusion is that Black and non-minority banks respond similarly to the relevant stock and flow variables that shape their environments, with observed differences in portfolio composition tracing to differences in their particular vectors of operative influences. Black banks should be viewed as institutions facing typical small bank problems. Thus, the analysis of Brimmer and others criticizing the liquidity of these banks' portfolios is deemed inappropriate.

II. Theory and Practice

Commercial banks have traditionally been formed to service loan demands of local markets with funds derived primarily from depositors in those same markets. In the 1960's, Black economic development proponents used this rationale to justify creation of Black-owned banks in urban ghetto areas. Pool the savings of ghetto residents and put them to work financing the economic development of the inner city Black community—it sounded fine in theory. Lindley and Selby [14] indicate that Blacks earning less than \$12,000 annually are much less likely to utilize bank services than Whites earning identical incomes. Furthermore, Irons, Doctors, and Drebin [12] report that Black-owned banks established in urban areas appear to be attracting depositors who had never previously utilized the services of banks.

As the services of financial intermediaries become increasingly available to inner city Blacks, indirect financing (through banking intermediaries) will come not only from the few prosperous inner city residents but also from the small savers. If these small savers are to be induced to participate in the financial process, they must be offered financial assets with short maturity, easy marketability, small denomination, and low risk. However, these qualities are not generally desirable to the potential debtors (borrowers) who want to borrow on a long-term basis and in large denominations.

Financial intermediaries can reconcile the incompatible portfolio requirements of inner city lenders and borrowers by issuing their own liquid claims (savings accounts, etc.) to the small savers and purchasing illiquid securities (mortgages, notes, etc.) from the borrowers.¹ The savers benefit by increased liquidity and reduced risk since a financial intermediary can diversify its loans more effectively than an individual saver. The borrowers benefit by access to a larger pool of savings than previously existed. However, the mere existence of financial institutions provides no assurance that inner city Black communities will experience increased development by participating in the financial intermediation process. Local savers undoubtedly enjoy the benefits of safety and convenience that banking intermediaries provide, but local borrowers may not have access to the pool of community savings that financial intermediaries assemble. Indeed, Brimmer [7] has asserted that "the Black banks, because of difficulties inherent in lending in the urban ghetto perhaps inadvertently may be diverting resources from the Black community into the financing of the national debt."

¹ This analysis is partially adopted from Gurley and Shaw [10]. A more extensive discussion of these phenomena appears in Bradford [5].

The remainder of this study investigates determinants of Black bank holdings of earning assets. Data that are analyzed include financial information describing 1) all Black-owned commercial banks chartered before 1972, 2) all Black banks chartered before 1973 who are members of the Federal Reserve System, and 3) a comparison group of non-minority banks that was designed to resemble, in terms of geographic location, size, and age, the newer post 1963 group of Black-owned banks.² Utilizing data on the weekly deposits of Federal Reserve member Black-owned banks, measures of deposit variability and unpredictability are developed that help to explain the asset structure of Black-owned commercial banks.

A. Bank Portfolio Composition

Over half of the Black banks in existence have been formed in the last ten years. Studies investigating portfolio composition must therefore attempt to control for differences in lending behavior due to young bank start-up problems if accurate generalizations are to be made about secular trends in bank lending patterns. Other problems arise: for example, what were the short-run and long-run impacts of government programs to increase government and corporate deposits in minority banks? The confusing presence of temporary, cyclical phenomena has complicated the task of making generalizations about the long-term lending behavior of Black-owned banks. These problems notwithstanding, past studies utilizing only crude summary statistics have made strong assertions about the lending and investment practices of Black banks.³ This study applies various econometric techniques to time series and cross-sectional bank data in an effort to test rigorously various hypotheses that seek to explain the asset holdings of Black-owned banks.

All studies of Black-owned banks have noted the large portion of funds kept in highly liquid assets, primarily U.S. government obligations.⁴ The consolidated balance sheets for Black-owned banks (excluding those formed after 1971) show that their combined asset portfolio (Table I) is extremely liquid. This liquidity is characteristic of the older and newer Black banks. The existing literature presents four possible explanations of the relatively large holdings of government securities in Black bank portfolios: 1) They hold government securities because federal regulations require that most U.S. government deposit funds be invested in this type of asset, Bates [1]; 2) because rapid asset and deposit growth have not been matched by bank capital growth, Black banks must avoid risky assets if they wish to maintain adequate capital in light of the risks associated with their portfolio of earning assets (this is reinforced by the capital adequacy requirements of bank regulatory authorities), Emeka [9]; 3) extreme deposit instability forces the banks to hold highly liquid assets that can be easily converted into cash for

² Sample selection procedures are described in chapter 6, Appendix B, "Sampling Procedures," in Bates and Bradford which includes a listing of the individual Black banks [2] analyzed in this study.

³ In addition to Brimmer's widely cited studies [6, 7], see Emeka [9], Boorman and Kwast [4], and Summers and Tucker [15].

⁴ In Boorman and Kwast's samples of banks [4], the minority banks had 46.5 percent of total assets in highly liquid forms in 1972, while the non-minority bank comparison group held only 29.5 percent of their assets in similarly liquid forms.

Table I
Consolidated Report of Condition for 30 Black Banks as of December 31
(in thousands of dollars)

	1970 ^a	1971	1972	1973	1974
<i>Assets</i>					
Cash and due from banks	40,297	51,711	56,104	54,523	59,110
Government securities	105,902	169,719	197,482	206,601	206,272
Federal funds sold	22,575	41,630	32,275	20,995	34,777
Other securities	<u>4,532</u>	<u>8,844</u>	<u>12,640</u>	<u>11,138</u>	<u>11,463</u>
Total liquid assets	173,126	271,904	298,501	293,257	311,622
Loans (consumer, business, real estate)	135,448	173,301	227,956	249,915	257,766
Other assets	<u>16,042</u>	<u>19,290</u>	<u>22,245</u>	<u>26,582</u>	<u>28,810</u>
Total assets	<u>324,616</u>	<u>464,495</u>	<u>548,702</u>	<u>569,754</u>	<u>598,198</u>
<i>Liabilities</i>					
Non-government deposits	239,842	326,103	385,741	399,068	412,621
Government deposits	50,026	97,129	106,122	108,828	118,006
Other liabilities	<u>10,033</u>	<u>12,008</u>	<u>23,156</u>	<u>23,287</u>	<u>27,348</u>
Total liabilities	299,901	435,240	515,019	531,183	557,975
Minority interest in consol. subsid.	19	20	23	26	28
Reserves	1,091	1,239	1,901	2,096	3,010
Capital account	<u>23,606</u>	<u>27,996</u>	<u>31,759</u>	<u>36,449</u>	<u>37,185</u>
Liabilities, reserves, capital	<u>324,616</u>	<u>464,495</u>	<u>548,702</u>	<u>569,754</u>	<u>598,198</u>

SOURCE: Federal Bank Regulatory Agency Documents

^a 27 banks only for 1970; 3 additional banks were chartered during 1971.

meeting large sudden withdrawals by depositors, Emeka [9]; 4) Black bankers are heavily invested in U.S. government securities because they have difficulties finding reasonably secure outlets for their funds in the Black community, Brimmer [7]. Finally, we hypothesize that bank age is a key determinant of bank asset holdings. Many Black banks are relatively recent entrants into the industry and, like typical new banks, they are investing heavily in safe government securities while they a) build up employee skills, b) master the routine operations of running a commercial bank, and c) gradually build up expertise in lending to their particular clientele. These hypothesized determinants of Black bank asset holdings are discussed in the following sections.

1. *Bank Liquidity and Government Deposits*

The first explanation for Black bankers' highly liquid asset holdings is intertwined with programs by government designed to assist Black-owned banks. In late 1970, the Nixon Administration adopted a policy of deliberately increasing its deposits of government funds at minority-owned commercial banks. On June 30, 1971, 29 Black-owned banks operating in the United States had total deposits of \$317,820,000 and government deposits of \$47,374,000. Six months later, on December 31, these totals had leaped to \$419,576,000 and \$98,890,000 (increases of 32 and 109 percent, respectively). While the government deposit program was supposed to supply Black banks with funds to lend to Black enterprises, the use

of funds was restricted by regulations specifying that all federal government accounts exceeding the insured \$20,000 maximum must be protected dollar for dollar with U.S. government securities.

Regarding the first explanation for Black bankers' highly liquid asset holdings, investment of government deposits in government securities is only part of the story because 1) holdings of government securities have consistently been far larger than government deposits, and 2) growth in government security holdings has been much larger than growth in government deposits (see Table I). Furthermore, the Black banks held relatively more of their assets in government securities than the comparison group of nonminority banks, but this difference in asset structure is not great.

2. Bank Liquidity and Capital Adequacy

Capital inadequacy may be a major determinant of asset portfolio composition for many Black bankers. While deposits and total assets showed phenomenal growth in the early 1970's, bank capital failed to grow at a similar rate. Assets and deposits increased 69.0 and 69.7 percent, respectively, while capital grew by 34.5 percent in the two-year period ending December 31, 1972. However, the rapid growth in assets, deposits, and loans which characterized the 1970-1972 time period has not been sustained in the following two-year period ending December 31, 1974.

Since the capital adequacy formula guidelines of bank regulatory agencies suggest that banks have at least ten percent capital backing for all "normal risk assets," and 50 percent capital backing for all doubtful loans and defaults, many Black banks are presently, by these standards, undercapitalized.⁵ Faced with capital growth that has not matched deposit growth in the 1970's, Black-owned banks often put incremental deposits into riskless earning assets that require no capital backing; treasury bills, of course, require no capital backing.

If Black banks adhere to the capital adequacy guidelines of bank regulatory agencies, then a necessary condition for expanding loans as a proportion of portfolio asset holdings is capital account growth. Retained earnings are the primary source of capital accessible to existing Black banks and retention of earnings necessarily entails operating at a profit. Profitable operations also facilitate bank sales of such capital raising instruments as common stock. Profitability and capitalization are thus closely interrelated and they are key determinants of the extent to which Black banks are capable of servicing the loan demands of their local markets.

Loan losses have impaired the profitability of several newer Black banks, and this phenomenon has led some investigators to question the viability of Black banks as inner city lenders, Bates [1]. In particular, John Boorman and Myron Kwast's comprehensive study [4] of minority banking concluded that the most persistent difficulty facing Black-owned banks was the continuous relatively heavy losses sustained in their loan portfolios. Boorman [3] rather pessimistically

⁵ Boorman [3] reports that over half of the sampled minority banks covered in his study were criticized for inadequate capital in the evaluation report classifications of bank regulatory agencies.

concludes that "minority-owned banks can succeed in generating sufficient operating income to survive as viable and profitable institutions only when they manage to control loan losses. This may require further retrenchment in local lending operations."⁶

Black banks may indeed face a loan demand function characterized by generally higher risk than that faced by non-minority banks. Because of the lower per capita income and less stable employment characteristics of Black communities, Black banks may experience a higher proportion of loan defaults relative to non-minority banks of comparable size. These phenomena are not necessarily severe problems for Black banks because they can be offset by utilizing government loan default insurance programs, or by charging loan recipients rates of interest that compensate the banks for their risk exposure. Available evidence clearly shows that newer Black banks hold relatively more (far more) 1) FHA-HUD and VA insured home mortgages, and 2) SBA guaranteed commercial and industrial loans than the non-minority banks of comparable size.⁷

3. Bank Liquidity and Deposit Instability

Predictions of deposit flows provide a basis for individual banks to acquire various earning assets that have properties (regarding maturity and risk) which will allow the banks to meet expected deposit withdrawals. Individual banks may be expected to maintain different mixtures of assets in their portfolios in order to maximize their profits in the particular circumstances in which they find themselves. Interbank differences in the proportion of portfolio assets held in liquid forms is expected to be a function of the variability and the predictability of deposit flows and such previously mentioned traits as bank age.

We have examined deposit variability and predictability by analyzing weekly deposits over the December 27, 1972 to December 31, 1975 time period for Black-owned banks that are members of the Federal Reserve System and a comparison group of non-minority banks. In terms of size, age, and geographic location, the comparison group of banks was selected to resemble the Black-owned Federal Reserve member banks. Fourteen Black banks that had been formed by 1972 are members of the Federal Reserve System; 13 of these institutions belong to the group of newer Black banks that have begun operations since 1963. Deposit variability is much more pronounced for the Black banks than for the sampled non-minority institutions. For weekly total demand deposits, standard deviations divided by mean deposits average .209 and .221 for the Black banks in 1974 and 1975; corresponding figures for the non-minority banks are .107 and .100. For time and savings deposits, this same pattern prevails. When the highly variable government deposits are netted out and private deposits are examined, the

⁶ No comprehensive data on racial composition of loan recipients exist. Examination of approximately 60 business loans granted by Black-owned banks in Chicago, New York, and Boston indicated that all but one of the loan recipients was a Black-owned business. This examination was conducted by Timothy Bates.

⁷ See Bates and Bradford [2], Chapter 5. For example, Black banks chartered between 1963 and 1971 held FHA-HUD and VA guarantees on 27.9 percent (by dollar volume) of their total residential mortgages as of December 31, 1974.

deposits of Black banks are still highly variable relative to their non-minority counterparts. For the entire 104 week period ending December 31, 1975, coefficients of variation for demand deposits net of U.S. government deposits were .200 and .106, respectively, for the sampled Black and non-minority banks.

To understand further the nature of the instability that characterizes Black bank deposits, regressions explaining weekly deposit changes have been estimated for each of the 14 Black and 37 non-minority banks. Theories of the demand for cash suggest that individuals or businesses receiving deposit increments are not likely to hold such balances idle. A bank should expect to see part or all of this week's deposit increments withdrawn in succeeding weeks. A forecasting model designed to measure the resultant deposit fluctuations has been developed by Hester and Pierce [11] and it is applied herein to the samples of Black and non-minority banks. Deposit differences in bank demand and time deposit weekly averages are predicted by the following autoregressive deposit forecasting models:

$$(D_t - D_{t-1}) = \alpha + \sum_{i=1}^T \beta_i (D_{t-i} - D_{t-i-1}) + \beta_{52} (D_{t-52} - D_{t-53}), T < 52$$

$$(S_t - S_{t-1}) = \alpha + \sum_{i=1}^T \beta_i (S_{t-i} - S_{t-i-1}) + \beta_{52} (S_{t-52} - S_{t-53}), T < 52$$

where D_t and S_t are bank demand and time (and savings) deposits in week t , and the β_i are estimated coefficients of the forecasting model. For a more detailed description of the forecasting model, see pp. 90-93 of Hester and Pierce [11]. The β_{52} are seasonal coefficients, relating demand deposit changes predicted to occur in week t to deposit changes that occurred 52 weeks ago. In addition to the various lagged deposit changes and the seasonal component, each autoregressive process is expected to have a trend (intercept) component, α . Except for β_0 and β_{52} , coefficients in the bank demand deposit equations are hypothesized to be predominantly negative. This expectation is based on the premise that depositors seek to avoid incurring the opportunity costs of holding idle balances in demand deposits; therefore, deposit inflows should be associated with a succeeding sequence of deposit outflows.

To determine the order of the autoregressions, processes of four, eight, twelve, sixteen, and twenty weeks were tried; the seasonal correction was always present. When a block of four weekly deposit changes is added to the model, an F-test is used to test the hypothesis that the additional four parameters improved the description of the bank's deposit changes. An order of $T = 12$ was judged satisfactory for explaining weekly demand deposit changes of the Black and sampled non-minority institutions.

Determination of the autoregression order for time and savings deposits bogged down because, whatever the order, time deposit prediction equations were rarely statistically significant. When variations of the model attempting to explain time and savings deposit variability were tested, the findings were similarly unproductive. These results suggest that bank time and savings deposits may vary randomly.

Estimation of equations explaining weekly demand deposit changes was suc-

cessful, indicating that demand deposit variability is somewhat predictable. Table II summarizes mean deposit coefficients and relevant summary statistics for Black banks and the non-minority bank comparison group regression exercises. Coefficients β_1 , β_2 , and β_3 were statistically significant at the .05 level for most of the Black banks; β_1 and β_2 were significant for a majority of the non-minority banks. The incidence of statistically significant regression coefficients was clearly greater when weekly deposit changes over the longer, two-year time period were estimated (see Table III). Overall, the incidence of nonsignificant demand deposit regressions was much lower for Black as opposed to non-minority banks. Demand deposits of Black-owned banks are clearly more variable and predictable relative to the non-minority bank comparison group.

Table II indicates that Black banks experiencing a demand deposit inflow in any given week can expect in the following week a corresponding deposit outflow equal to 41.9 percent and 45.6 percent (in 1974 and 1975, respectively) of the current week's increase in deposits. Over 40 percent of this week's increase in demand deposits will, on average, be gone next week. In order to meet next week's expected deposit withdrawals, a large share of this week's deposit increase must be invested in such highly liquid assets as Federal Funds sold or U.S. Treasury

Table II
Mean Deposit Coefficients and Summary Statistics from Bank Regression
Equations Explaining Total Demand Deposit Variability

	1974 (52 weeks)		1975 (52 weeks)		1974 & 1975 (104 weeks)	
Coefficient	Black	Nonminority	Black	Nonminority	Black	Nonminority
β_0	16.16	16.22	58.30	40.20	21.56	18.93
(trend)						
β_1	-.419	-.278	-.456	-.301	-.453	-.294
β_2	-.452	-.273	-.410	-.274	-.435	-.248
β_3	-.400	-.220	-.449	-.271	-.427	-.241
β_4	-.220	-.145	-.258	-.165	-.232	-.139
β_5	-.280	-.144	-.212	-.160	-.217	-.131
β_6	-.297	-.125	-.269	-.176	-.249	-.128
β_7	-.277	-.174	-.273	-.171	-.241	-.167
β_8	-.299	-.093	-.253	-.136	-.227	-.094
β_9	-.189	-.047	-.172	-.102	-.107	-.041
β_{10}	-.222	-.124	-.239	-.140	-.201	-.117
β_{11}	-.139	-.097	-.203	-.088	-.141	-.080
β_{12}	-.170	-.089	-.093	-.081	-.095	-.064
β_{52}	+.207	+.206	+.240	+.203	+.164	+.172
(seasonal)						
$\bar{R}^2$	.239	.150	.321	.201	.327	.184
S.E.E.	1,360.6	495.5	1,567.3	475.5	1,475.0	488.8
F	3.08	2.06	3.62	2.63	6.11	3.67
n	52	52	52	52	104	104
# banks in this group	14	37	14	37	14	37

NOTE: The above figures summarize the results of 51 regression equations that were estimated for each year, 1974 and 1975, and for both years, 1974 and 1975; 14 and 37 equations were estimated (one bank, one equation) for the 14 and 37 Black and nonminority banks.

Table III
Frequency of Statistically Significant Demand
Deposit Equation Coefficients
(number of banks)

Coefficient	1974		1975		1974 and 1975	
	Black	Nonminority	Black	Nonminority	Black	Nonminority
β_0	0	2	0	5	1	4
β_1	11	20	11	20	13	31
β_2	11	19	10	21	13	23
β_3	9	10	10	13	14	24
β_4	5	7	5	8	7	13
β_5	5	5	3	9	7	12
β_6	4	4	6	9	8	8
β_7	5	8	5	12	7	16
β_8	5	2	4	8	7	10
β_9	3	2	3	3	3	1
β_{10}	3	9	4	7	5	9
β_{11}	4	2	3	6	4	6
β_{12}	2	0	3	7	3	6
β_{52}	2	12	3	13	4	14
# banks in this group	14	37	14	37	14	37

NOTE: cut-off point for determination of statistical significance was .05.

bills. The less volatile demand deposits of the nonminority bank comparison group behave similarly, but this week's deposit inflow (or outflow) is predicted to be followed by a relatively smaller deposit outflow (or inflow) in the following week. If the deposit regressions summarized in Table II are re-estimated for the demand deposit data excluding U.S. government deposits, these same relationships continue to prevail. Deposit variability forces Black banks to invest a substantial portion of their deposit inflows in highly liquid assets.

Summaries of equations explaining weekly demand deposit changes (Tables II and III) indicate a high degree of stability from year to year; equations explaining 1974 weekly deposit changes exhibit coefficients that are quite similar to the coefficients corresponding to equations explaining 1975 deposit changes. Estimated equations explaining weekly deposit changes for the entire two-year (1974-1975) period, however, tend to be more powerful predictors of deposit behavior than the equations corresponding to the single year periods of 1974 and 1975. Comparison of the residual sums of squares from 1) the two-year period models and 2) the separate 1974 and 1975 equations indicates that the separate models do not explain weekly deposit changes more accurately in an analysis of covariance. The separate 1974 and 1975 equations explained deposit changes significantly more accurately than the pooled 1974, 1975 equation for only two of the 37 White banks and none of the 14 Black banks. Finally, the regression equations summarized in Table II were re-estimated with all weekly deposit figures deflated by bank total assets. This exercise produced no interesting changes in equation coefficients or summary statistics, which suggests that the variance of the error

term is not proportional to the squared value of the deflator in the previously discussed equations explaining weekly deposit changes.

Statistical considerations aside, this section has documented that Black banks experience demand deposit flows that are clearly more volatile than the deposit flows encountered by their non-minority bank counterparts. This greater volatility continues to be present when U.S. government demand deposits are netted out and, in practical terms, it means that Black banks must hold relatively more liquid assets than their non-minority counterparts. Relatively greater liquidity enables Black banks to meet their expected future deposit withdrawals, but it necessarily limits their ability to invest large shares of their funds in such illiquid forms as loans for households and businesses.

B. Multiple Linear Regression Models Explaining Bank Asset Holdings

Because banks vary in age, deposit structure, capitalization and a number of other traits, it is potentially useful to utilize multiple regression models to test hypothesized relationships between various individual explanatory variables and bank asset structure. Hypothesized relationships about Black bank asset holdings are listed below. All hypotheses about bank asset holdings reflect an assumption of *ceteris paribus*. All of the hypotheses discussed below are possible explanations of the relatively large holdings of liquid assets (and hence, small loan holdings) in Black bank portfolios.

1. Hypothesized Relationships:

- a. The percentage of a bank's deposits held in the form of U.S. government demand deposits is directly related to the percentage of a bank's assets held in liquid forms.
- b. The number of years that a bank has been in operation is inversely related to the percentage of bank assets in liquid forms.
- c. Bank capitalization is inversely related to the percentage of bank assets invested in liquid forms. An earlier section of this study, "Bank Liquidity and Capital Adequacy," showed that Black bank under-capitalization was primarily caused by 1) rapid deposit growth that has outrun capital account growth, and 2) loan losses that have impaired the profitability of several newer banks. Because bank undercapitalization is largely a function of rapid deposit growth and loan loss experiences, these latter two variables are the appropriate explanatory variables to include in the regression equations that seek to explain bank liquidity. Specifically:
 1. The growth rate of bank deposits is directly related to the percentage of bank assets invested in liquid forms.
 2. Bank loan loss reserves, expressed as a percentage of total loans outstanding, are directly related to the percentage of bank assets invested in liquid forms.
- d. Black banks are more heavily invested in liquid assets than the comparison group of White banks because they have difficulty finding reasonably secure opportunities to make loans in the Black community. This hypothesis, advocated by Mr. Brimmer, suggests that "Black" and "White" are proxies measuring the quality of lending opportunities available in the bank's

immediate vicinity; White suggests good lending opportunities and Black suggests severely limited lending opportunities.

- e. Bank deposit variability is directly related to the percentage of bank assets invested in liquid forms.
- f. Unpredictability of bank deposit flows is directly related to the percentage of bank assets invested in liquid forms.

All of the Black-owned Federal Reserve member banks that had been formed by 1972 serve as the Black bank sample for purposes of estimating linear regression models explaining bank liquid asset holdings. In order to test hypothesis d above, a regression model explaining bank liquid asset holdings is then applied to the pooled sample of Black and White-owned banks, and a dummy variable (Black = 1, White = 0) is employed to test for the relevance of racial grouping, other factors constant, for explaining bank liquidity.

2. The Data and the Variables:

Utilizing data from the December 31, 1974 and 1975 bank balance sheets, weekly deposit data covering 1973, 1974, and 1975, and bank age, variables were constructed to explain the proportion of bank liquid assets held in three forms: 1) cash assets, 2) federal funds sold, and 3) U.S. government obligations, as of December 31, 1975. On that date, the samples of White and Black-owned banks held 35.2 percent and 46.4 percent of their assets, respectively, in these three liquid forms.

Construction of the balance sheet variables was straightforward:

- a. *Liquid assets*, the dependent variable, is (cash assets plus federal funds sold plus U.S. government obligations) divided by total bank assets.
- b. *U.S. government deposits* is U.S. government demand deposits divided by total bank deposits.⁸
- c. *Deposit growth* is (December 31, 1975 total deposits minus December 31, 1974 total deposits) divided by December 31, 1975 total deposits.
- d. *Loan loss* is loan loss reserve divided by total loans outstanding.

All of these balance sheet variables are expressed in ratio form, and all are calculated from the individual bank balance sheets. Unless otherwise indicated, variables are calculated from December 31, 1975 balance sheets.

Bank age is a dummy variable; for all banks formed during or after 1970, bank age = 1, and for all banks formed before 1970, bank age = 0. Since all banks in the sample had been in existence for at least three full years, the bank age variable creates a group of newer banks—defined as those in existence for more than three but less than five full years—and older banks, those in existence over five years.

Three explanatory variables measuring deposit variability and predictability are somewhat more involved:

- a. *Demand deposit variability* is the standard deviation of weekly non-U.S. government demand deposits during 1974 and 1975, divided by non-U.S. government demand deposits outstanding on December 31, 1975.

⁸ U.S. government time and savings deposits were exceedingly rare amongst the sampled banks; they are therefore not analyzed separately in this study.

- b. *Time deposit variability* is the standard deviation of weekly total time and savings deposits during 1974 and 1975 divided by time and savings deposits outstanding on December 31, 1975.
- c. *Demand deposit unpredictability* is measured in two ways. Deposit predictability is determined by the degree to which the autoregressions estimated in the preceding section, "Bank Liquidity...", succeed in estimating weekly deposit changes. Conversely, deposit unpredictability is measured by the standard error of estimate (S.E.E.) of each autoregression. Our first measure of deposit unpredictability is the S.E.E. of the bank autoregressions explaining weekly changes in non-U.S. government demand deposits during the 1974, 1975 two-year period. Correlation with demand deposit variability compromised the usefulness of the S.E.E. measure; therefore, the percentage of deposit variation not explained by these same non-U.S. government demand deposit autoregressions is used as an alternative measure of demand deposit unpredictability.⁹ Regression results appearing in Table 4 utilize this alternative measure of deposit unpredictability.

3. The Findings:

For the sample of Black-owned banks, the regression results confirm, at a .05 level of statistical significance, the hypothesized relationships between bank liquidity and 1) U.S. government deposit holdings, 2) demand deposit variability, 3) demand deposit unpredictability, and 4) loan loss reserves. Bank age, deposit growth, and time deposit variability were not significant determinants of Black bank liquidity. These findings are discussed below.

The lack of significance of the age variable for explaining Black bank liquidity may be caused by 1) the fact that all of the sampled banks had been in existence for at least three full years and 2) small sample size. Bank age may certainly be an important determinant of bank liquidity for those Black banks in existence for less than three full years.

Explanatory variables describing deposit structure and behavior were extremely important determinants of the asset composition observed in Black bank portfolios. The direct relationship between liquid asset holdings and the proportion of deposits held in the form of U.S. government demand deposits was statistically significant. Similarly, the variability of Black bank non-U.S. government demand deposits was a very important determinant of bank liquidity. The explanatory variable time deposit variability was both statistically insignificant and highly collinear with other variables describing bank deposits. Re-estimation of the Table IV equations excluding time deposit variability reduces the standard errors of most explanatory variables. The high correlation between demand deposit and time deposit variability is a noteworthy fact. Those Black banks who are most plagued by highly variable demand deposits appear to have time and savings deposits that are similarly quite variable.

⁹ The percentage of deposit variation explained by the autoregression is measured by the adjusted R^2 ; therefore, the percentage of unexplained variation (hence deposit unpredictability) is measured by $(1.0 \text{ minus } \bar{R}^2)$. The $1.0 \text{ minus } \bar{R}^2$ measure of deposit unpredictability was utilized in Table IV.

Table IV
Multiple Linear Regression Models Explaining the Proportion
of Assets Held in Liquid Forms

Variable	Black Banks Regression Coefficient		Pooled Sample Regression Coefficient	
	Model #1:	Model #2:	Model #1:	Model #2:
Black-White	—	—	-.033 (.043)	-.033 (.044)
Bank age	-.016 (.028)	-.019 (.027)	.042 (.032)	.042 (.032)
U.S. government demand deposits	.533 ^a (.138)	.560 ^a (.130)	.723 ^a (.328)	.727 ^a (.332)
Deposit growth	-.065 (.085)	-.106 (.066)	-.169 (.130)	-.170 (.127)
Loan loss	4.383 ^a (.936)	4.408 ^a (.912)	3.826 ^a (1.740)	3.825 ^a (1.720)
Demand deposit variability	1.292 ^a (.150)	1.230 ^a (.124)	1.272 ^a (.253)	1.262 ^a (.228)
Time deposit variability	-.160 (.204)	—	-.015 (.161)	—
Demand deposit unpredictability	.203 ^a (.032)	.195 ^a (.029)	.196 ^a (.043)	.195 ^a (.042)
R ²	.893	.893	.942	.944
S.E.E.	.040	.039	.097	.096
F	282.6	346.3	103.2	120.7
n	14	14	51	51

Coefficient standard errors are in parentheses

^a Statistically significant at the 0.05 level.

Demand deposit unpredictability was statistically significant and it was related to Black bank liquidity in the expected direct fashion. The banking literature contains some discussion on the relevance of various measures of deposit variability to bank asset holdings. While existing studies tend to focus upon either total deposit variability (typically the ratio of the standard deviation to mean deposits) or deposit predictability (typically the ratio of the S.E.E. to mean deposits), Kaufman [13] argues that, given positive transaction costs, one must consider both aspects of deposit behavior.¹⁰ Our findings for Black-owned banks support Kaufman's position that both deposit variability and predictability are relevant determinants of bank asset holdings.

Although the very high rate of deposit growth experienced in the 1970–1972 time period is hypothesized to be a key determinant of Black bank liquidity, the insignificance of the 1975 deposit growth variable in the estimated equations suggests that growth may no longer be a problem for bank portfolio managers. The moderate 10.7 percent rate of deposit growth experienced by the sampled Black banks in 1975 may not be outstripping the rate of capital account growth

¹⁰ A study that claims superiority of the S.E.E. measure for explaining bank cash asset holdings and Fed. borrowings is authored by Dewald and Dreese [8].

Table V
Summary Statistics Describing Table IV Explanatory Variables

Variable	Mean			Standard Deviation		
	Black:	Non-minority:	Pooled sample:	Black:	Non-minority:	Pooled Sampled:
Bank age (= 1 for young banks)	.429	.324	.353			
U.S. government demand deposits	.084	.006	.028	.083	.009	.056
Deposit growth	.107	.102	.104	.174	.090	.123
Loan loss	.011	.012	.012	.012	.006	.008
Demand deposit variability	.201	.107	.132	.130	.057	.080
Time deposit variability	.133	.112	.118	.103	.101	.101
Demand deposit unpredictability	.725	.827	.799	.176	.120	.141
n	14	37	51			

for most banks; easing of the capital account constraint could therefore co-exist with moderate deposit growth. Finally, the loan loss variable was, as hypothesized, a strong determinant of Black bank liquidity. Because loan losses over time are causally related to Black bank capitalization, our findings suggest that Black banks in 1975 who are constrained to safe liquid asset investments because of undercapitalization are likely to be banks with loan loss problems rather than rapidly growing banks.

Finally, Table IV's model explaining bank liquid asset holdings for the pooled sample of Black and White-owned banks indicates that bank racial grouping, *ceteris paribus*, is not systematically related to bank liquidity. When bank age, deposit characteristics, loan loss, and deposit growth are controlled for, Black banks' portfolio management strategies are essentially the same as those of the comparison group of non-minority banks. The greater liquidity of Black banks is accounted for primarily by 1) their heavier reliance upon U.S. government demand deposits as a source of funds and 2) by the variability that characterizes their demand deposit supply function. Relative to the importance of the Black bank deposit supply function's behavior as a determinant of bank liquidity, the loan loss factor is rather minor for explaining the greater liquidity of Black versus non-minority banks.

For the sample of White-owned banks, the results of the regression model explaining liquid assets (which is not reported because of space limitations) are relatively straightforward. The regression coefficients show the proper signs; statistically significant determinants of bank liquidity were 1) U.S. government deposits, 2) demand deposit variability, and 3) demand deposit unpredictability. For the samples of both Black and White banks, demand deposit variability was the single most important determinant of bank liquid asset holdings. To test the value of estimating separate models to explain bank liquidity for the samples of Black- and White-owned banks, the residual sums of squares from the model

based on the pooled sample of 51 banks were compared to the summed residual sums of squares for the separate models (analysis of covariance), and the separate models did not explain bank liquidity more accurately than the pooled model ($F = 0.93$ for model #2); the difference in explanatory power was statistically insignificant.

III. Concluding Remarks

The unique circumstances influencing the asset holdings of Black-owned banks involve primarily their sources of funds rather than their aversion to investing in loans to households and businesses. Because of government programs to assist them, Black banks hold U.S. government deposits that are a relatively large proportion of their total deposits. Because of 1) government regulations constraining the investment of these funds and 2) the extreme volatility of U.S. government demand deposits, the greater liquidity of Black banks is partially accounted for by their heavier reliance upon the U.S. government as a source of funds. Black banks have been criticized for their consistently low loan to asset ratios when, in fact, loans as a percentage of assets have clearly risen since 1970, especially for newer (post 1963) Black banks; if U.S. government deposits and the related investment in liquid forms are netted out of Black bank balance sheets, the rise over time in the loan to asset ratio is, of course, much more pronounced. Black banking institutions mobilize the savings of a neighborhood clientele whose incomes are, on average, lower and less stable than those of non-minorities. Relative to the comparison group of non-minority banks, the non-U.S. government deposits of Black banks exhibit substantial variability which, in turn, requires relatively greater liquidity of Black banks if they are to meet their expected future deposit withdrawals.

We conclude that Black bank liquidity has been incorrectly interpreted by the existing banking literature. Aversion to lending because of difficulty in finding reasonably secure opportunities to make loans does not appear to characterize the sampled Black banks. Bank racial grouping per se does not appear to be causally related to bank liquidity. Forces that shape the environment in which small, relatively young urban banks operate do differ for the samples of Black and non-minority banks examined in this study. Regarding choice in asset holdings, however, Black banks appear to respond to their particular environment in a manner no different from non-minority banks.

REFERENCES

1. Timothy Bates, "Lending Activities of Black-Owned Commercial Banks." *Review of Black Political Economy* (Winter 1976).
2. ———, and William Bradford. *Financing Black Economic Development* (New York: Academic Press, 1979).
3. John Boorman, *New Minority-Owned Commercial Banks* (Washington, D.C.: Federal Deposit Insurance Corporation, 1973).
4. ———, and Myron Kwast. "The Start-Up Experience of Minority-Owned Commercial Banks: A Comparative Analysis." *The Journal of Finance* (September 1974).

5. William Bradford, "Minority Financial Institutions, Inner City Economic Development and the Hunt Commission Report." *The Review of Black Political Economy* (Spring 1974).
6. Andrew Brimmer, "The Black Banks: An Assessment of Performance and Prospects." *The Journal of Finance* (May 1971).
7. ———. "Recent Developments in Black Banking." *The Review of Black Political Economy* (Fall 1972).
8. William Dewald, and G. Richard Dreese. "Bank Behavior With Respect to Deposit Variability." *The Journal of Finance* (September 1970).
9. Mauris Emeka, "Some Common Problems of Black Banks in 1972." *The Review of Black Political Economy* (Spring 1973).
10. John Gurley, and Edward Shaw. *Money in a Theory of Finance* (Washington, D.C.: The Brookings Institution, 1960).
11. Donald Hester, and James Pierce. *Bank Management and Portfolio Behavior* (New Haven: Yale University Press, 1975).
12. Edward Irons, Samuel Doctors, and Allan Drebin. "The Impact of Minority Banks on Communities." *The Bankers Magazine* (Summer 1975).
13. George Kaufman, "Deposit Variability and Bank Size." *Journal of Financial and Quantitative Analysis* (December 1972).
14. James Lindley, and Edward Selby. "Black Customers: Hidden Market Potential," *The Bankers Magazine* (Summer 1973).
15. Bruce Summers, and James Tucker. "Performance Characteristics of High-Earning Minority Banks." *The Review of Black Political Economy* (Summer 1977).