BANK LOAN ACCOMMODATION

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ABSTRACT

The banking literature occasionally refers to bank loan accommodation, that is, the willingness of commercial banks to make loans at such favorable terms that they suffer a diminution of profits. Such behavior is explained by a strategy of temporarily reducing profits in order to increase long run gains through the strengthening of customer relations. This study's empirical analysis fails to find any evidence to support the accommodation view of bank behavior.

Introduction

This is a study of bank loan portfolio behavior. It focuses upon the willingness of banks to make loans to customers even at a short-run diminution in bank profits. As Kane and Malkiel put it, a bank may accommodate a loan even though "compared with its pre-request optimum, it entails a definite sacrifice of utility." (9, p. 121) Thus, a bank may charge customers a lower loan rate than the one dictated by profit-maximization principles. The rationale for this behavior is the banks' perceived strengthening of bank-customer ties and, hence, greater customer loan demand and/or deposits in the future. It is contended that the long-run gains from better customer relationships will offset the temporary reduction in profit [1].

The loan accommodation view, with its emphasis both on commercial loans and the importance of bank-customer relationships, has been traced back to the real bills doctrine (1). The bank-customer relationship was given particular emphasis by Hodgman (8). Goldfeld, who first introduced the commercial loan market to financial models, included the accommodation view in his model by postulating a perfectly elastic loan supply curve (7). That is, he assumed that the decision variable for banks was the loan rate and that in the short run, banks stood ready to accommodate all acceptable customers at that rate. The same view of bank behavior was incorporated into the FRB-MIT model (5, 10) and this view is currently cited to describe bank behavior (6, 15).

Banks play a pivotal role in the creation of money and credit. Thus, for those observers who believe that bank loans are significantly more expansionary than bank investments, the need to understand bank portfolio shifts between loans and investments takes on special importance (2).

Despite its intuitive appeal, and the citation of bank loan accommodation in the literature, the empirical support for this mode of bank behavior is far from overwhelming. Therefore, this study reviews the literature on the accommodation principle and tests models of bank loan behavior to further investigate the impact of loan accommodation on bank behavior. The tests of the accommodation view normally focus either on the impact of loan demand on bank behavior or on the elasticity of the supply curve.

Bank Portfolio Behavior

Goldfeld, in his pioneer work on bank portfolio behavior, and later Silber in his study of financial institutions (14), tested for the existence of loan accommodation by including a loan variable in bank demand functions for various assets and liabilities such as excess reserves, borrowed reserves, short-term government securities, municipal securities, and mortgages. In Goldfeld's tests, changes in bank loans were found to have a significant, positive influence on city (but not country) banks' demand for borrowed reserves. Both Goldfeld and Silber also found that bank

demand for short-term government securities was negatively influenced by changes in bank loans. These results are consistent with the view that banks finance increases in loan demand by drawing down government securities and by borrowing from the discount window, irrespective of yields. Nonetheless, their results do not serve as conclusive support for the accommodation view for several reasons.

First, some of Goldfeld and Silber's evidence conflicted with the accommodation view. According to this view, an increase in the change-in-loan variable should cause a reduction in bank assets and an increase in bank liabilities to finance the loans. Yet, the change-in-loan variable was found to have a positive, rather than the expected negative, effect on bank demand for municipal securities (Goldfeld's finding) and mortgages (Silber's finding).

Also, a more precise testing of the accommodation principle would require the inclusion of a loan demand variable, yet both Goldfeld and Silber simply tested a loan quantity variable which may reflect supply, as well as demand, effects.

Finally, conflicting results were found by Anderson and Burger (1) who found that bank loan behavior could be better explained by profit-maximization rather than customer accommodation. They regressed the demand for excess reserves and borrowed reserves on various interest rates and GNP (which was a proxy for bank loan demand), and found that GNP (loan demand) did not have a significant impact on bank demand for excess and borrowed reserves. They also found bank loans to be positively influenced by their proxy for the bank loan rate. Though these results were contrary to the accommodation view, they also cannot be accepted as conclusive. The use of a short-term security rate is an imperfect proxy for the bank loan rate as is GNP for loan demand. More important, the authors did not specify a separate loan supply and demand function and thus their results may suffer from misspecification.

Tests of the Loan Supply Function

Goldfeld and Silber tested a loan model in which the loan-supply curve was presumed to be perfectly elastic. The loan rate was assumed to

be the short-term bank decision variable which in turn was determined by market rates such as the 90-day Treasury Bill rate and a longer-term market rate. Nonetheless, without having tested an alternative model, i.e., a positively sloped supply model, Goldfeld's and Silber's tests cannot be accepted as conclusive proof of the accommodation principle.

Budzeika (3), in his study of large New York city banks, took the tests a step further by simulating two different models of bank behavior: a demand-supply model which assumes a positively sloped supply curve; and a demand model which assumes a perfectly elastic supply curve such that bank loans are demand-determined. Using simulation, he found that the demand model fit the data better.

Nonetheless, simulation may not be the best means of choosing between the two loan supply models. For example, a single-equation model estimating a loan demand curve where the loan supply function is assumed to be perfectly elastic can obtain a very high R^2 by employing a few appropriate variables in the demand function. Thus, simulation would normally favor the choice of the single-equation model as the fit usually is better than that of simultaneous equation models. Melitz and Pardue (10) found results that conflict with the accommodation view. They derived a bank loan demand function from general theory, starting at the microeconomic stage. Tests of their bank loan supply and demand functions, employing equation methods, yielded results suggesting that banks alter their quantity supplied of loans in response to changes in bank loan rates. That is, the loan supply curve is positively sloped. Their tests, unlike Budzeika's, were not limited to New York city, but encompassed all banks.

Further Tests of Loan Accommodation

In order to further investigate whether or not banks passively accommodate loan requests at a given loan rate, we build a model of bank loans. The model assumes that the quantity of bank loans is determined by the interplay of supply and demand, and the bank loan rate serves as an equilibrating force. The testing of these variables will allow us to further investigate the loan behavior of banks. Our data, which include all commercial banks, will provide a useful supple-

ment to Budzeika's study which was limited to large, New York city banks. If our evidence points to an upward sloping supply curve, it will cast doubt on the existence of bank loan accommodation which postulates a perfectly elastic curve. It will also cast doubt on the notion that changes in bank loans, irrespective of yields, influence bank portfolio behavior. As mentioned previously, the earlier results would be valid only if the changes-in-loans variable in their tests accurately represents loan demand.

The model posits that the demand for loans is a positive function of GNP, inventory demand (measured by unfilled manufacturer's orders lagged one period), and the rate of alternative financing (the commercial paper rate), and a negative function of the bank loan rate. The bank loan rate is a Federal Reserve index of the average interest rates charged by banks on short-term loans (12). GNP serves as a scale variable, and it is a proxy for those factors stimulating bank loan demand such as new plant and equipment, which are not captured in the inventory variable.

The supply function assumes that the quantity of bank loans is positively influenced by a scale variable, the cost of deposits and the bank loan rate, and negatively influenced by the opportunity cost of making loans (measured by the 3-5 year government bond rate), and the cost of borrowing short-term funds (the Federal Funds rate).

The adjusted asset variable, AA, is the scale variable. A scale variable is included to reflect the constraint on banks to raise funds. Assets in excess of legal reserves are chosen rather than deposits thereby avoiding the problem of liabilities with different reserve requirements. Total assets would not be satisfactory as they contain loans which are already in the left-hand side of the equation. Adjusted assets is equal to the sum of excess reserves and bank investments, which represents the ability of banks to expand loans through adjustments to assets.

A cost per dollar of deposits variable is included. The deposit cost ratio equals the product of the then existing legal ceiling on savings deposits and the ratio of savings to total deposits. The assumptions underlying the use of this variable are that demand deposit costs are cover-

ed by service charges and that the rate on savings deposits are a given fraction of the legal maximum rate (10, pp. 686-687).

Increases in the deposit cost variable are expected to raise the quantity supplied of loans for two reasons. First, an increase in costs, ceteris paribus, may cause banks to recoup some of the higher cost through higher earning assets, i.e., loans. Second, an increase in this index of deposit costs normally would be associated with a decrease in this index of demand deposits-to-total deposits, and a decline in bank risk. Hence, banks presumably would react to an increase in the cost and a decline in the risk of deposits by shifting into higher return - higher risk assets, i.e., loans. The borrowing rate would be expected to have a greater impact on larger money-center banks which are active liability management banks than on smaller banks that are believed to be more reluctant to borrow funds. The model is presented in more explicit form as follows:

(1) $LD = a_0 - a_1 LR + a_2 CPR + a_3 GNP + a_4 MUL$

(2) $LS = b_0 + b_1 LR - b_2 IR + b_3 AA + b_4 DC + b_5 BR$

where:
LR   = Bank loan rate
CPR = Commercial paper rate
GNP = Gross National Product
MUL = Unfilled manufacturer's orders lagged one period
IR   = 3-5 year U.S. government bond rate
AA   = Adjusted assets
DC   = Cost of deposits
BR   = Borrowing rate, the Fed Funds rate

Estimation of the Model and Empirical Results

The data employed were seasonally adjusted quarterly averages from 1959 to 1979 [2]. In testing our simultaneous equation system, we use both the two stage least squares (2SLS) and the three stage least squares (3SLS) procedures. In the 2SLS procedure, the parameters of an equation are estimated independently of the remaining parameters of the system. In the 3SLS method, all equations are estimated simultaneously and the correlation of disturbance across equa-

tions and the prior restrictions on the other equations in the model are taken into account. Both methods yielded similar results. Here we will report only the 3SLS estimates. The borrowing rate, BR, in equation (2) was dropped due to problems of multicollinearity. The results are presented below [3]:

(1) LD = -2.86 - 1.66 LR + 0.89 CPR + 1.30 GNP + 0.26 MUL
$\quad$ (8.69) $\quad$ (3.59) $\quad$ (3.56) $\quad\quad$ (10.49) $\quad\quad$ (2.72)

(2) LS = -0.20 + 0.93 LR - 0.42 IR + 1.03 AA + 0.95 DC
$\quad$ (0.53) $\quad$ (6.63) $\quad$ (3.31) $\quad$ (15.26) $\quad\quad$ (3.88)

In the loan demand equation, all of the coefficients are significant at the 95 percent confidence level and have the expected signs.

Of greater interest to this study, however, are the results of the loan supply equation. Variables have the expected signs and are statistically significant at the 95 percent level of confidence. Of particular interest is the coefficient for the loan rate. It has a positive sign, is highly significant, and is very robust in various tests of this model. As expected, loan supply is related negatively to the opportunity cost of loans, the government bond rate, and positively both to the cost of deposits and to the scale variable. The estimated value for the AA variable, approximately unity, is consistent with expectations. It suggests that a dollar increase in the ability of banks to expand earning assets is readily channeled into loans.

Accommodation as a Shift in the Supply Function

Our results, so far, suggest that the supply curve is positively sloped and thus do not support the accommodation view and its notion that the loan supply function is perfectly elastic, i.e., that banks set a loan rate and then passively accommodate customers at that rate.

Nonetheless, it is possible that loan accommodation manifests itself in a shifting supply function [4]. For example, it is possible that even if the loan supply curve is positively sloped, a rise in the loan rate relative to market rates might induce bankers to increase loan supply to accommodate their customers (the supply curve might shift outward). As Kane and Malkiel point out, during periods of economic growth, shifts in the demand curve for loans could be matched by outward shifts in the supply curve. (9, p. 130)

Aside from periods of economic expansion, periods of credit restraint induced by the Federal Reserve might also encourage banks to accommodate loan customers, i.e., banks might attempt to satisfy customer demand for loans even in the face of a decline in reserves. In both cases, banks would be satisfying loan customers at a reduction in profit due to the loan supply curve shifting out in response to a decline in the spread between loan rates and market rates.

In an attempt to model this loan accommodation effect, we return to our loan equations 1 and 2, but add a dummy variable, (D), to reflect the outward shifts in the loan supply curve. Thus, the loan supply curve would appear as follows:

(3) LS - e_0 + e_1LR - e_2IR + e_3AA + e_4DC + e_5D

Where D = dummy variable

The dummy variable takes the value of unity when credit conditions tighten, i.e., the difference between the loan rate and the market (Treasury Bill) rate increases, and zero otherwise.

The results are presented below [5]:

(1) LD = -2.82 - 0.49 LR + 0.33 CPR + 1.19 GNP + 0.14 MUL
       (14.33)   (3.43)   (3.94)   (17.19)   (2.17)

(3) LS = 0.33 + 0.80 LR - 0.33 IR + 0.98 AA + 1.30 DC - 0.03 D
       (0.93)   (5.17)   (2.30)   (15.18)   (5.59)   (1.30)

The dummy variable is statistically insignificant. Equation (3) was tested several times with different formulations of the dummy variable. In place of increases in the difference between the loan rate and T-bill rate, we also tested dummy variables reflecting: (1) increases in loan rates; (2) peaks in the loan rate [6]; (3) increases in GNP (reflecting an outward shift in the demand curve); (4) decreases in total reserves; and (5) decreases in non-borrowed reserves (reflecting an inward shift in the supply curve). The dummy variable was statistically insignificant in all tests. Hence, we conclude that tightening credit conditions do not cause an outward shift in the bank loan supply curve and an accommodation of bank loan demand.

Summary and Conclusion

Reference to the importance of bank-customer relationships has appeared frequently in the literature, and has been cited to explain why banks might accommodate loan demand -- even at a decline in short-run profit -- in order to cement customer relations, thereby raising profits in the long run. Yet, despite the intuitive appeal to practitioners and academicians alike, the empirical evidence adduced in support of this view is far from conclusive.

In our tests, which include all commercial banks, we find evidence to support the notion that the loan function is positively sloped and that bank loans are determined by the interplay of supply and demand rather than being solely demand-determined. Thus, our results conflict with the accommodation view that postulates a perfectly elastic supply curve.

We also tested for a version of the accommodation view in which a positively sloped loan supply curve shifts outward during periods when loan rates risk relative to market rates, but did not find any empirical support for this view.

Thus, we have not been able to uncover empirical support for the accommodation view, or for the view that the supply curve for bank loans is perfectly elastic. Our study is but the first step in analyzing this issue. Further work, focusing on differences in lending behavior between large and small banks should also be undertaken. Nonetheless, our results suggest that until new and more conclusive evidence can be found, the accommodation view be treated as unproven.

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