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In theory commercial banks exist to resolve asymmetric information problems in credit markets. Because small business firms have much greater information problems than large firms,, it is not surprising that they depend almost entirely on banks for external finance needs. Unfortunately, little is known either in academic literature or banking practice about the profitability of small business credit (and related information) services. The present study employs recently available business loan size information from the Call Reports for all insured U.S. commercial banks in 1994 and 1995 to examine the relationship between bank profits and small business credit. Regression analyses are conducted using the rate of return on assets and business loans less than $250,000, in addition to a number of variables that proxy various dimensions of risk that potentially could influence this relationship. Due to the fact that small and large banks differ considerably in their lending activities, separate analyses are conducted for five asset size groups. In brief, we find that, while small business loans likely have a negligible effect the profits of large banks, they tend to increase the profitability of small banks over time, holding constant various bank risk characteristics.

I. INTRODUCTION

Theory suggests that asymmetric information is a major problem in the provision of credit by lenders (e.g., see Leland & Pyle, 1977; Ross, 1977; Campbell & Kracaw, 1980; Diamond, 1984).[1] In this regard, Fama (1985) argues that commercial banks are unique financial intermediaries because they overcome information deficiencies by collecting so-called *inside* (or otherwise private) information from the firm's managers and principals. Banks have a

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fiduciary responsibility to keep this information private, such that leaks would cause a loss in their reputational capital and future public trust.

Prowse (1996) has observed that the asymmetric information problem is particularly acute in the case of small firms. In contrast to most large firms, small firms typically do not have long credit histories, well-documented relationships with suppliers and buyers, and publicly-held stock that provide a wealth of information about the firm to investors. Not surprisingly, and consistent with the aforementioned theoretical framework, survey information recently gathered by the Federal Reserve and the Office of Advocacy of the U.S. Small Business Administration[2] indicates that the dominant institutional provider of credit for small firms is the commercial bank. Indeed, about 87 percent of small firms with 100 to 500 employees utilized bank credit to supplement their financing needs.

While banks are specialized lenders in the sense of producing and managing inside information, they will only provide small business credit to the extent that it is perceived to be a profitable enterprise. Unfortunately, little or no information is available either in the banking literature or among bankers themselves on the profitablity of small business lending. This shortfall has serious implications from a public policy perspective. Small firms are a major source of national employment, innovation, and economic growth in the U.S. (e.g., the latest available data from the Census reported that firms with 1-4 employees added 565,000 net new jobs in the period 1990-1992, while the economy as a whole lost 643,000 jobs). If there are misconceptions among bankers and others about the profitability and risks of small business loans, misallocation of credit in the financial system could result in lowered national productivity and standards of living.[3]

In June 1993 Congress required banks for the first time to include in their Call Reports schedule RC-C entitled "Loans to Small Businesses and Small Farms." Cross-sectional information on different categories of small commercial and industrial and commercial real estate loans for all insured U.S. banks is contained in this schedule.[4] This new data source has been employed in a number of recent studies [viz., Berger and Udell (1995), Keeton (1995) Peek and Rosengren (1995), and Whalen (1995)] that focus on how bank structure (i.e., size, multi-office branching, multi-bank holding companies, and acquisitions and mergers) affects small business lending behavior. However, no research has directly addressed the issue of whether or not small business lending (and related information production) is profitable for commercial banks, holding various risks constant that could potential influence this relationship.[5]

The present study seeks to fill this gap in banking literature and practice by reporting empirical evidence on the relationship between bank profit and small business credit, holding constant a number of risk variables. Based on 1994 and

1995 Call Report data for all insured U.S. commercial banks, our regression analyses indicate that small business loans tend to have a beneficial effect on small banks' profitability *over time*. More specifically, in 1994 no signficant relationship was found, but this result was overturned in 1995 by a highly signficant positive association between bank profit and small business lending for banks with assets less than $500 million. One exception to these findings is that in 1995 banks with total assets in the range of $500 million to $3 billion experienced lower profits as small business lending increased. Because small business lending comprises a small proportion of assets for these larger banks, it is likely that this result was not economically meaningful. Alternatively, further study is needed to ascertain the reasons for this negative relationship and its implications to large banks' credit flows to the small business sector.

The next section describes our methodology and is followed by the empirical results section. The last section gives the conclusions and implications of the study.

METHODOLOGY

To examine the relationship between bank profitability and small business lending it is necessary to hold constant differences between banks' on- and off-balance sheet risk profiles, market concentration, and size. For this reason we employ an OLS multivariate regression model with numerous control variables. Table 1 defines the dependent and independent variables in the model.[6]

The dependent variable is the rate of return on assets (ROA), which is the most commonly used measure of profit in the banking industry. ROA is defined

Table 1
Definitions of Variables

Variables	*Definitions*
Profitability:	
ROA	Rate of return on assets, or net income after taxes to total assets
Risk Variables:	
LOSS	Loan and lease losses minus recoveries to total assets
TIER1	Tier 1 (core) capital, or total equity to total assets
OFFBAL	Total off-balance sheet activities to total assets
SECURITIES	Total securities to total assets
PURCHASED	Purchased funds, or large time deposits plus other borrowed money to total assets
ASSETS	Total assets
HHI	Herfindahl index
SMALLBUS	Small business loans (commercial and industrial loans and commercial real estate loans under $250,000) to total assets

as net income after taxes, including gains and losses on securities and other extraordinary items, divided by total assets.[7] In theory the marginal profitability of different products and services offered by banks should be similar after adjusting for risk and other bank characteristics. If they were not similar, the most profitable products and services would be expanded until their marginal profit rates dropped to a level competitive with other financial services. In this regard there should be no difference in return between small business loans and other asset types for a given bank after adjusting for differences in risk. Thus, theory is consistent with the null hypothesis that there is no difference in profits as measured by ROA among banks with varying levels of small business lending.[8]

A number of other independent variables shown in Table 2 are included in the regression models to adjust for bank characteristics that could influence the relationship between ROA and small business lending. For example, loan and lease losses net of recoveries to total assets (LOSS)[9] is the most often cited indicator of bank risk. Most banks generate the lion's share of their earnings in the loan portfolio; therefore, controlling *credit risk* is critical to survival and profitability.

Another control variable is total equity capital to total assets (TIER 1), referred to as core or Tier 1 capital by regulators. This ratio represents the ownership stake of shareholders in the bank. It is well known that this capitalization ratio tends to decrease with bank size, which enables larger banks to have lower ROAs but still offer shareholders a comparable rate of return on equity (e.g., see Samolyk 1994). To adjust for this possibility, we include TIER1 to hold constant bank capitalization in examining the relationship between small business lending and ROA.[10]

Over the last decade, the ratio of off-balance sheet activities to total assets (OFFBAL) has dramatically increased in the banking industry, especially among multi-billion dollar banks.[11] Many banks provide various hedging services to clients (e.g., futures and options trading in addition to swap arrangements). More commonly, banks offer loan commitments that firms can later utilize for financing project needs over time. These off-balance sheet services and others enable banks to earn service revenue and enhance their relationships with clients. However, while they help reduce clients' risks, they increase the *off-balance sheet risk* exposure of the bank. For example, loan commitments tend to increase liquidity demands, and hedging services in derivatives are normally exposed to some degree of market risk.

The next variable is inversely related to risk—namely, the ratio of total securities to total assets (SECURITIES). By definition, increasing the securities ratio decreases the ratio of total loans to assets and thereby reduces bank *liquidity risk* (i.e., securities act as a secondary reserve for meeting liquidity

Table 2. Means (and Standard Deviations) of Profit and Risk Variables by Bank Asset Size Groups: 1994 and 1995

	Assets in Millions											
	All banks		*<$100 (smallest)*		*$100-$300 (smaller)*		*$300-$500 (medium)*		*$500 -$3,000 (medium large)*		*>$3,000 (large)*	
Year	*1994*	*1995*	*1994*	*1995*	*1994*	*1995*	*1994*	*1995*	*1994*	*1995*	*1994*	*1995*
Sample size	*n=10,542*	*n=9,991*	*n=7,449*	*n=6,888*	*n=2,113*	*n=2,107*	*n=367*	*n=374*	*n=437*	*n=437*	*n=176*	*n=185*
Profit:												
ROA (%)	0.56	0.57	0.55	0.56	0.57	0.59	0.60	0.61	0.60	0.60	0.67	0.63
	(0.48)	(0.51)	(0.50)	(0.57)	(0.43)	(0.36)	(0.39)	(0.28)	(0.38)	(0.34)	(0.51)	(0.48)
Risk Variables:												
LOSS (%)	0.05	0.05	0.04	0.04	0.07	0.06	0.08	0.07	0.10	0.10	0.16	0.17
	(0.22)	(0.20)	(0.21)	(0.18)	(0.24)	(0.21)	(0.24)	(0.18)	(0.23)	(0.23)	(0.30)	(0.45)
TIER1 (%)	9.76	10.25	10.09	10.69	9.21	9.57	8.61	8.96	8.52	8.71	8.13	7.97
	(3.72)	(4.41)	(3.91)	(4.86)	(3.36)	(3.20)	(2.11)	(2.31)	(2.50)	(2.18)	(2.35)	(1.99)
OFFBAL (%)	15.18	12.17	6.94	9.55	13.09	10.86	25.94	16.31	54.75	29.07	268.45	76.59
	(138.90)	(206.12)	(17.67)	(246.23)	(33.58)	(17.24)	(72.35)	(29.20)	(377.91)	(59.25)	(834.68)	(834.68)
SECURITIES (%)	33.32	30.72	34.19	31.84	32.99	29.89	29.15	27.13	27.76	25.27	23.25	18.91
	(15.38)	(14.82)	(15.58)	(15.15)	(14.95)	(13.68)	(12.78)	(10.65)	(14.83)	(13.89)	12.74)	(10.75)
PURCHASED (%)	7.95	9.37	7.68	8.97	8.44	9.92	7.95	9.71	9.21	11.10	9.92	13.11
	(6.29)	(6.65)	(5.77)	(6.03)	(6.64)	(6.64)	(6.76)	(6.94)	(6.66)	(9.70)	(9.51)	(13.62)
ASSETS	314	348	43	44	164	164	380	383	1,132	1,121	11,411	11,858
($millions)	(2,320)	(2,413)	(24)	(25)	(53)	(53)	(57)	(57)	(639)	(618)	(13,945)	(13,945)
HHI	0.33	0.34	0.33	0.34	0.31	0.33	0.31	0.34	0.27	0.28	0.29	0.29
	(0.22)	(0.22)	(0.22)	(0.22)	(0.22)	(0.23)	(0.23)	(0.24)	(0.19)	(0.20)	(0.19)	(0.18)
SMALLBUS (%)	11.29	11.44	12.13	12.32	10.80	11.04	7.88	8.24	5.68	5.79	2.80	2.92
	(7.29)	(7.09)	(7.54)	(7.31)	(6.25)	(6.13)	(5.20)	(4.91)	(4.14)	(4.13)	(1.97)	(2.34)

needs of banks). Securities generally do not earn rates of interest as high as loans, as banks normally purchase government and investment grade money and capital market debt instruments. However, theory suggests that on a risk-adjusted basis, their marginal rate of return should be the same.

The extent to which banks use purchased funds as a proportion of total assets (PURCHASED) is another measure of risk. Unlike core deposits with lower interest costs and higher noninterest costs (associated with added labor and record keeping services), purchased funds bear market interest rates and, thus, have higher and more volatile interest costs than core deposits. Additionally, they are more volatile in the sense that outflows of funds can occur rapidly if higher market rates can be obtained elsewhere. Deregulation of interest rates on deposits has increased the use of purchased funds by banks and, consequently, their *funding risk.*

We also include measures of bank size and market structure (or market risk). While we do divide our sample banks into subsamples using five asset size groupings (to be discussed shortly) and run separate regression analyses for each subsample, this cross-sectional approach to adjusting for size differences is arbitrary and may not fully adjust for size effects. For this reason we included total domestic assets (ASSETS) in the regression models. Market structure is proxied by the well-known Herfindahl index (HHI), which is the sum of squared ratios of the total assets of the ith bank to the aggregate total assets of all banks in the SMSA for urban areas or county for other areas. The structure-conduct-performance (SCP) paradigm[12] implies that, as concentration in local bank markets increases (i.e., higher HHI), profit rates can be expected to increase due to diminished competition.

Lastly, and most important to the present study, small business credit is calculated as the ratio of small commercial and industrial and commercial real estate loans (SMALLBUS) to total assets. The Call Report breaks down small business loans down into three size categories: less than $100,000, $100,000 to $250,000, and $250,000 to $1 million. Loans less $100,000 would ignore all but the very smallest firms, and loans in the $250,000 to $1 million range would contain many loans to large firms. Thus, we opted to collapse two categories to obtain all business loans less than $250,000, thereby capturing the majority of small business loans in the U.S. banking industry.[13]

Table 2 gives the means and standard deviations of the variables in 1994 and 1995. Results are given for all banks, as well as five arbitrary asset size groupings of banks: <$100 million (smallest), $100-$300 million (small), $300-$500 million (medium), $500 million-$3 billion (medium large), and ≥ $3 billion (large). As we will see, the average values of the variables differ considerably across bank size groups.

Table 2 shows that the rate of return on assets (ROA) gradually increases from a range of 0.56-0.57 percent for the smallest banks (with less than $100 million in assets) to 0.63-0.67 percent for large banks (with more than $3 billion in assets). As bank asset size increases, per dollar of assets, loan and lease losses net of recoveries (LOSS) and purchased funds (PURCHASED) increase, while equity capital (TIER1) and securities holdings (SECURITIES) decrease. These differences do not necessarily mean that larger banks have higher failure risk than smaller banks. Larger banks likely have considerable geographic and product diversification that reduces their exposure to regional and product specific risks and, in turn, enables them to reduce their equity capital. Additionally, relative to smaller banks, they enjoy greater access to market funds, probably reap economies of scale in certain operations, and potentially have the advantage of market power. On the other hand, smaller banks tend to benefit from a more stable customer base, greater ability to adapt quickly to changing market demands, and cooperative relationships with larger banks that help overcome some of their disadvantages vis-à-vis larger banks.

Off-balance sheet exposure (OFFBAL) of banks greatly differed across size groups. In 1994 and 1995 the smallest and smaller groups of banks had ratios in the range of 7-13 percent compared to 59-835 percent for medium large and large banks. This large difference implies that multi-billion dollar banks are unique and not comparable to the other groups.

Also notice that mean HHIs tend to decrease with bank asset size. This trend suggests that small banks operate in relatively more concentrated local bank markets than large banks (i.e., most small banks exist outside of urban SMSAs in which competition for bank services is likely to be less intense than otherwise).

Finally, Table 2 shows that small banks have much larger exposures to small business credit than large banks. The smallest and small bank groups had mean ratios of small loans to total assets in the range of 10-13 percent. Small business credit drops off markedly as bank size increases further, with mean ratios of 5-6 percent for medium large banks and 2-3 percent for large banks. While these means clearly indicate that smaller banks are more active small business lenders than larger banks, some caution is needed in their interpretation. Some large banks have considerable dollar volumes of small business loans, but as a proportion of total assets, their exposure is relatively small.

It is clear that banks differ considerably in their activities, risk exposures, and market conditions as size changes. For these reasons, as already mentioned, we run separate regressions for each of the bank size groups in Table 2.

Table 3

Rate of Return on Assets (ROA) Regression Analyses for U. S. Commercial Banks by Asset Size Group: 1994[a]

	Assets in Millions				
Independent Variables[b]	*<$100 (n=7,449)*	*$100-$300 (n=2,113)*	*$300-$500 (n=367)*	*$500-$3,000 (n=437)*	*>$3,000 (n=176)*
INTERCEPT	0.005	0.005	0.004	0.005	0.003
	(6.34***)	(5.35***)	(1.76*)	(3.45***)	(1.21)
LOSS	–0.798	–0.786	–0.569	–0.244	0.251
	(-31.58***)	(-23.44***)	(–5.63***)	(-3.06***)	(2.04**)
TIER1	0.006	0.032	0.043	0.027	0.097
	(3.45***)	(11.90***)	(4.55***)	(3.19***)	(5.34***)
OFFBAL	0.001	-0.002	0.002	-0.0000	0.0002
	(2.39**)	(–7.41***)	(6.32***)	(–0.76)	(1.50)
SECURITIES	0.001	0.0003	–0.001	–0.004	0.003
	(1.51)	(0.47)	(–0.53)	(–3.01**)	(0.81)
PURCHASED	0.002	0.004	0.003	0.001	0.007
	(2.17**)	(3.72***)	(1.38)	(0.63)	(3.12***)
ASSETS	0.0000	0.0000	0.0000	–0.0000	–0.0000
	(7.98***)	(1.97**)	(0.07)	(–0.08)	(–1.03)
HHI	0.001	0.001	0.001	0.002	0.001
	(4.60***)	(3.97***)	(1.12)	(2.36**)	(0.63)
SMALLBUS	0.001	0.002	0.0000	–0.004	–0.011
	(0.95)	(1.31)	(0.01)	(–0.95)	(–0.52)
Overall F	148.11***	125.25***	11.98***	4.26***	9.30***
Adjusted R^2	0.1364	0.3200	0.1935	0.0565	0.2752

Notes: [a] *t* statistics in parentheses; asterisks indicate significance at the following levels: * — .10, ** — .05, and *** — .01.

[b] Independent variables are defined as follows:

LOSS = loan and lease losses, net recoveries/total assets

TIER1 = total equity/total assets

OFFBAL = total off-balance sheet activities/total assets

SECURITIES = total securities/total assets

PURCHASED = large time deposits plus other borrowed money/total assets

ASSETS = total assets

HHI = Herfindahl index

SMALLBUS = commercial and industrial loans and commercial real estate loans less than $250,000/total assets.

Table 4
Rate of Return on Assets (ROA) Regression Analyses for U. S. Commercial Banks by Asset Size Group: 1995[a]

	Assets in Millions				
Independent Variables[b]	*<$100 (n=6,888)*	*$100-$300 (n=2,107)*	*$300-$500 (n=374)*	*$500-$3,000 (n=437)*	*>$3,000 (n=185)*
INTERCEPT	0.003	−0.0002	0.002	0.001	0.00005
	(3.27***)	(−0.31)	(1.10)	(0.81)	(0.26)
LOSS	−0.803	−0.519	−0.296	0.003	−0.541
	(−22.54***)	(−14.36***)	(−3.45***)	(0.04)	(−7.87***)
TIER1	0.012	0.035	0.027	0.030	0.068
	(7.09***)	(14.58***)	(4.17***)	(4.07***)	(4.75***)
OFFBAL	0.0003	0.002	0.002	0.0004	0.002
	(10.46***)	(5.59***)	(4.49***)	(1.22)	(9.21***)
SECURITIES	−0.0001	−0.001	−0.001	−0.003	−0.002
	(−0.25)	(−0.89)	(−1.22)	(−2.47**)	(−0.63)
PURCHASED	0.00003	−0.002	0.0001	−0.004	−0.0001
	(0.03)	(−2.67***)	(0.10)	(−3.34***)	(−0.03)
ASSETS	0.0000	0.0000	0.0000	0.0000	0.0000
	(6.14***)	(2.14***)	(1.45)	(0.09)	(0.21)
HHI	0.001	0.001	−0.0001	0.002	0.0002
	(3.21***)	(2.57**)	(−0.14)	(2.62***)	(0.10)
SMALLBUS	0.004	0.004	0.007	−0.012	−0.009
	(4.31***)	(2.85***)	(2.26***)	(−2.90***)	(−0.71)
Overall F	97.10***	59.91***	8.17***	5.06***	19.11***
Adjusted R^2	0.1004	0.1828	0.1333	0.0694	0.4405

Notes: [a] *t* statistics in parentheses; asterisks indicate significance at the following levels: * — .10, ** — .05, and *** — .01.

[b] Independent variables are defined as follows:

LOSS = loan and lease losses, net recoveries/total assets

TIER1 = total equity/total assets

OFFBAL = total off-balance sheet activities/total assets

SECURITIES = total securities/total assets

PURCHASED = large time deposits plus other borrowed money/total assets

ASSETS = total assets

HHI = Herfindahl index

SMALLBUS = commercial and industrial loans and commercial real estate loans less than $250,000/total assets.

II. EMPIRICAL RESULTS[14]

Tables 3 and 4 report the multiple regression results using ROA as the dependent variable for 1994 and 1995, respectively. The overall F statistics are all significant at the 0.01 level, and the adjusted R^2 values are in the range of 13-28 percent in 1994 and 7-44 percent in 1995. These statistics indicate that there is weak to moderate goodness of fit in these regression models. Also notice that all of the independent variables are statistically significant in at least one of the regression models in both 1994 and 1995.

Concerning the risk control variables, ROA was positively related to capital (TIER1) and purchased funds (PURCHASED)—that is, holding other bank characteristics constant, profitability is higher among banks with higher equity capitalization[15] and lower costs of funding assets, respectively. The significant regression coefficients for off-balance sheet activities (OFFBAL) are also positive (with one exception) and, consequently, imply that these activities tend to increase profits, holding other variables constant. Moreover, as expected, ROA was negatively related to loan and lease losses (LOSS) and securities holdings (SECURITIES) (i.e., securities tend to have lower risks and returns than loans). Relevant to market structure, HHI and ASSETS were positively related to ROA when they were significant in the regression models, which is consistent with the SCP paradigm.

Turning to the small business credit results, which are our primary interest, Table 3 shows that SMALLBUS is insignificant for all size groups in 1994. Notice that, for smaller banks under $500 million in assets, the signs of the regression coefficients are positive, while the signs are negative for larger banks over $500 million in assets. Table 4 reveals a comparable pattern of coefficient signs for SMALLBUS across size groups based on 1995 data. However, for the first three asset size groups, SMALLBUS now is *significant* and positively related to ROA—that is, holding the control variables constant, smaller banks increased their profitability by expanding their small business lending activity. Also significant is the negative coefficient for medium large banks in the $500 million to $3 billion asset size range. While this relationship is statistically significant, because larger banks devote a relatively low percentage of assets to small business loans (see Table 2), it is reasonable to believe that these banks' profitability was not significantly lowered from an economic standpoint.

Table 5 provides the correlation coefficients between the independent variables using all banks in the samples. The highest correlation coefficients in both 1994 and 1995 are between TIER1 and PURCHASED (i.e., -0.39 in 1994 and -0.41 in 1995) and SECURITIES and SMALLBUS (i.e., 0.38 in 1994 and 0.36 in 1995). As shown in Table 2, these results no doubt are related to bank size, which is held constant in the regression models. More importantly, all other

Table 5
Correlation Matrices for Independent Variables Using All Insured U. S. Commercial Banks: 1994 and 1995

	LOSS	*TIER1*	*OFFBAL*	*SECURITIES*	*PURCHASED*	*ASSETS*	*HHI*	*SMALLBUS*
				A. 1994				
LOSS	1.00							
TIER1	0.06	1.00						
OFFBAL	–0.04	0.06	1.00					
SECURITIES	0.17	–0.17	0.05	1.00				
PURCHASED	–0.05	–0.39	–0.19	0.13	1.00			
ASSETS	–0.00	0.11	–0.34	0.07	–0.13	1.00		
HHI	0.02	–0.04	0.02	–0.05	–0.01	–0.00	1.00	
SMALLBUS	0.04	0.03	0.02	0.38	0.11	0.12	–0.07	1.00
				B. 1995				
LOSS	1.00							
TIER1	0.10	1.00						
OFFBAL	–0.06	–0.07	1.00					
SECURITIES	0.15	–0.16	0.04	1.00				
PURCHASED	–0.09	–0.41	–0.04	0.12	1.00			
ASSETS	0.01	0.15	–0.02	0.11	–0.23	1.00		
HHI	0.02	–0.04	0.01	–0.05	–0.01	0.01	1.00	
SMALLBUS	0.07	0.04	0.02	0.36	0.10	0.15	–0.07	1.00

correlation coefficients are relatively small. We infer from these findings that the independent variables proxy different bank risk characteristics and that multicollinearity is likely not a source of bias in the estimation of the regression parameters.

CONCLUSIONS AND IMPLICATIONS

The main conclusion to be drawn from the multivariate findings is that, at least over time, small business loans tend to boost bank profitability among small banks after holding constant different bank characteristics. A positive and significant relationship between small business lending and the rate of return on assets was found in 1995 for all three groupings of small banks with less than $500 million in assets. In 1994 this relationship was positive but insignificant for smaller banks. By contrast, small business lending activity was negatively related to profit rates for larger banks in 1994 and 1995 and, in the latter year, the relationship was significant in banks with $500 million to $3 billion in total assets. One interpretation of the negative finding in 1995 is that a relatively low proportion of assets is devoted to small business lending in larger banks, such that it was not economically significant in terms of reducing their profitability. Alternatively, additional research is needed to examine this issue in greater detail, especially in light of the public policy implications to funding the small business sector and associated national productivity.

As a final note, our results represent the first available evidence on this issue and are preliminary in the sense that they depend on only two years of data. As additional data is compiled in forthcoming years, further evidence will enhance our understanding of how small business lending affects bank profit and risk. In this regard, a relevant current trend that could alter some of our results is the growing use of credit scoring models in small business lending by large banks. Relatedly, by increasing standardization in the loan process, securitization of small business loans may be possible. Of course, given our empirical results, a major motivation for these changes among larger banks is that the profitability of small business loans could be increased.

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NOTES

1. Asymmetric information arises when there are incentives for owners or managers of firms to withhold valuable information from investors.
2. The National Survey of Small Business Finances (NSSBF) contains responses from about 5,300 firms.
3. This possibility is not remote due to the fact that small firms have numerous disadvantages relative to large firms. Small firms are less well diversified, have less access to capital and liquidity, and have more limited management resources than large firms. Such disadvantages could easily discourage banks from making small business loans in the absence of profit potential information.
4. In this initial year there were substantial errors that make analyses based on this early data suspect; however, the subsequent mid-year 1994 and 1995 updates are considered by federal regulators to be accurate.
5. Numerous studies have examined the financial condition of small banks relative to large banks and, therefore, make indirect inferences concerning the effects of small business lending on bank performance. For example, see Benston (1985), Fant (1985), Fraser and Kolari (1985), Brunner and English (1993), Moore and Couch (1994), and Harvey (1995).
6. Initial analyses of the entire population of insured U.S. banks suggested that there is a unique subgroup of banks on the Call Report tapes that have extraordinary off-balance sheet activities. Inspection of the data revealed that these banks tended to make no business loans. Correspondence with this group indicated that most of these banks were wholly-owned subsidiaries of large banks with special charters that do not allow them to make commercial and industrial loans (for example). To reduce this potential bias in the data, we dropped banks with no commercial loans. The final samples contained 10,542 and 9,991 U.S. insured commercial banks in 1994 and 1995, respectively. These samples necessarily include multiple banks within the same multibank holding company (MBHC). As such, our analyses presume that the data for each bank reflect the operations of an individual bank operating as an independent entity.
7. We also conducted analyses using other measures of bank profitability, including the net interest margin, the net interest margin adjusted for loan losses, and the rate of return on equity. In general, the results were similar to those reported here for the rate of return on assets.
8. In practice, we can only observe the average return on different asset types. That is, ROA reflects revenues and expenses over a period of time (i.e., one-half year in the present case), as opposed to a moment in time.
9. LOSS measures total charge-offs and recoveries on all loans and leases, as opposed to only commercial loan losses. The Call Reports do provide detail on commercial and industrial loan losses, but no disaggregated data for commercial real estate losses is available to develop a measure that closely coincides with business lending as defined by our small business lending variable.
10. Further justification for including TIER1 is that higher bank capitalization may well reduce risk of failure. According to Berger (1994), higher capital tends to alter the portfolio

decisions of banks, which can alter the risk and return profiles of both on- and off-balance sheet activities. Also, he notes that higher capital could lower the cost of uninsured debt and influence other operating costs that affect bank profitability.

11. Large banks have far more off-balance sheet activities than small banks, due in large part to scale economies required in many such activities, including proprietary mutual funds, mortgage servicing operations, financial standby letters of credit, and derivative contracts. Some small banks do participate in asset securitization and fiduciary activities that would not appear on their balance sheet.
12. See Gilbert (1984) for an excellent review of this literature, in addition to Hannan (1991).
13. A weakness in this definition of small business lending is that loan size does not necessarily coincide perfectly with firm size. Also, many small business firms use credit cards, which fall under consumer loans on the Call Reports, for various working capital needs. Apparently, despite these drawbacks, Congress believed that the data was a reasonable proxy for small business lending.
14. Univariate analyses of the variables, with emphasis on the effects of small business lending activity on each variable, were also conducted. Since the results were consistent with the multivariate analyses, they are not reported to conserve space.
15. It is not possible to further infer that increasing equity capital causes an increase in profits, which is beyond the scope of the present paper. As discussed earlier, the capital ratio is included in the regression model to account for cross-sectional differences among banks that possibly affect their operating decisions, including small business lending.

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