

Does Bank Consolidation Hurt the Small Business Borrower?

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ABSTRACT. The recent wave of mergers in the commercial banking sector in the United States has led to tremendous industry consolidation. Some fear that such consolidation will leave the small business borrower with fewer opportunities to obtain bank credit. This study uses regression analysis to empirically determine if consolidation has caused larger banks to abandon relationship loans extended to small businesses over time. If so, this leaves small business borrowers with two distinctly different choices, a low interest rate loan from a large bank for those small business borrowers who qualify or a high interest rate loan from a small bank for those who do not. The results of this study support this theory, and find consolidation has raised small business loan rates at small banks and lowered rates at large banks, *ceteris paribus*.

1. Introduction

Over the past fifteen years, the banking industry in the U.S. has undergone dramatic structural change both in terms of the size and number of institutions as well as the activity taking place within commercial banks. Numerically, banking has shrunk by more than one third since 1985. As a result, the average size of a U.S. commercial bank increased from \$190 million in assets in 1985 to over \$686 million in 2000 in nominal terms and doubled in real terms (computed from *FDIC*

Statistics on Banking 2000). Further, consolidation within the industry is projected to continue over the next ten years (Berger et al., 1995).

Business borrowers, particularly small business borrowers, may be adversely affected by this consolidation as larger institutions focus their lending activity on larger businesses. For example, in an analysis of bank mergers between 1977 and 1992, Berger et al. (1998) found a reduction in small business lending three years after mergers involving large and medium size banks. These mergers accounted for more than two-thirds the total in terms of assets.¹ In addition, small businesses primarily rely on banks for external financing; transaction costs and asymmetric information barriers preclude the vast majority of these firms from issuing publicly traded securities (1998 National Survey of Small Business Finance). Fears for the small business owners' ability to obtain bank credit were often cited as an important reason for maintaining interstate branching barriers. It was argued that if banks were able to merge and branch across state lines the result would be fewer, larger banks who would abandon the small business borrower. Despite such fears, the 1994 passage of the Riegle-Neal Interstate Banking and Branching Efficiency Act essentially opened the commercial bank market to interstate branching. The liberalization of branching laws coupled with the increase in bank mergers has contributed to the aforementioned consolidation within the commercial banking industry.²

Despite theoretical and some empirical evidence to suggest that the small business borrower is hurt by industry consolidation, some scholars have found that small business lending actually increases with increases in bank company size, at least for a while. For example, Strahan and Weston (1998) find that until a bank holding company reaches approximately \$300 million in

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size, lending to the small business borrower increases. Thus, not all mergers appear to be harmful to small businesses seeking credit.

Thus the question still remains; how has the small business borrower fared in the face of industry consolidation? Have fears materialized leaving the small borrower with fewer traditional credit options? Furthermore, are different size banks making increasingly different types of small business loans? This study attempts to answer these questions by considering small business loan rates at different sized banks over time. The hypothesis is that merging large and medium size banks abandon certain types of small business loans forcing small business borrowers to turn to smaller banks for these credit needs. In response to the higher loan demand, interest rates on small business loans are expected to rise at small banks.

This is an important study from two perspectives. First, it should give regulators and policy makers more information on the impact of consolidation in the commercial banking industry. As the industry continues to consolidate, these issues will become increasingly more urgent for those making and implementing policy decisions. Second, our study deals with the terms under which small business loans are made. This is in contrast to many existing relationship studies which deal with the approval process of the loan (see, for example, Cole et al. (1998)). Thus, this study makes a valuable contribution to existing literature and, hopefully, can help inform the policy debate surrounding bank consolidation.

The next section of this paper briefly considers differences in lending practices from small to large banks. The third section then considers existing literature on the relationships between small business lending, different sized bank institutions, and the role of consolidation. This is followed by an empirical model meant to explain how different sized banks respond to the needs of small business borrowers in the face of industry consolidation. The final section concludes.

2. Lending practices at large and small banks

Different sized banking institutions tend to make different types of loans and to use different processes in making lending decisions. Banking literature distinguishes between two types of loan

decision processes: relationship loans and ratio loans. A relationship loan refers to a loan made based on both objective and subjective information about the prospective borrower (see Allen et al., 1991; Nakamura, 1993; and Berger and Udell, 2002). Typically, such loans are made by small banks. In contrast, a ratio loan is one made according to predetermined underwriting procedures and is objective in nature. Not surprisingly, such loans tend to be made by large commercial banks. It seems likely that as consolidation reduces the number of small banks, certain types of small business borrowers may be increasingly neglected; namely, the relationship small business borrowers.

Why do small banks have a comparative advantage making relationship small business loans? One reason is small bank decision makers are likely familiar with local economic conditions as well as the character of the prospective borrower. Conversely, large banks often make credit decisions hundreds of miles from the small business in a centrally based credit department. Small banks can also use their proximity to more effectively gather information from suppliers and customers of the firm. Another advantage for small banks is there are fewer chains of command between the loan officer and bank manager, allowing the manager to more easily monitor the loan officer. This organizational structure is conducive for relationship lending since "soft" information, which is accumulated over time, is difficult to transfer over many layers of management (Berger and Udell, 2002). To compensate for the flexible underwriting standards used for relationship loans, they typically carry higher interest rates (Berger and Udell, 1996).

Ratio small business loans, conversely, are more apt to be made by large banks, and since there are increasingly more large banks, ratio small business borrowers may have an easier time accessing credit. Ratio borrowers usually have an established history and encounter more standardized underwriting procedures (Berger and Udell, 1996; Cole et al., 1997). Many are credit scored, underwritten homogeneously, and some even securitized (Mester, 1997). Cole et al. (1997) finds financial ratios such as firms' debt-to-assets and cash-to-assets to be a statistically significant predictor of whether a loan is approved at large

banks, but these variables are insignificant for small banks.

Large banks, due to their superior technology, have a comparative advantage making ratio loans in mass at relatively low rates. Large banks also make these loans out of necessity since it is easier to monitor loan officers in a large, complex organization when a consistent loan approval system based on readily available “hard” information is implemented. However, because of the relatively minimal and inflexible underwriting requirements associated with credit scored loans, credit is usually limited to less than \$100,000 per customer (Mester, 1997). Levonian (1997) found large banks in the western U.S. have increased their holdings of small business loans with original amounts under \$100,000 over 26 percent from June 1995 to June 1996 while other banks (small and medium) in the same region increased their holdings only about 3 percent. The same study finds that small business loans between \$100,000 and \$1 million *shrank* at large banks by 5 percent from 1995 to 1996, but increased by 7 percent at other banks. A more recent study by Ely and Robinson (2001) found small banks’ ratio of small business loans for less than \$100,000 to total loans shrunk 16.15% from 1994 to 1999 compared to only 4.73% for large banks. However, the ratio of small business loans for \$250,00 to \$1 million to total loans grew for small banks by 22.12% over this period and shrunk by 8.09% for large banks. It appears small banks are finding a niche in the *large* small business loan market and the large banks in the *small* small business loan market (which are more likely to be ratio loans).

This discussion of ratio and relationship loans allows us to further refine the hypothesis of this paper. If rates on small business loans at large and small banks are increasingly diverging over time, we hypothesize that large and small banks are making increasingly different types of small business loans. Large banks are concentrating on low interest rate ratio small business loans, and small banks are concentrating on high interest rate relationship small business loans. We believe this to be the most likely scenario since there will be more and more competition among *large* banks, both locally and nationally, to make ratio small business loans. Moreover, remaining *small* banks will experience an increase in demand for rela-

tionship small business loans from those small businesses abandoned from mergers of large and medium banks. In addition, small banks have an opportunity to charge higher interest rates because of reduced competition caused by merger and consolidation activity. Abandoned relationship borrowers are left seeking a lender, which provides small banks the opportunity to choose from amongst the potential business borrower.

3. Related literature

Two related strands of literature are relevant to this study. First, and perhaps the most obvious, is the literature examining small business loan rates. The second set of related literature considers how mergers impact lending behavior. Each is reviewed briefly.

3.1. Small business loan rates

A few theoretical and empirical models exist which investigate the terms (for example, interest rates or collateral requirements) of relationship borrowing and lending between commercial banks and small business firms. Petersen and Rajan (1993) and Boot and Thakor (1994) both establish theoretical models suggesting that as the borrower/lender relationship matures, loan interest rates will decline. Further, Boot and Thakor (1994) argue that collateral requirements will also decline with relationship maturity. Several studies have attempted to empirically evaluate these theoretical relationship models.

Berger and Udell (1995) empirically determine that small firms with relationships at commercial banks often borrow at reduced rates and that they often do not need collateral relative to other small firms. The authors establish this using 1988–89 National Survey of Small Business Finance data for line of credit borrowing. In contrast to the Berger and Udell findings, Petersen and Rajan (1994) also empirically investigate the existence of relationship lending but do not find evidence to suggest that loan rates were influenced by the borrower/lender relationship.³ Thus, the empirical evidence is mixed regarding relationship lending though it is certainly likely that small business firms may be able to obtain different lending rates based on subjective connections with lenders.

3.2. *Rates on small business loans and mergers*

In addition to relationship lending, much of the literature on small business loan rates focus on the connection between market power and rates charged. In general, these studies typically find that banks in more concentrated local markets exploit market power and charge higher rates on small business loans (Berger and Hannan, 1989, 1997; Hannan, 1991; Cynrak and Hannan, 1998).⁴ The analysis is on local markets because small businesses tend to rely almost exclusively on local banks (Kwast et al., 1997).⁵ Petersen and Rajan (1995) find higher local concentration levels lead to relatively *lower* rates for young small firms and higher rates for mature firms. They reason that an intertemporal bond between a bank and a small business is more easily developed in a concentrated market since the bank can recoup an initial concessionary low rate later. Sapienza (1998) finds mergers which greatly increase concentration within a market lead to higher rates at the merged bank, but mergers involving banks *within* a local market that did *not* greatly increase concentration lead to lower rates. He argues that merging banks in the latter case improve efficiency by closing overlapping offices within the market and pass the lower costs on as lower rates. Lastly, a recent study by Berger, Rosen, and Udell (2001) using cross-sectional data from the 1993 National Survey of Small Business Finance, Call Reports, and the Summary of Deposits finds local market structure affects the rates large banks charge small business loan customers, but not so for small banks. Specifically, they find large banks compete less aggressively and charge higher rates in markets dominated by small banks, but they find local market structure has little effect on small banks' rates.

3.3. *Quantity of small business loans and mergers*

Related literature examines the quantity, rather than the price of, small business loans given merger activity. Strahan and Weston (1998) examine the growth of the ratio of commercial and industrial (C&I) loans to total assets at merged institutions and find that they tend to hold more small business loans than non merged institutions.

More specifically, the authors find that when small bank holding companies merge, they tend to make *more* small business loans which is contrary to the bank lending behavior hypothesis outlined previously. In addition, Walraven (1997) uses Call Report data on banks involved in mergers between 1993 and 1996 and finds that most merger activity does not lead to less small business lending. More specifically, he finds that most small banks are purchased by other small banks who are also already committed to extending small business loans. Thus the Walraven results tend to support those of Strahan and Weston (1998). Additional support for these results is found in Peek and Rosengren (1997) who also find that in most merger cases the purchasing bank has a larger portfolio of small business loans than the target bank. From this they conclude that often mergers may actually increase small business lending.

Interestingly, the existing literature concerned with the impact that bank merger activity may have on small business borrowing paints a mixed picture. On the one hand, much of the literature regarding mergers and interest rates charged on small business loans finds the increased concentration hurts the borrower. On the other hand, the literature exploring merger activity and the amount of small business lending tends to find that mergers actually increase lending to the small borrower. Thus the question of whether the small business borrower has reason to worry about increasing bank consolidation remains open to debate. The purpose of this paper is to shed additional light on the subject. Namely, whether different size banks are increasingly making different types of small business loans.

4. Data and methodology

The data for this empirical investigation comes primarily from the Federal Reserve's Quarterly Survey of the Terms and Bank Lending (STBL) which provides data on the terms under which business (and other) loans are extended. The sample begins in the first quarter of 1991 and continues through the fourth quarter of 2001 for a total of 44 observations.⁶

The model used in this study is similar to the one developed in Berlin and Mester (1998). However, the focus of their study is on bank prof-

itability and interest rate changes, whereas this study attempts to show how small business loan rates are changing at small banks relative to large banks over time. Our model is specified as follows:

$$\text{MARKUP}_{it} = \beta_0 + \beta_1 \text{COLL}_{it} + \beta_2 \text{COMM}_{it} + \beta_3 \text{CONSOL}_{it} + \beta_4 \text{RGDP}_t + \mu_{it}$$

where subscript i refers to the category of the loan, and t is the quarter in which the loan was extended. We estimate and compare four separate regressions. The data is separated into large and small bank sets. Large banks are defined as having more than \$1 billion in assets and small banks less than \$1 billion in assets. Within each set, there are two categories of small commercial and industrial (C&I) loans. So, for each bank size, there will be two regressions: one for each category of C&I loan.

4.1. Dependent variable

Similar to Berlin and Mester (1998), the dependent variable, MARKUP, is the difference between the interest rate charged by small and large banks on small C&I loans and the federal funds rate. Following Walraven (1997), a small business loan is defined as those C&I loans that have an initial value of less than \$1 million. We separate small business loans into two categories for this study: C&I loans for less than \$100,000 and C&I loans between \$100,000 and \$1 million. We do this since the smaller small business loans are the loans large banks are most likely to credit score (Mester, 1997), and therefore may most resemble ratio loans.

4.2. Independent variables

The independent variables consist of borrower specific variables and general control variables. Following Berlin and Mester (1998), the model contains two explanatory variables meant to capture borrower-specific characteristics. These include the percentage of loans requiring a collateral pledge, i.e. higher risk, COLL, and the percentage of loans made under commitment, COMM. Clearly these variables will impact the rate at which loans are extended.

The model contains two general control vari-

ables. A consolidation variable, CONSOL, is created to capture the merger activity within the commercial banking sector. Consolidation is captured as the percentage of total U.S. bank assets comprised of banks with less than \$1 billion in assets (computed from FDIC *Statistics on Banking*). Not surprisingly, this number declines throughout the study. Following Berger and Hannan (1989, 1997) and Cynrak and Hannan (1998) it is expected that consolidation will lead to higher interest rates at small banks as competition is decreased for the loans small banks tend to make – relationship loans. Large banks will experience more competition making ratio loans with increased consolidation, and therefore rates are expected to fall (*ceteris paribus*), consistent with the findings of Berger, Rosen, and Udell (2001). To capture credit risk, we use real gross domestic product, RGDP. The higher RGDP, the lower the expected credit risk.

Prior to estimation, the data is checked for the presence of auto regressive conditional heteroskedasticity (ARCH) and for serial correlation. The ARCH procedure reveals no evidence of this heteroskedasticity specification. However, the Durbin-Watson statistics from OLS estimation of the models does indicate serial correlation. The technique of first-order auto regressive correction is used to minimize serial correlation. Further, the correlation matrix is checked for multicollinearity and there is no evidence of multicollinearity. Finally, each data series is tested for stationarity using the augmented Dickey-Fuller test. While the series are found to be nonstationary, all are stationary when first differenced. However, rather than simply differencing and losing valuable information, it is possible that nonstationary variables may have linear combinations that are stationary (such variables are cointegrated) (Granger (1981)). Johansen's multivariate cointegration test reveals a cointegrating relationship for each series so we may proceed with the regression without first differencing.

Table I contains the descriptive statistics as well as definitions for all variables. The table indicates that small banks making the smallest loans have the highest percentage of collateralized loans, suggesting that these loans are the most risky. Large banks, for both loan categories, make a greater percentage of loans under commitment, most

TABLE I
Variable definitions and descriptive statistics for small business loan rate models^a

Variable name	Variable definition	Descriptive statistics for small banks and C&I loans under \$100,000	Descriptive statistics for small banks and C&I loans between \$1 m–\$100,000	Descriptive statistics for large banks and C&I loans under \$100,000	Descriptive statistics for large banks and C&I loans between \$1 m–\$100,000
<i>Dependent variable</i>					
MARKUP	The difference in the interest rate charged on small business loans C&I loans and the federal funds rate, according to category.	4.44 (0.29)	3.66 (0.20)	3.93 (0.23)	3.27 (0.20)
<i>Borrower characteristics</i>					
COLL	Percentage of C&I loans secured by collateral.	84.73 (2.11)	80.29 (4.13)	82.03 (3.35)	69.41 (3.27)
COMM	Percentage of C&I loans under commitment.	68.16 (4.71)	77.16 (4.55)	87.06 (4.80)	88.16 (3.03)
<i>General control variables</i>					
CONSOL	Percentage of total U.S. bank assets in banks with less than \$1 billion in assets.	0.23 (0.049)	0.23 (0.049)	0.23 (0.049)	0.23 (0.049)
RGDP	Real gross domestic product (in billions of dollars). Controls for credit risk.	7946.04 (909.2)	7946.04 (909.2)	7946.04 (909.2)	7946.04 (909.2)

^a Variable means with standard deviations in parentheses.

likely because large banks lend to lower risk borrowers. Also evident in Table I is the fact that small banks making the smallest loans have the greatest interest rate markup and that for both sized institutions, the smaller the loan, the higher the markup.

5. Results

Table II contains the estimated regression results for all four models. Overall, the model does a fair job of explaining the variation in MARKUP as indicated by the coefficient of determination. However, the coefficient of determination is particularly high for the small bank model making larger business loans. The only variable to be statistically significant for all four regressions is RGDP. The estimated results suggest that the more prosperous the economy, the more small banks are able to markup business loans but that larger banks see RGDP performance as a decrease in credit risk and so do not increase interest rates on business loans.

The control for mergers and consolidation in the commercial banking sector is statistically significant in three of the four regressions indicating that consolidation does play an important role in explaining small business borrowing rates. The sign of the estimated CONSOL coefficient is negative in both small bank regressions which is consistent with the findings of Berger and Hannan (1989, 1997) and Cynrak and Hannan (1998), but inconsistent with Berger, Rosen, and Udell (2001). This indicates that as the commercial bank markets become more consolidated, interest rates rise at smaller banks due to less competition from other small banks and because large merging banks abandon relationship small business loans thereby increasing the demand for such loans from smaller institutions. At the same time, the estimated coefficient of CONSOL for the large bank is positive indicating lower rates on ratio loans due to more competition from the growing number of large banks which is consistent with the findings of Berger, Rosen and Udell (2001).

TABLE II
AR(1) coefficient estimation results for small business loan rate models^a

Variable name	Estimates for small banks and C&I loans under \$100,000	Estimates for small banks and C&I loans between \$1 m–\$100,000	Estimates for large banks and C&I loans under \$100,000	Estimates for large banks and C&I loans between \$1 m–\$100,000
COLL	–0.026 (1.193)	0.013 (0.972)	–0.022* (2.251)	–0.006 (0.943)
COMM	–0.011 (1.193)	–0.008 (1.247)	–0.006 (0.886)	–0.031* (2.908)
CONSOL	–3.460** (1.742)	–6.907* (3.495)	4.858** (1.721)	2.915 (0.881)
RGDP	0.0001** (1.693)	0.0002** (1.81)	–0.0003** (1.662)	–0.0002** (1.746)
CONSTANT	5.930 (1.167)	0.370 (1.423)	10.24* (4.00)	8.734* (3.241)
R squared	0.714	0.946	0.685	0.543
Durbin-Watson statistic	2.09	2.13	2.24	2.21

^a Note: A * and ** denotes significance at the 5% and 10% level, respectively. Absolute values of the *t*-statistic appear in parentheses.

The percentage of loans requiring collateral, COLL, is surprisingly negatively related to loan rates, but statistically significant only at larger banks making the smallest of loans. The negative estimated coefficient suggests that banks do not markup highly collateralized loans as much as non-collateralized loans perhaps because the bank may make use of the collateral in the event of default. The percentage of loans made under commitment is generally not statistically significant though, as expected, negatively related to loan rates in all four of the models.

6. Conclusion

This paper finds that consolidation has led to a larger interest rate gap between rates on small business loans at small banks versus large banks. As a result, relationship borrowers may pay higher rates and ratio borrowers may pay lower rates as consolidation continues (*ceteris paribus*). Moreover, relationship borrowers have fewer lenders as small banks dwindle in number, while those who qualify for a ratio loan have more lenders as larger banks increasingly dominate the industry. Does this mean that consolidation is a bad thing? Not necessarily. Jayaratne and Strahan (1998 and 1996) found that when barriers to consolidate were

relaxed, banks made better quality loans, were more profitable, and better diversified. However, when banks merge (especially a large and small bank), abandoned small business loan customers may attempt to reestablish a relationship with another small bank. This is costly to the firm, and will be more difficult since consolidation has lessened the number of small banks in the local market. There are other, generally more expensive, ways relationship borrowers can access credit, however. We suspect that factoring, trade credit, personal home equity loans, and credit card loans will increasingly take the place of traditional commercial small business loans for those marginally credit-worthy relationship borrowers.

Notes

¹ Berger et al. (1998) did find evidence other banks within the market may pick up the abandoned small business loans.

² See, for example, Matasar and Heiney (1999) who provide an analysis of how the act has changed the number and size of commercial banks in the seventh district of the Federal Reserve System.

³ The authors do, however, find relationships between borrowers and lenders may increase the *quantity* of loanable funds.

⁴ In related literature, Prager and Hannan (1998) find evidence that mergers reduce *deposit* rates thereby concluding that merger activity increases market power.

⁵ In Berger and Hannan (1989) and Hannan (1991) the local market is defined as Metropolitan Statistical Areas (MSA) or non-MSA counties.

⁶ The STBL had a change in format starting with the survey given May of 1997. Prior to this date, the STBL categorized C&I loans as short or long term, and as fixed or floating rate; since then, it has not. In order to use the STBL prior to May of 1997, we aggregated the data for each quarter via a weighted average based on amount of loans from the various (4) categories.

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