STUDIES OF SMALL BUSINESS FINANCE

Commercial Bank Business Lending
By Size of Loan

Thomas F. Brady*

THE INTERAGENCY TASK FORCE ON SMALL BUSINESS FINANCE

Board of Governors of the Federal Reserve System
Federal Deposit Insurance Corporation
Office of the Comptroller of the Currency
Bureau of the Census
Small Business Administration
Commercial Bank Business Lending
By Size of Loan

Thomas F. Brady*


*Economist, Division of Research and Statistics, Board of Governors of the Federal Reserve System. Research assistance was provided by Mary McLaughlin and helpful comments and suggestions were received from other members of the Board's staff, including Barbara Opper, Martha Scanlon, David Lindsey, Gary Gillum, and Eleanor Stockwell.

This study was prepared for the Interagency Task Force. The views expressed are those of the author and not necessarily those of the Board of Governors of the Federal Reserve System, Federal Deposit Insurance Corporation, Office of the Comptroller of the Currency, Bureau of the Census or the Small Business Administration.
I. INTRODUCTION

This paper attempts to draw inferences regarding differences in commercial bank credit practices with respect to large and small business borrowers from the Federal Reserve Survey of Terms of Bank Lending (STBL). The STBL provides, for all insured commercial banks, estimates of gross business loans extended, loan rates charged, whether loan rates are fixed or floating, whether loans are secured, and their maturity and commitment status. Since the STBL includes no data on borrowers, the survey information may be used to compare loans made to small and large businesses only under the assumption that the correlation between size of borrower and size of loan is sufficiently high to allow inferences to be drawn about the former from the latter. Although it can safely be assumed that large loans go to large borrowers, large borrowers may also acquire "small" loans, either because their credit needs are limited or because particular loans represent either an individual bank's participation in a larger loan, spread among a consortium of banks, or partial drawdowns of larger loans made under commitment. Thus, an unknown number of the "small" loans in any survey may involve "large" borrowers.

1. The STBL collects data on gross loan extensions made by 340 respondent banks during the first full business week of the middle month of each quarter. The STBL is described in detail in the May 1977 Federal Reserve Bulletin, pp. 442-45.

2. Cross section data from a special 1972 survey have been used to identify a relation between loan size and borrower size. See R. Puckett and M. Scanlon, "A Model of Bank Lending to Business," (Mimeo, Board of Governors of the Federal Reserve System) and Martha Scanlon, "Relationship Between Commercial Bank Loan Size and Size of Borrower."
The plan of this paper is to develop—in terms of the loan characteristics enumerated in the preceding paragraph—an overall profile of selected loan size categories using the three types of business credit reported on the STBL: short-term commercial and industrial (C&I) loans (maturities of under one year), which account for about three-quarters of the volume of business credit flows reported on the STBL; long-term C&I loans (maturities of a year or more), which account for about 15 percent of reported business credit; and construction and land development loans. An attempt is also made to identify interest rate changes between large and small loans that seem attributable to the business cycle.

II. DEFINING "SMALL" AND "LARGE" BUSINESS LOANS

There is no generally recognized numerical distinction between "small" and "large" business loans. However, the vast majority of short-term C&I loans reported on the STBL—over 70 percent by number—are made in denominations under $25,000. Within this category, the largest number of loans are made in amounts between $1,500 and $2,500, with an average of about $7,000. However, loans substantially larger than $25,000 are also likely to be used by small borrowers. For example, a survey in 1972 found that firms with assets of less than $50,000 accounted for approximately one-third of the number of loans in the $25,000-$99,000 size range. Moreover, the upper limit on...
Small Business Administration loan guarantees is $500,000. Hence, two other categories of small loans were also selected for examination: those falling in the ranges $25,000-$99,000 (averaging $41,976) and those falling in the range $100,000-$499,000 (averaging $178,000). In the remainder of this report, loans in these ranges will be referred to as small loan categories 1, 2 and 3. Loans of $500,000 and above will be considered large loans.

III. NON-PRICE CHARACTERISTICS OF SMALL LOANS

I. Commitment Status

The proportion of small loans made under commitment is considerably below that for large loans for all loan categories, although there has been some tendency for the share of smaller short-term loans made under commitment to rise over the survey period. As shown in table 1, about 24 percent of the volume of short-term loans made in category 1 during the survey weeks since 1978 were made under commitment; for the second and the third categories, the respective proportions were about 35 percent and 46 percent. By comparison, over one-half of large short-term loans were made under commitment. A similar picture emerges from long-term loans and for construction and land development loans, although the relation between size and commitment status is less consistent than for short-term loans.

4. Banks are asked to report as commitments on the STBL only official promises expressly conveyed orally or in writing. Loans authorization where the customer is not informed of the amount are not treated as commitments. All data reported in this paper are on the basis of dollar volume, rather than number of loans, unless otherwise specified.
Table 1

VOLUME OF GROSS LOAN EXTENSIONS MADE UNDER COMMITMENTS
(percent)

<table>
<thead>
<tr>
<th>Size of loans ($1,000)</th>
<th>Short-term</th>
<th>Long-term</th>
<th>Construction and land development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Under 25</td>
<td>20.7 16.9 22.6 24.0 26.1</td>
<td>22.6 22.9 33.1 23.2 25.2</td>
<td>45.3 58.3 47.4 55.3 48.1</td>
</tr>
<tr>
<td>2. 25 - 99</td>
<td>27.5 26.9 35.5 34.5 35.7</td>
<td>25.0 36.4 31.5 36.5 33.2</td>
<td>43.5 41.0 45.8 56.6 43.0</td>
</tr>
<tr>
<td>3. 100 - 499</td>
<td>45.3 41.3 46.0 47.2 46.6</td>
<td>42.9 47.8 45.4 57.7 39.1</td>
<td>57.8 62.1 56.2 60.3 52.1</td>
</tr>
<tr>
<td>Large (500 and over)</td>
<td>60.1 50.4 55.1 51.9 51.4</td>
<td>71.0 65.5 67.1 78.3 83.0</td>
<td>64.5 67.9 65.8 72.0 75.5</td>
</tr>
</tbody>
</table>

Note: Annual data are averages of the four survey weeks in each year.
1. Short-term loans have original maturities of less than a year, and long-term of one year or more.
B. Floating Versus Fixed Rates

Well under half of small business loans are made at floating rates, while the bulk of large loans have this feature. As shown in table 2, the percentage of short-term C&I loans in category 1 having floating rate provisions has averaged as high as 30 percent but generally has been closer to 20 percent. For the second category, the proportion ranged between 30 and 44 percent; and for the third category, between 43 and 60 percent. For large short-term loans, almost two-thirds had floating rates for the survey years 1977-1979. The decline in this proportion to under one-half in 1980 and 1981 appears to reflect a surge in large, very short-term loans made at rates based on money market rates.5

The positive relation between the size of loan and the percent of loans made at floating rates also holds for long-term and for construction and land development loans. For category 1 and 2 loans, however, it is surprising to note that the proportion of long-term loans made with floating rates was less than the proportion for short-term loans in the 1977-1980 period.

C. Collateral

The tendency for loans to be secured varies inversely with size of loan. As shown in table 3, roughly one-half of short-term loans smaller than $100,000 were secured. For

5. These loans, which are generally made at rates below prime, typically have average terms to maturity of less than a month.
### Table 2

**VOLUME OF GROSS LOAN EXTENSIONS MADE WITH FLOATING RATES**

*(percent)*

<table>
<thead>
<tr>
<th>Size of loans ($1,000)</th>
<th>Short-term¹</th>
<th>Long-term¹</th>
<th>Construction and land development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Small</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Under 25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>25 - 99</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. 100 - 499</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Large (500 and over)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Annual data are averages of the four survey weeks in each year.

1. Short-term loans have original maturities of less than a year, and long-term of one year or more.
<table>
<thead>
<tr>
<th>Size of loans ($1,000)</th>
<th>Short-term&lt;sup&gt;1&lt;/sup&gt;</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Long-term&lt;sup&gt;1&lt;/sup&gt;</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>Construction and land development</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Small</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Under 25</td>
<td>47.5</td>
<td>43.0</td>
<td>53.5</td>
<td>54.0</td>
<td>52.4</td>
<td>65.2</td>
<td>74.3</td>
<td>80.4</td>
<td>66.5</td>
<td>80.0</td>
<td>88.9</td>
<td>96.1</td>
<td>88.5</td>
</tr>
<tr>
<td>2. 25 - 99</td>
<td>46.8</td>
<td>46.1</td>
<td>52.1</td>
<td>56.9</td>
<td>55.0</td>
<td>69.7</td>
<td>80.9</td>
<td>80.1</td>
<td>82.7</td>
<td>64.8</td>
<td>97.6</td>
<td>97.9</td>
<td>89.8</td>
</tr>
<tr>
<td>3. 100 - 499</td>
<td>40.8</td>
<td>43.9</td>
<td>46.4</td>
<td>48.5</td>
<td>52.0</td>
<td>76.1</td>
<td>76.3</td>
<td>71.4</td>
<td>74.5</td>
<td>75.1</td>
<td>93.5</td>
<td>96.9</td>
<td>95.1</td>
</tr>
<tr>
<td>Large (500 and over)</td>
<td>27.0</td>
<td>32.5</td>
<td>24.1</td>
<td>17.3</td>
<td>12.1</td>
<td>42.1</td>
<td>48.8</td>
<td>45.8</td>
<td>38.5</td>
<td>35.7</td>
<td>95.6</td>
<td>95.9</td>
<td>94.1</td>
</tr>
</tbody>
</table>

Note: Annual data are averages of the four survey weeks in each year.
1. Short-term loans have original maturities of less than a year, and long-term of one year or more.
category 3 loans, the proportion averaged somewhat lower. Over this period, moreover, the secured proportion of all categories of small short-term loans has tended to rise. For large short-term loans, by contrast, the secured proportion has tended to decline from around 30 percent in 1977 and 1978 to less than 20 percent in 1980 and 1981. As was the case for large loans made with floating rates, the share of large short-term loans having collateral declined in recent years partly because of a surge in loans made at rates based on money market rates. Such loans tend not to be collateralized.

The proportions of secured long-term loans exceeded those for short-term loans for all loan size categories. As with short-term loans, the proportion secured is considerably greater for small than for large long-term loans. For construction and land development loans, nearly all loans were secured, with only category 1 loans averaging less than 95 percent.

D. Summary of Non-Price Characteristics

There is a clear correlation between loan size and each of the loan characteristics reported in the STBL. The greater volume of small loans are made at fixed rates, are acquired without prior commitments, and are secured; the greater volume of large loans have floating rates, are made under previous commitments, and are unsecured. While these findings suggest that large borrowers generally may be less likely to encounter problems of credit availability, it may be that the lower proportion of small loans reported as made under commitment
simply reflects the costs associated with the formal commitment process and does not necessarily indicate differences with respect to the availability of loan authorizations. Differences in collateral status likely reflect differences in the degree of risk that borrowers of various sizes present to banks.

Finally, over the period analyzed, banks have tended to shift interest rate risks onto borrowers of larger rather than smaller sums, particularly as loan maturities lengthen. The demand for protection against rate movements may be stronger from smaller borrowers, who are typically less able to hedge against unforeseen rate changes. With respect to the supply side, the sharp difference between the proportion of small and larger loans made at floating rates may be attributable to considerations of relative costs, as banks may find that administering floating rate loans is comparatively expensive on small loans. Thus, for smaller loans, these supply and demand factors may have tended to complement one another during the period of generally rising rates examined in this paper. The negotiation of other loan terms—including price—nevertheless likely reflected any concessions banks may have made with respect to rate flexibility. If so, smaller borrowers may have been asked to accept somewhat higher loan rates, on average, in return for protection from interest rate risk. During a period of generally declining rates, borrowers of smaller sums might have to pay a greater price in terms of rate—relative to borrowers of larger sums—if they wished credit made under floating rate arrangements.
IV. PERSPECTIVES ON RATES AND FLOWS, 1977-1981

A. Interest Rates on Small Versus Large Loans

The greater per-dollar administrative and processing cost that smaller loans present to banks suggests that net returns would tend to be equalized across loans if rates on smaller loans were above those on larger loans. As may be seen from chart 1, average interest rates on short-term business loans indeed did vary inversely with size of loan during 1977 and 1978. However, as interest rates rose over the period from early 1977 to early 1980, the largest increases were registered on larger loans, and rate spreads narrowed. By late 1979, the alignment earlier in the period had been fully reversed, with average rates highest on the largest loans and least for category 1 loans. By August 1980, after several months of declining rates, the earlier inverse relation between loan size and average rate was re-established. This cycle was repeated in the period from August 1980 to November 1981.

The decline in the rate on category 1 and 2 loans relative to larger loans over the 1977-1981 period is even greater when an attempt is made to remove from the small loan averages the effect of partial drawdowns of larger loans. To do this, average rates were calculated on loans made by banks small

6. As previously discussed, this differential could also reflect relatively strong preferences by smaller borrowers for fixed-rate loans.
Chart 1

Effective Interest Rates on Short-term Loans
(selected loan sizes)

Percent

1977 1979 1981
enough to be unlikely to make any larger loans. As shown in chart 2, average rates on category 1 short-term loans made by "small" banks were somewhat above average rates for the same loan size made by all banks in early 1977. This relation soon reversed, however, with rates on category 1 loans at small banks falling almost as much as a full percentage point below the average rate at all banks during early 1979. The same pattern also holds for category 2 loans. To the extent that average rates on small loans made at small banks are more representative of actual small loan rates, the impression of relative rate changes given in chart 1 is strengthened.

As shown in charts 3 and 4, the tendency for the normal alignment of rates on large and small loans to reverse in periods or rapidly rising rates also occurred for long-term business loans and for construction and land development loans.

7. The definition of "small" bank was chosen to eliminate any bank likely to make a substantial number of loans in excess of $500,000. With bank regulators normally specifying a maximum loan to equity ratio of 10 percent, a bank could not make a loan of more than $500,000 with capital of less than $5 million. Since, at smaller banks, the average ratio of equity to assets is .085, no bank with assets of less than $60 million would appear likely to make any loans in excess of $500,000. In light of these guides and recognizing that a meaningful volume of large loans would only be made by somewhat larger banks, "small" banks were defined as those with assets of less than $100 million.

8. Of course, loan rates at small banks may on average be below rates at large banks for similar loans, for example, because their average costs of funds are lower. However, an alternative method of excluding partial drawdowns of large loans from the data used to calculate small loan rates—by looking at rates on the subset of category 1 loans having characteristics typical of small loans, namely, those not made under commitment, having a fixed rate and being secured—yields similar results.
Effective Interest Rates on Short-term Loans Below $25,000

Note: Small banks are defined as those having assets of less than $100 million.
Chart 3

Effective Interest Rates on Long-term Business Loans

- Under $25,000
- $25 - 99,000
- $100,000 - 499,000
- Over $500,000

Percent

1977 1979 1981
Chart 4
Effective Interest Rates on Construction and Land Development Loans

Percent

1977 1979 1981

Under $25,000
$25,000-99,000
$100,000-499,000
Over $500,000
B. Small Versus Large Gross Loan Extensions

The STBL data cannot be used to depict trends in net credit extended by loan size, since loan flows are reported for but a single week of each quarter and are on a gross basis. In addition to masking any variations in repayments rates among loan sizes, the gross measure of loan extensions is affected by differences in average maturities among loans sizes, since the shorter are loans' average maturities the greater is the volume of gross credit extended per period for any given volume of net credit outstanding.\(^9\) Adjustments can be made for possible distortions from this latter source with the information the STBL provides on loan maturities.\(^{10}\) Gross loan extensions by size of loan, adjusted for differences in average maturities among loan size categories, are presented in chart 5.

Recognizing the limitations in using these gross flow data, the distinct differences in trends depicted by the adjusted weekly flows between large and small loans do suggest possible similar differences in net flows. Gross credit flows extended in the form of short-term large loans has trended up considerably over the 1977-1981 period, particularly in 1980-81. For category 3 small loans, the pickup in 1980-81 has been less,

---

9. Large short-term loans tend to have a much shorter average maturity than smaller short-term loans, and this difference has become more pronounced during the period being examined. For long-term loans, larger loans tend to have longer maturities than smaller loans.

10. For each type of loan (short-term, long-term, and construction and land development) adjustments were made by multiplying gross loans extended for each size category by the ratio of the average maturity of the loans in that size category to the average maturity of all loans of that type.
Chart 5

Gross Loan Extensions by Type and Size of Loan
(adjusted weekly flows as of mid-quarter)

1. For each type of loan, flows are adjusted to account for different average maturities among loan sizes. See text, page 9.
while category 1 and 2 loan flows have increased only very moderately over the period under analysis. For long-term loans, no category of small loan extensions has shown any growth over the period, while large long-term loan extensions are up markedly since mid-1979. For construction loans, there has been no distinct growth pattern by size of loan.

Unfortunately, these gross flows, and what they imply for net flows, are distorted to an unknown extent by inflation. Even over a period as short as that being examined, rapid inflation will push an unknown but probably meaningful volume of loans into the open-ended $500,000 and above category. It likely also distorts bracketed categories and may have reduced the volume of loans in the smaller categories.

C. Summary of Rate and Flow Developments

The reversal over recent years of the normal inverse relation between interest rate and loan size appears to reflect several factors. Smaller firms acquire a larger share of their credit from banks and generally have debt obligations with shorter average maturities than larger firms, who obtain a more sizable amount of their financing in longer-term credit and equity markets. As a result, the immediate effects of rising rates tend to be greater for smaller firms, other things equal, and particularly when interest rates are rising very rapidly banks may be reluctant immediately to impose on smaller borrowers the full impact of higher interest rates for fear of endangering the solvency of these debtors and hence their contribution to
the longer-run profitability of the bank. The ability of banks to follow such a longer-run profit maximization strategy would be facilitated by the fixed-rate ceilings on a share of their deposits that act to slow the increase in average cost of funds when interest rates generally are rising. Such longer-run profit considerations, in conjunction with political pressures to provide smaller borrowers with below market rates—as, for example, through "two-tier" prime rate programs—may explain the observation that rates on smaller loans rise more slowly than market rates when rates generally are rising. At the same time, rates on large loans are very competitive and tend to move closely with other market determined rates, such as the commercial paper rate.

The divergences between trends in large and small gross credit extensions, despite the more rapid increase in the cost of large loans, may suggest that large borrowers were less sensitive than small borrowers to increases in the cost of bank credit over the period examined. It is possible to follow up on this observation by looking at the relative demands for bank credit by large and small manufacturing firms over the business cycle. As shown in charts 6 and 7, reliance on both shorter- and long-term bank credit by large manufacturing firms has typically intensified in periods preceding business cycle peaks, apparently reflecting attempts by these firms to postpone other, longer-term financing arrangements in the
Small manufacturing firms are those having assets of less than $5 million.

Small firms are those having assets of less than $5 million.
expectation that interest rates will decline.\textsuperscript{11} By contrast, smaller manufacturing firms—which on average have a greater reliance on bank credit—have not generally increased their relative demands on banks in periods of rising rates.\textsuperscript{12}

V. CONCLUSIONS

This paper has examined available information on loan extensions by selected size groups in order to make inferences about commercial bank lending practices to large versus small business borrowers. Although the inability to measure directly loans by size of borrower acts to reduce the assurance with which general conclusions can be made, the very distinct average differences between small and large loans in terms of commitment status, collateral, exposure to rate fluctuations, and average rates themselves nevertheless suggest that loans made to small and large borrowers likely are similarly different.

Most of these differences—those between commitment status and floating versus fixed-rate status, as well as in average rates charged—appear partly attributable to the larger per-dollar processing and administration costs that smaller loans on average present to banks. The slight tendency for the proportion of small short-term loans made under commitment to rise over the 1977-1981 period may indicate that smaller borrowers did

\textsuperscript{11} The same development can be observed in the 1965-66 period, as interest rates moved up rapidly.

\textsuperscript{12} The only exception to this pattern was in 1973-74, when the share of credit acquired from banks rose more rapidly at small firms than large firms. This may have reflected the influence of the Committee on Interest and Dividends, which exerted pressures to keep down the cost of bank credit, especially to smaller borrowers.
encounter credit availability resistance, or it may suggest that smaller borrowers increased their efforts to secure loan commitments as the business cycle lengthened. The view that smaller borrowers encountered availability problems is consistent with relative movements in gross flow data—to the extent that trends in these weekly flows reflect something other than inflation and to the extent that gross flows are indicative of trends in the amount of credit outstanding—but it appears to be inconsistent with the relatively slow increase in the cost of smaller loans, since banks could have added to their profitability by rationing by price. Moreover, an alternative explanation of the suggested differences in trends between large and small loans is provided by the longer-run experience of large and small manufacturing firms, indicating a cyclical tendency for large but not small firms to increase their relative demand for bank credit in periods of rising interest rates.

In any case, due to a combination of relatively slowly rising rates on small loans and a larger share of these loans made under fixed-rate arrangements, it appears that the cost of bank credit rose more slowly to smaller firms than to larger firms from 1977 through early 1980. In late 1979 and early 1980, in fact, average short-term rates on very large loans rose above rates on small loans, and this phenomenon re-occurred in 1981. Of course, since large firms rely relatively less on bank credit than smaller firms even in periods of rising rates, it is not necessarily true that the average cost of
credit to larger firms rose faster than that to small firms in the period being analyzed.

Future research in this area might explore the relations, if any, between rates on loans in any particular size category and the loan characteristics available from the STBL. For instance, it may be possible to determine whether smaller loans tend to have a lower rate if they are collateralized. And, when enough data are available to perform time series analysis, one could also explore whether there are any systematic differences between rates on floating versus fixed-rate loans, taking into account changes in rate expectations. Although large and small loans turn out to have quite distinct characteristics, there nevertheless might be some benefit to having data on the size of the commitment under which loans reported on the STBL are made, as well as an indication of whether a particular loan represents a bank's participation in a larger credit package.

Finally, while the STBL does provide data on several important aspects of the loan contract, it does not include several other important aspects of the bank/customer relationship. For example, loan rates doubtless are related to such factors as the average deposit balances a borrower maintains, fees paid, and the borrower's use of other services provided by the bank, such as cash management services, and so on.