

Credit Scoring for Small Business Lending

By Gary Palmer, Banking Studies Officer, Division of Banking Supervision & Regulation, the Federal Reserve Bank of San Francisco

Credit scoring models are increasingly replacing human judgement in lending decisions. Scoring dominates the consumer-lending arena, with the vast majority of credit card and mortgage originations aided by credit scoring models. All indications are that small business lending is going the same route.

During the first half of 1999, the Federal Reserve Bank of San Francisco conducted a survey of 51 12th District financial institutions to learn more about the use of credit scoring in underwriting small business loans. The following presents highlights of the survey results, which cover the extent that scoring is used among large and small banks and the varying approaches to scoring system implementation. The results will also serve as the basis for future Fed research on this topic.

MODELS FOR BUSINESS LENDING

Similar to consumer loan models, small business models use credit history information from credit bureaus to statistically estimate the likelihood that borrowers will repay their loans. For business lending models, credit bureau information for the business' principal owner is used. Additionally, the models factor in information from the loan application such as the business owner's deposit account relationships, liquid assets, and type of business. Sometimes, credit history variables on the small business itself are also incorporated into

the models used. This data usually comes from Dunn and Bradstreet.

Typically, the models use some 20-25 variables, and the end-result is a single measure, or score, for each small business. Scores normally range from 300 to 900. The higher the score, the greater a small business's creditworthiness.

Automatic decisioning: Lenders often set policies to allow for automatic lending decisions. Applicants receiving scores above a designated cut-off number are automatically approved, and those receiving scores below another cut-off are rejected. Generally, there's a gray-area in between where human judgement is involved.

In the example below, a lender au-

tomatically approves a business loan application when the amount requested is for \$50 thousand and less and the business's credit score is 650 and higher. A score between 600 and 649 requires credit officer review, while lower scores result in automatic rejection. This would be the general policy followed by the lender, but with overrides allowed in certain situations.

LENDER SURVEY

To find out more about scoring usage within the 12th Federal Reserve District, a survey was administered informally to a sample of lenders. Completed surveys were returned from the five largest banking companies head-

EXAMPLE OF DECISIONING POLICY
USING CREDIT SCORES

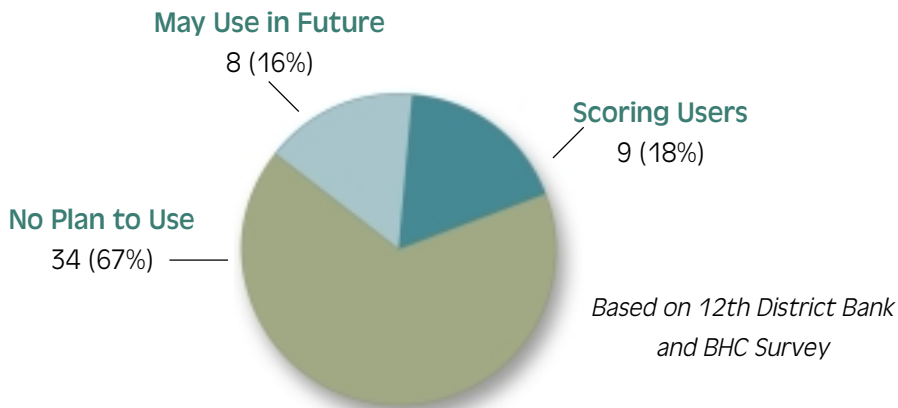
	Credit Score	Action
Loans 50K and Under	650-900	Approve
	650-900	Review ("grey area")
	300-599	Reject
Loans over 50K	600-900	Review
	300-599	Reject

quartered in the District, and from 46 smaller banking companies selected arbitrarily from banks and bank holding companies regulated by the Federal Reserve. They ranged in size from less than

picture emerges when we look at the lending volume of those organizations. As shown in the chart on the lower left, the nine organizations that use scoring account for over 90% of the

credit scoring models, just as consumer and mortgage lending is similarly dominated by scoring users. Also, given the competitive advantage that is possible, it appears that more and more small and mid-sized banks will adopt scoring over time.

INSTITUTIONS USING CREDIT SCORING FOR BUSINESS LENDING NUMBER OF INSTITUTIONS



\$10 million in assets to over \$200 billion, with a median size of \$195 million.

The survey found that, for these 51 banking institutions, 18% use credit scoring models for business lending, and another 16% are considering using in the future.

While the proportion of banking companies using scoring for business lending is relatively low, a different

small business loans of the institutions surveyed. The five largest District banking organizations all use credit scoring models for business lending: Wells Fargo & Company, Union BanCal Corporation, First Security Corporation, Zions Bancorporation, and BankWest Corporation.

These findings provide support to the notion that small business lending is now dominated by those that use

SURVEY QUESTIONS

Respondents were asked a variety of questions about their credit scoring programs. A summary of their responses follow:

Length of time used: Eight of the nine users implemented their scoring programs within the past three years. Only Wells Fargo started its program earlier. This industry pioneer in credit scoring implemented its small business scoring model in 1989.

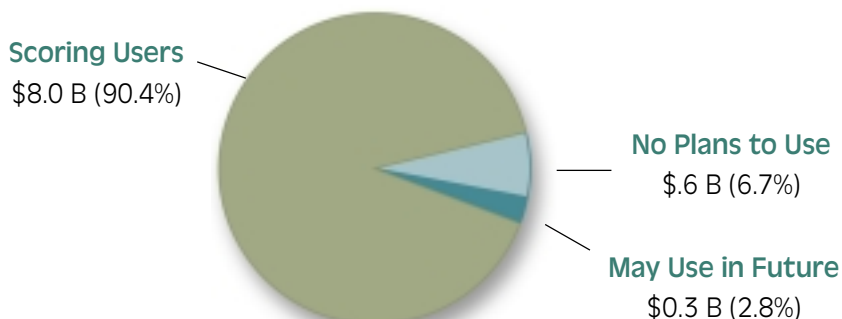
Automatic approvals: Six of the nine banks that use scoring automatically grant some loan requests based on customer scores. The other three use scoring to streamline their lending processes, but they continue to subject all loan applications to human review.

Scoring for business expansion: Three use scoring as a means to attract new customers through mail solicitations, but only one uses scoring to expand outside its normal geographic area.

Home-grown or vendor models: Interestingly, all nine of the respondents use scorecards purchased from Fair, Isaac and Company of San Rafael, California. Seven use scorecards from an off-the-shelf Fair Isaac (FICO) model, and two use a customized FICO model. Wells Fargo also uses an internally developed model.

Overall reliance on scoring models: Some of the usage factors and others were combined on the following table to produce a subjective ranking of respondents by their reliance on the models for business lending.

INSTITUTIONS USING CREDIT SCORING FOR BUSINESS LENDING BY SMALL BUSINESS LOAN VOLUME



Based on 12th District Bank and BHC Survey - includes loans <\$250K only



The resulting analytical tool, with the institution names excluded here, considers four factors: 1) the lender use of scoring for automatic loan approvals; 2) the maximum size of loan applications scored; 3) the volume of scored loans on the organization's books; and 4) the use of scoring to facilitate business and geographic expansion.

dent reported that scored loans have underperformed non-scored loans, although this lender is still satisfied with its scoring system results.

Why scoring is used: Lenders that use scoring models claim several benefits: 1) faster loan decisions, 2) substantial efficiencies, and 3) improved under-

ing the market" on new small business loan originations.

While there is some evidence that scoring users are able to expand their small business lending at a rapid pace, the non-scorers are also generating new small business loans. Based on our sample, the growth rate of small business loans at institutions using scoring was a healthy 11% between 6/98 and 6/99. Over the same period, non-scorers grew their small business loans by 6%.¹ While this is a lower growth rate than that of the scorers, it does indicate that, at least for this group of western banks, small business loan expansion opportunities still exist for those that do not use scoring.

EXTENT AND RELIANCE ON CREDIT REPORTING					
	INSTITUTION	AUTOMATIC APPROVALS?	MAX SIZE OF LOAN SCORED ^A	VOLUME SCORED ^{*B}	USED FOR BUSINESS EXPANSION?
 LIBERAL USAGE CONSERVATIVE USAGE 	Bank A	Yes	High	High	Yes - Geog expansion
	Bank B	Yes	High	Low	No
	Bank C	Yes	Moderate	Moderate	No
	Bank D	Yes	Low	Moderate	No
	Bank E	Yes	Low	Moderate	Yes - Within existing Mkt.
	Bank F	Yes	Low	Low	Yes - Within existing Mkt.
	Bank G	No	Moderate	Moderate	No
	Bank H	No	Moderate	Low	No
	Bank I	No	Low	Low	No

* Shown as a percentage of small business loans on the books.

A Low = \$100K or less; Moderate = \$100K-250K; High = greater than \$250K

B Low = less than 10%; Moderate = 10-50%; High = 50% or greater

Institutions shown towards the top place greater reliance on the scoring models. In other words, they are more liberal users of the models. Those listed toward the bottom are more conservative users. Based on this survey group, it appears that the longer an institution uses scoring, the more liberal their usage becomes.

Performance of scored loans: The respondents all indicated that the performance of scored loans has been at least as good as expected, with most reporting "better than expected" performance. Five also believe that their scored loans have outperformed their non-scored loans in terms of charge-offs and delinquencies, although to some, this could also be a function of an improved economy. One respon-

der reported that scored loans have underperformed non-scored loans, although this lender is still satisfied with its scoring system results.

Why other institutions don't use scoring: Many of the forty-two respondents that do not use scoring models for small business lending prefer to give individual attention to each loan request. They feel that scoring would interfere with the existing culture of the institution, which emphasizes close customer relationships. Many also reported cost as a factor, citing an insufficient scale of business lending to justify the expense of a scoring model.

LOAN GROWTH OF SCORERS VERSUS NON-SCORERS

With the efficiencies made possible through credit scoring, we wanted to find out if scoring users are "corner-

FAIR LENDING IMPLICATIONS

Scoring models can have positive fair lending impacts. A properly constructed model avoids using any variable that is among the prohibited bases² in Regulation B. A scoring program can therefore, help reduce fair lending risks to lenders and facilitate an equitable expansion of credit access.

However, a model must be empirically derived and demonstrably and statistically valid to qualify as a credit scoring system under Regulation B. Otherwise, the system is considered "judgmental," which removes certain "safe harbor" protections such as the limited inclusion of applicant age in the model, and necessitates a more thorough fair lending review.

1 Based on small business loans with original maturities of \$250 thousand or less.

2 Prohibited bases include: national origin, age, gender, marital status, race or color, religion, receipt of public assistance.

ABOUT THE AUTHOR

GARY PALMER has nearly 20 years of experience at the Federal Reserve Bank of San Francisco. He currently serves as banking studies officer in the Division of Banking Supervision and Regulation. Mr. Palmer's recent work has focused on researching emerging issues and trends within the banking industry. Previously, he served as information technology officer and as financial analysis officer within the Division. Mr. Palmer holds an M.B.A. degree from the University of California at Berkeley and is a graduate of the Pacific Coast Banking School in Seattle.

Additionally, even a qualified credit scoring system does not eliminate fair lending concerns. For example, lenders often allow for a limited volume of overrides in their use of scoring models. Care must be taken to ensure that reasons for overrides are objective and nondiscriminatory; the reasons for the overrides should then be documented. Lenders should also track the performance of overrides.

CONCLUSIONS AND NEXT STEPS

It is evident that small business lending is now dominated by lenders that use credit scoring models, and that scoring is continuing to attract new followers for cost and competitive reasons. It is also clear that the vast majority of these lenders use models from one vendor, and that the fair lending implications of these models appear to be mostly positive.

The Federal Reserve is continuing to research issues related to credit scoring. Some of the areas of possible further research include:

Evaluating the variables and methodology used by the popular scoring models;

Obtaining information on the application integrity risk controls in place by vendors and credit bureaus to prevent the distribution of erroneous information;

Looking at how lenders validate the models they use to ensure that the scoring systems are leading to appropriate decision-making;

Considering the implications of scoring on credit risk at individual institutions and the entire banking industry;

Considering differences in regulatory risks faced by lenders based on their selection of vendor or home-grown models. **CI**

For more information on this survey or future Fed research please call Gary Palmer at (415) 974-3003.