

Making Scoring Work



With limited information, how valid can credit scoring really be? There's no magic formula for a small business credit-scoring system, and the best systems can show only the probability—not the certainty—of a loan going bad. The goal is to do as good a job as possible, and as efficiently as possible, in considering the basics: liquidity, leverage, profitability, payment history, and longevity. This article gives insight into how small business credit-scoring works and the caveats that should be applied.

by Joel J. Pruis

While small-business credit scoring has been around for about 10 years, relatively few banks use it. One issue is a lack of understanding about the scoring process and how it can be beneficially applied in the lending and portfolio management environment. Given the limited amount of information that is generally available on a small business, a small-business score derived from such data can leave banks wondering how valid it really can be.

In fact, a small-business score can be very valuable in assessing the risk associated with a small business, even if there is limited data. To understand the process, let's start with how a score is developed. In a nutshell, a bank or a group of banks collects data about a company at the time of its loan applica-

tion and compares that data with the actual performance of the company's loan. Banks are looking for application characteristics that have the strongest correlation to acceptable payment performance. Statistical analysis provides this correlation. On the flip side, this analysis looks at loans that perform poorly and determines which characteristics on an application have the strongest correlation to unacceptable payment performance.

Once identified, these characteristics are weighted to differentiate loans that have a strong probability of being bad (or good) versus loans that have a mediocre probability of being bad (or good). The better the differentiation between good loans and bad, the better the scorecard.

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Essential Characteristics

Commercial lenders consider many textbook credit analysis factors in their decision-making process, including the following:

- Global, national, and local economies.
- Industry performance and trends.
- The borrower's financial performance.
- Competitive factors.

Tools such as financial statement analysis, economic forecasts, and market analysis are all important when considering commercial lending decisions. With the availability of this information, commercial analysis often delves into items such as funded debt to EBIT (earnings before interest and taxes) or EBITDA (earnings before interest, taxes, depreciation, and amortization), sensitivity analysis with respect to interest rates and/or sales fluctuations, and segmenting financial statements into profit contributions by division or product line. All of these are excellent ways to analyze commercial credit but are of little value in analyzing a small-business loan request.

Let's consider this kind of analysis from both the functional as well as a risk/reward perspective. Baker Hill's *2005 Small Business Lending Benchmark Report* (an annual analysis of small-business lending portfolio performance throughout the financial services industry) found that the average credit request for a small business was just under \$90,000. Assuming a 4% net interest margin (and that is a big assumption), we have a potential net interest margin of only \$3,600 before operational costs and potential

reserves. When we combine this with the fact that approximately 64% of all small-business applications are approved, we learn that a typical financial institution will spend time on three applications but have only two approved and potentially closed.

In addition, approximately 50% of the requests will involve a line of credit where the full balance is typically not funded over the entire year. The bottom line is that were we to spend the same amount of time (and analysis) on a \$90,000 application as we do on a \$1.5 million request, we would be in a loss situation before we even made the final decision.

In addition to the practical revenue restraints, we have the practical information restraints. For example, for many small businesses, getting a balance sheet that actually balances and getting retained earnings to foot from one year to the next are both noteworthy events.

Even so, commercial lenders have a tendency to rely heavily on a small business's financial statements—and to put a small business through exercises similar to those for a larger commercial enterprise. Because of the inaccuracy of the financial reporting from a small business, this analysis simply cannot be done with any significant degree of accuracy. Yet we cannot abandon all the factors that are typically considered when we perform commercial analysis. These would include the basics, such as:

- Liquidity.
- Leverage.
- Profitability.
- Payment history.
- Longevity.

The following is a list of the general characteristics typically used to generate the credit score for a particular borrower:

- Data from application.
 - DDA balance.
 - Principal's total income.
 - Time as current owner.
- Personal credit report of owner(s).
- Business credit report.
- Business financial statement.
 - Business debt-service ratio.
 - Cash-to-assets ratio.
 - Debt-to-worth ratio.
 - EBIT-to-interest ratio.
 - Quick ratio.

As can be seen from this list, the scorecard considers characteristics related to:

- Liquidity (e.g., DDA balance, cash-to-assets ratio, quick ratio).
- Leverage (e.g., debt-to-worth ratio).
- Payment history (e.g., personal credit reports, business report, business debt-service ratio, EBIT-to-interest ratio).
- Longevity (e.g., time as current owner).

The areas not specifically covered in the scorecard are items such as the global economy, local economy, and industry trends. These items are considered in a holistic approach to the small-business origination process. Rather than evaluate each applicant on these large-scale items, the small-business function needs to analyze these areas with respect to applications in general. From a portfolio perspective, the financial institution needs to determine the following:

- Which industries are negatively affected by the current

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economic environment?

- Of those that are negatively affected, is the impact severe enough that, as a general rule, we no longer want to consider such applications?
- What general characteristics would need to be present to make a particular applicant in a negatively affected industry worthy of extra consideration?

Such questions need to be answered for the application population as a whole rather than one on one. As a result, the institution takes into consideration these larger factors that may not be captured in the scorecard.

No Magic Formula

Problems arise, however, with the actual implementation and long-term use of a scorecard. Some bankers assume that the scorecard provides a magic formula for underwriting loans. The individual score provides the financial institution with a *probability*—not a certainty—that the loan will go bad. The scores are not a magic formula. This misunderstanding can get a banker into trouble, leading to the misconception that all loans that score above a certain level are automatically good and should be approved and that all loans below that point will be bad and should not be approved. The truth is, some loans that are approved will go bad. And, yes, some loans that are

declined may have been good.

But this will happen no matter what system of evaluation is used. In fact, it will likely happen more frequently in an environment where only analyst judgment is used. In a scoring environment, you have an empirically derived benchmark as to the likelihood that a business will go bad in the form of published good-to-bad odds for any given score.

In the short run especially, a financial institution's experience with the scorecard will not necessarily reflect the bad rates indicated in the general population that was used to create a scorecard. Too often, management expects that scorecard results will mirror that of the population used in developing the scorecard—whether it be in the short or long run. When the performance does not exactly match, management deems the scorecard to be faulty,

when, in fact, there simply was not enough loan volume or the scorecard wasn't given enough time to prove itself statistically.

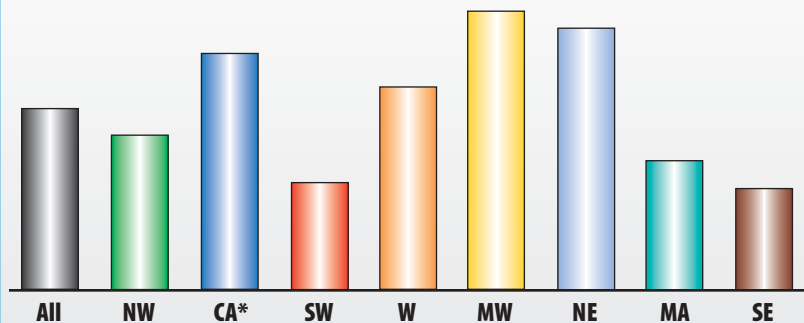
Many other factors (such as your individual credit policy) can factor into the actual result of whether the loan goes bad. In scorecard development, each score contains a certain percentage of loans that have gone bad. A financial institution's credit policy, used in conjunction with the scorecard, can help it avoid loans that might go bad at a particular score and reduce the probability that the institution would approve a bad loan.

Another reason credit scores offer no magic formula is that average scores can vary by region. As seen in Figure 1, the geographic regional differences can be as much as nine points (note the Southwest and Southeast regions versus the Midwest region). Therefore, depending on geographic regions, the user may need to use policy rules to make proper decisions on loans.

What can be said about scorecards—with the highest degree of certainty and without qualification—is that they provide an

Figure 1

Average Score by Region



* California

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excellent method to rank-order risk. That is, with a scorecard that has a range between 0 and 100—with 0 being the worst and 100 the best—an application that scores 70 is a better credit risk than an application that scores 60, which is better than an application that scores 50, and so on. It is up to an individual bank to determine at what level credit risk is acceptable or unacceptable based on its overall credit strategy or pricing for risk.

Skewed population sample.

Even if an individual bank does not rely on a magic formula (but rather sends applications through the scorecard and reviews the results), there can be pitfalls if the initial population sample is not an appropriate sample.

In commercial lending, it is a common practice for a lender to perform an initial review of a prospect. If the lender deems the prospect to be of less-than-desirable credit quality, no further analysis is done and the prospect's request is informally turned down. This is an appropriate practice, since the lender does not want to take up committee time on a prospect that he or she is not willing to support. The lender acts as the first filter or review. If the prospect does not pass, no further action is needed or warranted.

If a financial institution processes only those applications that have a good chance of being approved through an initial judgmental screening process, the scorecard performance at the individual institution will be faulty and unreliable.

Let's assume that you are a

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small-business owner who runs a moving company, and you are trying to determine how to select prospective employees who might be best suited to box up and load/unload a truck. You decide to visit the local gym and select a group of bodybuilders as your sample size in order to conduct tests to see who is best suited for this type of job. In your analysis, you find that height has the most significant effect on what the individual can or cannot lift. Based on your analysis about height, you determine that you should hire employees between 5 feet, 8 inches and 6 feet tall.

From your initial sample, which you secured at the gym, you begin to hire only physically fit young people between the height of 5 feet, 8 inches and 6 feet. For the next six months, your business runs very smoothly. Nothing gets dropped, and you have very low workers' compensation claims.

Since things have gone so well, you decide to rely heavily on the height factor and start hiring anyone that is between 5 feet, 8 inches and 6 feet tall. Suddenly, things start to go wrong. Damage and workers' compensation claims increase. The reason is easy to see. The applicants now considered for the job include everyone from bodybuilders to

those who are less physically fit but meet the height requirements. In effect, you misread the important characteristics. You assumed height was the critical factor determining a "good" mover, when in fact height was less important than strength or perhaps other factors. This is how a judgmental process can lead you astray. However, with a properly developed model, all factors are evaluated, and the likelihood of putting too much emphasis on the wrong characteristic is reduced significantly.

If you score only those applications that already have a strong chance of approval based on judgmental factors (the bodybuilders) and then establish your overall strategy for decisions by score alone based on that sample, your foundation is weak at best (no pun intended). Once you change the actual population that is being processed (the general population versus the bodybuilders), the factors that may have been accurate differentiators on the small population (height for the bodybuilders) cannot be assumed to be an accurate differentiator on the general population.

In Baker Hill's reviews of clients' scorecard/underwriting performance, the first indication that a client might be prescreening applications is the approval

percentage. Figure 2 indicates an average approval percentage of 64% across the entire population, with the lowest rate at 60% in California and the highest rate at 76% in the Southeast.

Of course, a number of factors could affect the approval rate. Renewals, for example, tend to have a higher approval rate than new applications. Logically, renewals tend to be approved since the financial institution already is committed to the transaction, having already made the loans. Therefore, if a financial institution is processing a significantly higher percentage of renewals than the norm (35% of all applications per the report), one would expect the approval percentage to be higher.

Here's the point: If you rely on the underwriting and portfolio performance by score alone, but your sample used only those loans that already had a high probability for approval, the overall sample is skewed and cannot be relied upon once applied against the general population of applications.

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Ignoring the data. Somewhat similar to the magic-formula approach is the risk of complacency. Financial institutions can be lulled into thinking that, since they now have credit scoring for small businesses, they no longer need to worry about credit decisioning for a small business. Or they may become lax in examining their loan portfolio because they assume (incorrectly) that it will take care of itself through the use of credit scoring.

Implementing the use of credit scoring does not, by itself, eliminate all lending worries. It does, however, provide a tool that helps you manage the origination and portfolio management process in small-business lending. If you purchase the finest-quality ther-

момeter to give you the outside temperature (so you will know whether to wear a jacket when you go outside) but never look at the thermometer, what good does it do? The same goes for credit scoring. You need to continually monitor the results from the credit scoring system and use those results to refine how you've implemented the models.

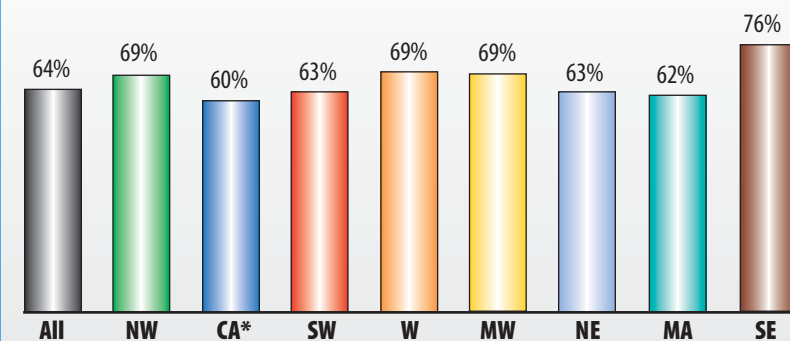
How to Use a Scorecard

We have discussed some of the pitfalls that cause the scorecard not to work, but how can they be successfully implemented in a financial institution? It boils down to these basics:

- Define the scope of the small-business lending function in the institution and adhere to this policy (no one-off processes allowed).
- Score and review applicants who meet the criteria for a small-business loan under the same criteria applied to the rest of the small-business applications.
- Do not prescreen applications. Even if you know that the request is of poor quality, the small-business lending function needs to see the application to verify that the score also indicates it to be undesirable.

Figure 2

Approval Percentage by Region



* California

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Once you are sure that your influx of applications is appropriate, your bank must regularly review key quantifiable measurements, including:

- Is my population of applications relatively constant?
- Is my approval percentage relatively consistent?
- Are my overrides within acceptable ranges?
- Are loans performing as expected within certain score bands?
- For those loans performing

outside of the norm, what was different about those applications from the rest of the population?

- Are my override reasons appropriate? Do the loans with an override have acceptable performance? What is the difference between those that perform well and those that do not?

Simply Put

Financial institutions that regularly review their data and make

necessary adjustments to their scorecard process are successful in small-business lending and in their use of credit scoring. Those that ignore the data, or do not adjust appropriately, do not achieve success with the scorecards. It's that simple. □

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