

Standard & Poor's Small Business Portfolio Model Introduces a Potential New Tool for Community Development Loan Risk Analysis*

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Over the past several years, the issuance of small business loan securitizations rose steeply with rated transactions completed by Business Loan Express, GE, and Lehman, to name a few. Community development lenders also gained notoriety beginning in 2004, when Standard & Poor's rated its first portfolio of loans whose underlying loan purpose was to spur community growth and development.

In rating both small business and community development portfolios, we recognized an opportunity to provide a tool—our Small Business Portfolio Evaluator™—for both our ratings process and our lenders' internal risk management. For a community development lender who is issuing debt in the capital markets, these potential benefits could have favorable credit implications.

For example, the Small Business Portfolio Evaluator (the SBP Evaluator) will flag the loans it deems as very risky from a capital markets perspective and allow the lender to adjust the underwriting accordingly. It will also generate the gross default and net loss percentages of a given pool on an aggregate level, which speaks to the pool's leverage or the equity needed to execute a securitization. Both of these credit feedback components are essential in the planning process for lenders issuing debt in the capital markets.

Why We Developed the SBP Evaluator

From a securitization standpoint, analyzing the credit quality of U.S. small businesses can be challenging. The small business marketplace is diverse, and individual businesses are vulnerable to risks that were unforeseen when the loans were underwritten. We developed the SBP Evaluator, a Monte Carlo-based algorithm that assesses loan portfolio default outcomes under various stress scenarios, to help the issuing and investing communities in their analysis.

A mainstay of U.S. economic growth, small businesses have been steadily gaining attention in the arena of structured finance. Small businesses account for more than half of the private-sector output in the United States, and they employ more than half of the country's workers. Through extended demand loans, seasonal lines of credit, and single-purpose loans

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for machinery, equipment, and other purposes, U.S. banks extend hundreds of billions of dollars of loans to small businesses annually. These loans are sometimes securitized through capital market issuances backed by cash flows from discrete loan portfolios.

Since 1997, Standard & Poor's has rated some 50 issuances securitizing small business loans, aggregating over \$14 billion. This total is a small fraction of the estimated \$1-trillion-plus in outstanding small business loans. With the SBP Evaluator, the structured market has an effective tool to expand securitization of such loans. In developing the model, Standard & Poor's analyzed the largest available pool of loan performance data and found that, after accounting for business sector and geographic correlation, one can generate statistically stable simulations of loan portfolio default outcomes.

The SBP Evaluator can contribute to analysis and surveillance of small business loan securitizations in a number of ways. It can:

- Help banks, other small business lenders, and secondary market participants manage risk in the portfolio;
- Assess expected portfolio defaults based on obligor size, Standard Industrial Code (SIC) sector distribution, and geographic concentration;
- Assist in ratings surveillance by assessing changes in portfolio credit quality due to prepayments, defaults, or substitutions;
- Analyze revolving structures where portfolio composition changes regularly;
- Above all, provide an industry-wide assessment platform and greater levels of transparency.

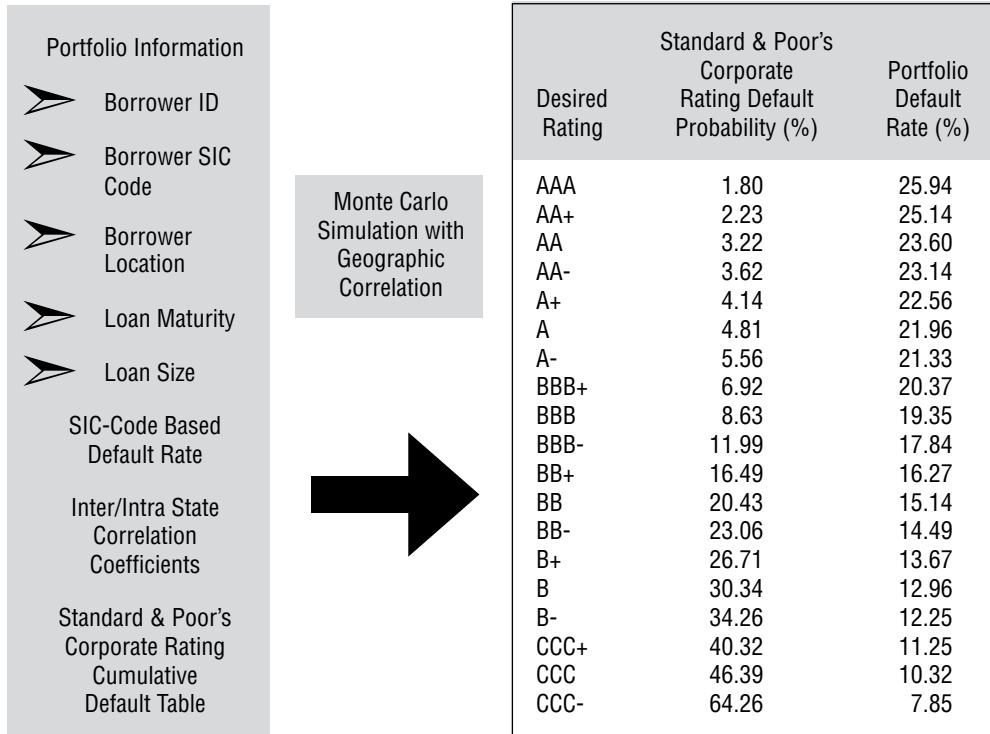
The SBP Evaluator uses the U.S. Small Business Administration (SBA) 7(a) program's historical loan default data to Monte Carlo-simulate the default distribution for a geographically correlated loan portfolio (see Appendix: The SBA 7(a) Program). Standard & Poor's uses the 7(a) program data because it's the largest publicly available pool of information and reflects considerable loan diversity. The 7(a) program guarantees riskier loans than a typical commercial lender would generally provide. The 7(a) program data include information on unseasoned businesses, borrower and business financial profiles, and nonconforming bank loans.

When properly run, the SBP Evaluator produces simulations that show the probability distributions of a given loan portfolio's default rates through the final maturity of the longest loan. These simulations model outcomes ranging from scenarios where no loan defaults through those where every loan defaults before maturity. The SBP Evaluator determines the gross default level for each rating category, consistent with Standard & Poor's corporate ratings benchmarks. While portfolios will vary in size, a minimum of several hundred obligors is needed to reach the degree of diversity necessary to achieve a portfolio effect.

The SBP Evaluator was designed for portfolio analysis. It was not designed to estimate the default probability of individual loans. This distinction is explained in more detail below.

Model Input and Output

The conceptual framework of the model is shown in the diagram.



As shown on the left, the model requires loan files grouped by obligor. Each file specifies the obligor’s ID, loan amount, maturity date, four-digit SIC code, and state or territory.

The default rate associated with each SIC code derives from the 7(a) program data. The SBP Evaluator’s calculation of SIC-specific default rates accounts for loan seasoning and default rate volatility. Standard & Poor’s current practice provides that if the originator’s default history deviates significantly from the default history of its SIC peers (as established from 7(a) data), the issuer-specific performance data may be used in the SBP simulations. The SBP Evaluator also contains Standard & Poor’s assumptions on small business loan correlation derived from the 7(a) data (see Appendix: Geographic Correlation).

On the right of the diagram is the gross default level for each Standard & Poor’s rating category and the comparable corporate rating benchmark. When assessing a loan pool with a weighted average life of 14 years, for example, a AAA corporate rating has a default probability of 1.81 percent corresponding to the AAA gross default rate of 25.94 percent for the small business loan portfolio. Over the same period, therefore, the model maintains that the default probability of the AAA-rated corporate obligation is the same as the loan portfolio experiencing a default rate greater than 25.94 percent.

The model also summarizes material portfolio metrics, thus supporting like-kind comparisons of portfolios. “Default measure” is derived from an annualized expected default rate. “Volatility measure” is derived from the standard deviation of that expected default rate. “Correlation measure” is a ratio of this standard deviation with and without the correlation coefficient factored in. These measures, together with rating-specific portfolio gross default rates, could lead to standardization and transparency in small business loan securitizations.

Another benefit of the SBP Evaluator is its flexibility: It can model changes in portfolio gross default that result from changes in portfolio size, geographic concentration, business (SIC) concentration, and borrower concentration.

Data Analysis Used to Build the SBP Evaluator

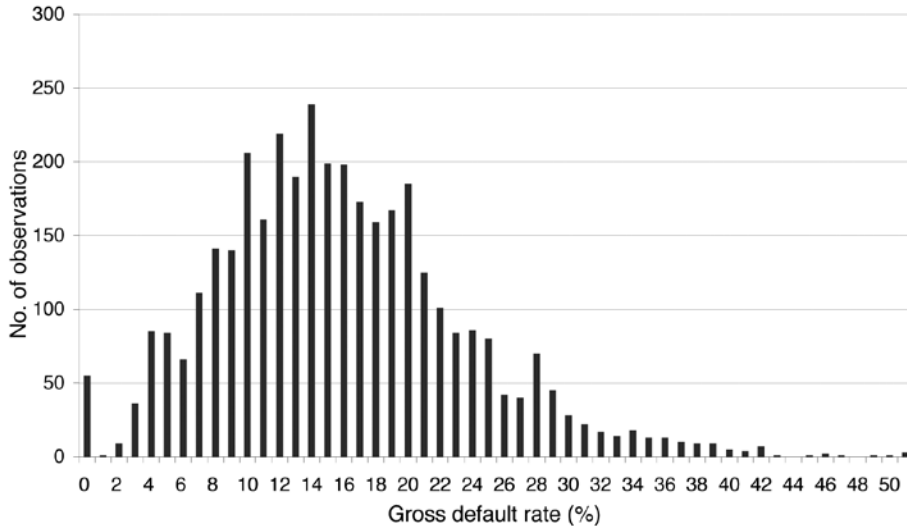
Before developing the SBP Evaluator, Standard & Poor’s identified and quantified the predominant characteristics of U.S. small business loan defaults. The data came from the Small Business Administration’s 7(a) database, which has parameters of 10,000 lenders, 600,000 disbursed loans, and 1,005 SIC codes. The database covers all 50 states, the District of Columbia, and six territories, and it contains 20 years of static pool information and material borrower and cash flow information. Standard & Poor’s is aware of no other publicly available comparable source of such data.

The 7(a) database also includes borrower-specific information such as employee details, loan size, guarantee percentage (loans are not fully guaranteed), female/veteran borrower status, new or existing business status, and the organizational form of the borrower. Loan information includes details on underwriting (“low-doc”), secondary market sale, and loan status history.

Analytical Challenge: The Heterogeneous Nature of Small Businesses and Small Business Lending

Compared with other asset classes, small business loans are still in the early stages of securitization. In part, this is because of the heterogeneous nature of small businesses. As observed in the Board of Governors of the Federal Reserve System’s Report to the Congress of the Availability of Credit to Small Businesses (1997): “Historically, lenders have had difficulty determining the creditworthiness of small business loan applicants. . . . Small businesses are extremely diverse—they range from small grocery stores to professional practices to small manufacturers. This heterogeneity, together with widely varying uses of borrowed funds, has impeded the development of general standards for assessing small business loan applications and has made evaluating such loans less straightforward and relatively expensive.”

Chart 1
**Default Rate by SIC Division, State, and Static Pool
 (1983-1999)**



Standard & Poor’s concluded, after analyzing the 7(a) data, that while it is currently ineffective to try to predict the default of individual loans, simulations of portfolios of small business loans diversified by business type and geographic location produce statistically sound results. The cumulative history of the 7(a) data supports this conclusion. As chart 1 shows, the small business loan-default rate varies by location, business sector (as represented by the first digit of the four-digit SIC number), and year of underwriting. But overall, the average default rate is relatively normally distributed. This, along with other evidence, supports the applicability of a Monte Carlo simulation and tranching of portfolio gross default rates by the resulting portfolio default distribution, since the Monte Carlo simulation assumes that the random variable being simulated is normally distributed.

Data Analysis Methodology

Standard & Poor’s analysis involved a binary logistical regression on whether any model could determine the default probability for an individual borrower and, if not, which generalized characteristics in the SBA 7(a) data could explain default variances.

Standard & Poor’s concluded that the SBA 7(a) data are insufficient to accurately model the default probability of an individual loan. This is because small business failures usually occur as a result of some overwhelming exogenous factor. According to a 1995 study prepared for the Small Business Administration entitled “Financial Difficulties of Small Businesses and Reasons for Their Failure,” researchers found that exogenous conditions such as new

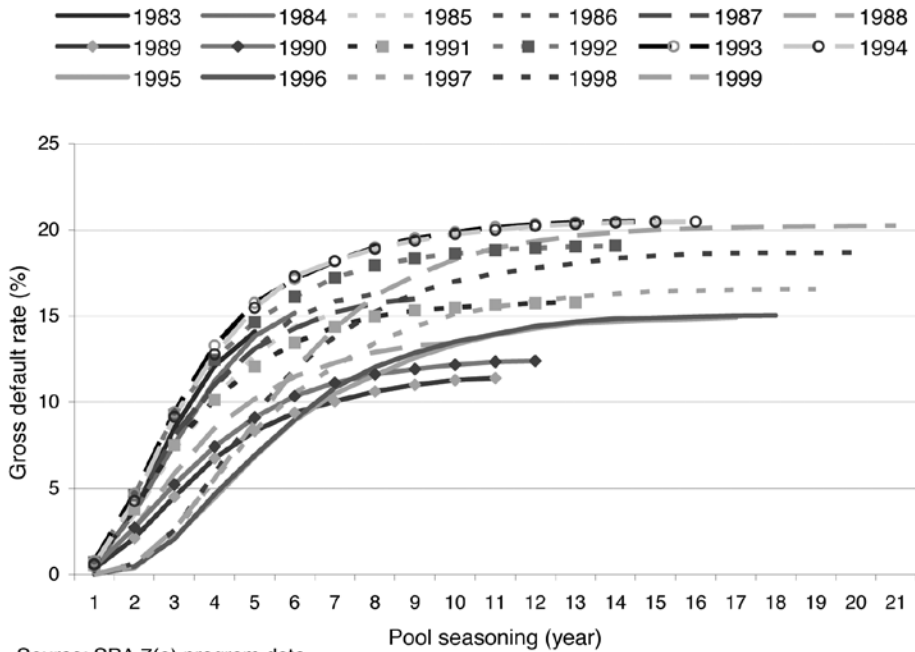
competition, increased business costs, taxes, business calamities, commercial disputes, or personnel issues caused small businesses to fail. Standard & Poor's SBP Evaluator contrasts with larger businesses, where the higher level of business diversification and greater financial flexibility tend to give borrowers greater ability to weather external challenges.

On the other hand, the second part of the logistical regression offered an explanation for the variance in small business defaults. At the portfolio level, generic issues such as business type, location, and loan-underwriting practices are material reasons for loan defaults. Standard & Poor's SBP Evaluator responds to these factors by analyzing SIC code-based default probability and geographic default correlation, among other issues.

Standard & Poor's also analyzed the correlation of historical U.S. macroeconomic conditions with the magnitude of small business failures in any particular year (see chart 2). Using linear multiple regression, Standard & Poor's found that 86 percent of small business defaults (as measured by the cumulative defaults in the first five years for each vintage) can be explained by four macroeconomic indicators at a 95 percent confidence level.

Specifically, the analysis found that bank credit expansion or contraction, as approximated by commercial and industrial loans outstanding, interest rates, producer prices, and the energy component of consumer prices, can explain the changes in business failure rates from 1987 to 1999. This is consistent with research findings noted previously that link small business failures to exogenous factors. Although of limited direct use in the rating process, this finding adds perspective to small business loan defaults and the volatility of failure rates. It also has applications in the surveillance of small business loan securitizations.

Chart 2
Static Pool Default Curve (1983-1989)



Source: SBA 7(a) program data.

How to Get the SBP Evaluator

We are releasing the SBP Evaluator on a subscription basis. For information on how to subscribe, you can visit the SBP Evaluator product page on Standard & Poor’s website at www.standardandpoors.com.

Standard & Poor’s will work closely with market participants in testing and enhancing the model so that it can be used not only to rate securitizations backed by U.S. small business loan portfolios but also to enable originators to determine the level of risk inherent in the portfolios they hold.

Additional Information on Monte Carlo Simulation and Small Business Rating Criteria

The computation algorithm and application of default correlation in the SBP Evaluator are identical to those used in the Standard & Poor’s CDO Evaluator™, a model Standard & Poor’s uses to evaluate the credit quality of a portfolio of CDO assets. Additional information on Standard & Poor’s Monte Carlo simulation and pair-wise default correlation methodologies is available on RatingsDirect at www.ratingsdirect.com. This information is also available on Standard & Poor’s website at www.standardandpoors.com. In addition, Standard &

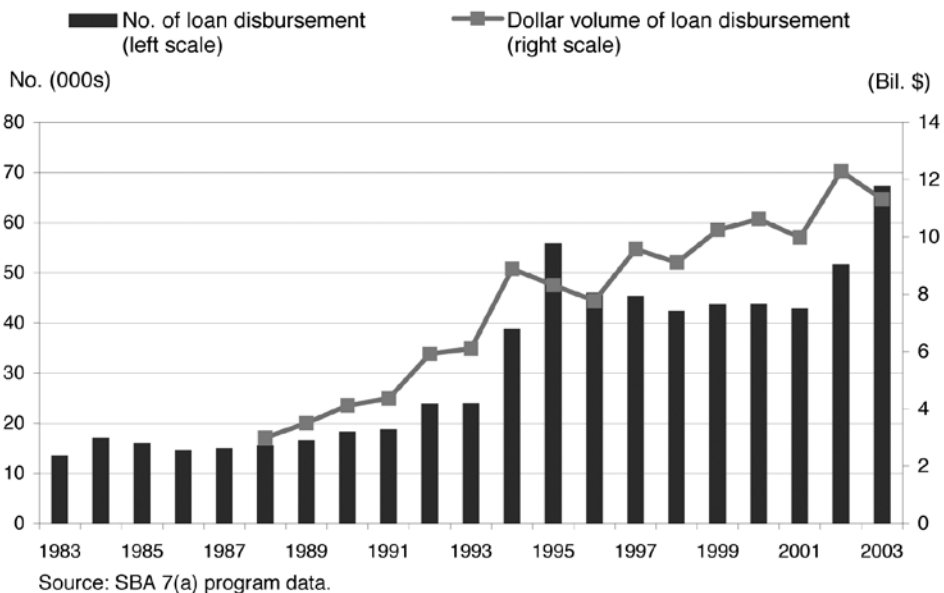
Poor’s general approach to rating small business loan securitizations is detailed in two articles, “Criteria for Securitization of U.S. Small and Middle-Market Enterprise Loans,” published January 30, 2004 and October 25, 2006. Both articles are available on both websites.

Appendix: The SBA 7(a) Program

Section 7(a) of the Small Business Act provides that the Small Business Administration “is empowered . . . to make loans for plant acquisition, construction, conversion, or expansion, including the acquisition of land, material, supplies, equipment, and working capital, and to make loans to any qualified small business concern, including those owned by qualified Indian tribes, for purposes of this Act. Such financings may be made either directly or in cooperation with banks or other financial institutions through agreements to participate on an immediate or deferred (guaranteed) basis.”

The program guarantees a portion (as much as 80 percent on loans up to \$100,000 and 75 percent on loans of more than \$100,000) of loan repayment to commercial lenders who make loans to U.S. small businesses (see chart 3). In doing so, the 7(a) program helps small businesses obtain financing when they might not be eligible for business loans through normal lending channels. Typically, an eligible business applies to a lender for financing. Based on the creditworthiness of the borrower, the lender decides if it will make the loan internally or if it will require an SBA guaranty.

Chart 3
Growth of SBA 7(a) Program (1983-2003)

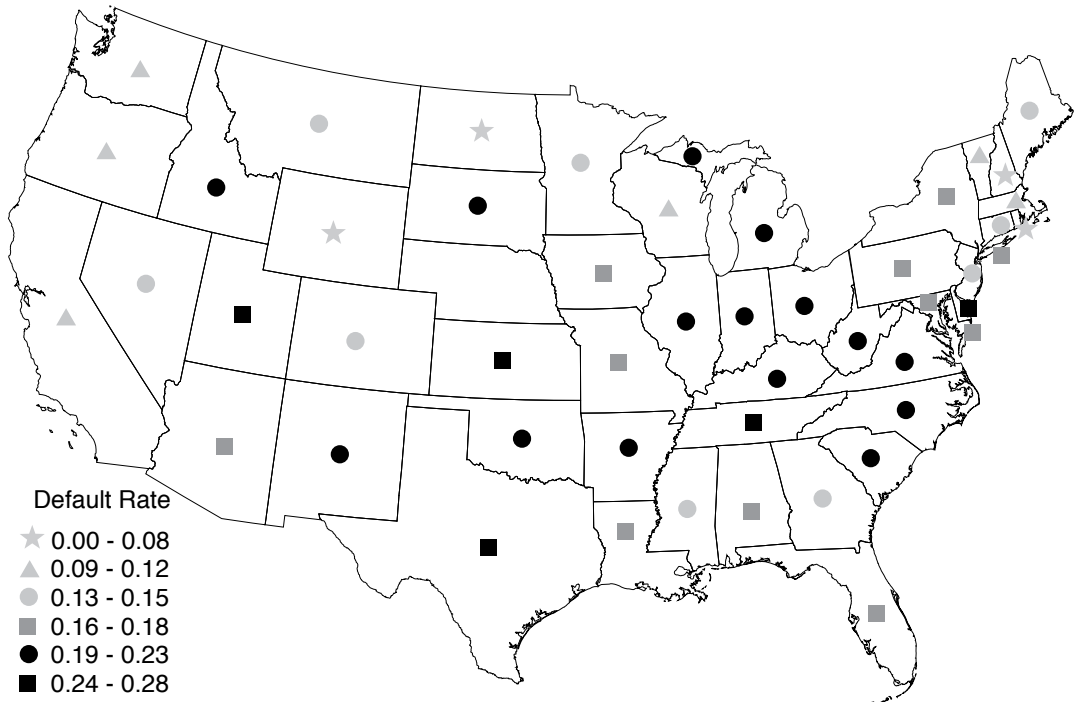


According to Gwendolyn Bounds, “Enterprise: Higher Fees, Less Backing on Loans—Small Firms May Need New Funding Sources in Wake of 7(a) Changes,” Wall Street Journal, October 5, 2005: “The program’s success can be measured in its growth: In 1954, the first full year 7(a) operated, the SBA helped finance 469 loans totaling a mere \$27.3 million. This past fiscal year, \$12.7 billion was lent (guaranteed) to almost 75,000 small businesses.” During the first quarter of fiscal-year 2005, which began October 1, 2004, the SBA approved 23,197 loans for \$3.56 billion, compared with 18,822 loans worth \$3.12 billion in the same period in 2003, and 3,759 loans worth \$2.24 billion in the same period in 2004.

Appendix: Geographic Default Correlation

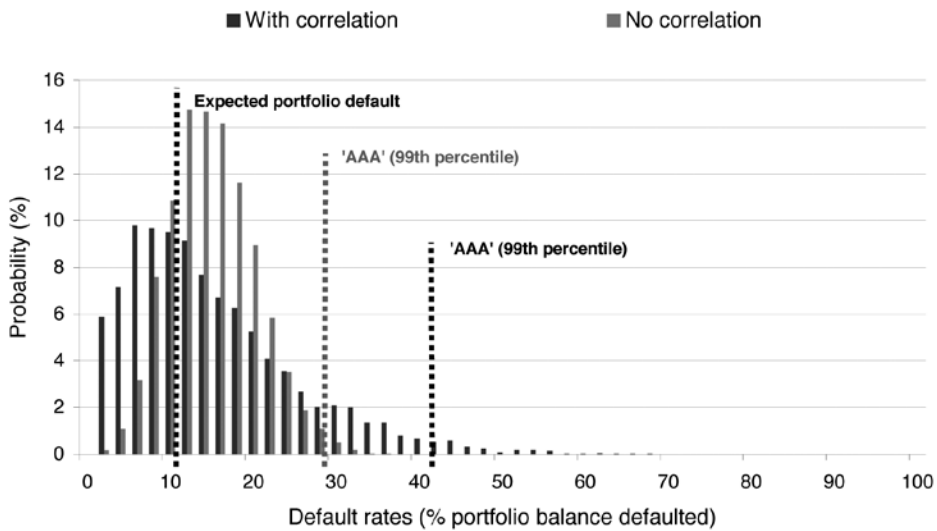
In general, “default correlation” refers to the phenomenon that borrowers sharing certain characteristics tend to default, or survive, together. Because most rated corporate entities operate nationally (that is, not exclusively locally or regionally), large rated corporate credit defaults tend to be correlated by industry. Examples include the sector weaknesses in the telecom and airline industries in 2000. In contrast, small businesses tend to operate locally or regionally, rather than nationally, so their local or regional location figures strongly in default correlations.

The map illustrates the default pattern for loans to three SIC classifications (restaurant, grocery store, and gas/convenience store borrowers) originated in 1999. Of interest are the high default clusters in the Rust Belt and Gulf State regions and the conversely low default cluster on the West Coast, suggesting a pattern of geographic correlation.



The effect of default correlation on portfolio gross default can be profound. As chart 4 illustrates, for a AAA rating, evidence of default correlation can increase the gross default rate substantially, in this particular case from 30 percent to approximately 43 percent.

Chart 4
Standard & Poor's Default Correlation Can Increase Portfolio Gross Default in Stress Scenarios



In the SBP Evaluator, Standard & Poor’s assumes that standard deviation of default is a function of borrower default probabilities and geographic correlation. A Standard & Poor’s proprietary model estimated both interstate and intrastate correlation coefficients most consistent with observed variability: high default correlation reflects a high level of default variance, and low default correlation reflects a low level of default variance.

References

Board of Governors of the Federal Reserve System, 1997. “Report to the Congress on the Availability of Credit to Small Businesses,” 29. Available at: http://www.federalreserve.gov/boarddocs/rptcongress/sbc_rep.pdf.

Small Business Act, Public Law 85-536. Available at: <http://www.sba.gov/regulations/sbaact/sbaact.html>.