The World Bank Group March 2006 | Issue No. 10

AccessFinance

A Newsletter Published by the Financial Sector Vice Presidency

Access to Finance Thematic Group

SME Credit Scoring: Key Initiatives, Opportunities, and Issues

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Wendel and Harvey describe small business credit scoring (SBCS) tools, their use in developed country markets, and their current and future use in emerging economies. They identify constraints to the adoption of SBCS in developing countries, as well as possible approaches for jump-starting the use of SBCS, including pooled data models.

Overview to Small Business Credit Scoring

Small and medium enterprises (SMEs) comprise a substantial part of the economic activity of both developed and developing countries. In the U.S. SMEs employ about 55 percent of the workforce and contribute over half the Gross Domestic Product (GDP)[1]. In developing countries, the role of SMEs is often relatively greater. For example, in Latin America, the vast majority of firms are micro or small enterprises and they employ approximately two-thirds or more of the labor force

Access to finance by small firms is a common problem and tends to be especially acute in developing countries. There are many causes for this including the cost and difficulty of evaluating the credit worthiness of small firms. Credit scoring tools are widely used in consumer credit markets to reduce the time and costs associated with loan evaluations but only recently have begun to be used for small business lending.

In the mid-1990s, Fair Isaac and Company introduced one of the first credit scoring models developed exclusively for use with SMEs. Since then, virtually all of the top SME banks in the U.S., as well as in Canada, the U.K., and Japan, have implemented some type of credit scoring for SME borrowers. While Fair Isaac and Company continues to dominate the market, in both the U.S. and internationally, a number of other players, such as Experian and Dun and Bradstreet, also offer SME credit scoring products.

Given the success of small business credit scoring (SBCS) in the developed world, commercial banks as well as the World Bank and other multi-lateral development agencies have been working to adapt the technology for use in developing country markets. This article evaluates what SBCS is, and is not, and discusses some of the potential benefits from adoption of SBCS tools. In particular, the role of pooled data SBCS models is discussed, as they may provide a cost-effective approach to adoption of this technology in some emerging markets. Actual experiences of banks in both the developed and developing world with SBCS tools are also presented, to highlight the advantages of a SME lending strategy involving SBCS as well as existing constraints and limitations to greater reliance on scoring tools.

What is SME Credit Scoring?

Credit scoring is a statistical technique that combines several financial characteristics to form a single score to assess a borrower's credit worthiness. Since experience has shown a strong link between the payment behavior of the business owner and that of the business, SME credit scores usually include financial characteristics from both the business and the business owner.

Bankers employ the SME's credit score as a guide in the credit-decision process. It is important to note that, while the credit score can be used to auto-decision an application, scoring and auto-decisioning are not the same. It is helpful to view credit scoring as part of a continuum in the development of the credit decisioning process (See Figure One) where credit screening is the most basic, foundation approach and auto-decisioning the most complex.

Figure One

Credit Scoring Development

	Credit Screening	Credit Scoring	Auto-Decisioning
Description	• An initial test to ensure that the applicant meets the lender's basic credit requirements • Performed either by the banker during the initial applicant interview or through an online questionnaire	• A statistical technique that combines several financial characteristics to form a single score to represent a borrower's credit worthiness • Derived from data provided on the application for credit as well as from outside sources (e.g., credit bureaus)	• An automated application decision based on the applicants credit score • Typically only very sophisticated banks and card companies use auto-decisioning, and then only for relatively small loan amounts, usually under $100,000
Elements	• Requires a checklist of basic eligibility criteria (e.g., number of years in business, income, etc.)	• Requires customer information provided on the credit application as well as provided by credit bureaus • Requires a valid scoring model, either proprietary or provided by a third-party	• Requires the lender to specify a credit score above which the applicant will be approved, below which the applicant will be declined
Benefits	• Gives unqualified applicants an immediate decision • Reduces the number of unqualified applications entering the underwriting system	• Provides a statistically accurate probability of repayment based on the past performance of similar applicants • Reduces the cost of underwriting and the time required to decision each application	• Reduces the time and cost associated with processing and underwriting credit applications • Often used to provide applicants with an "instant" decision

Within credit scoring, three types of models exist: expert, custom, and pooled data.

Expert models. Expert models offer judgment-based tools developed for a specific institution and are most commonly used when inadequate historical data exists to create an empirically based model, when a need occurs for an economical alternative to a custom scoring model, or when insufficient internal bank loan volume exists to support developing a custom model. Expert models are the most commonly used scoring model in the developing world.

Custom models. Custom models are statistically-based tools created from the bank's internal SME customer data and may be supplemented with data on the business owner and firm supplied by credit bureaus, if available[2]. This type of scoring model is commonly used in situations in which an individual bank maintains a comprehensive database of SME customer information.

Pooled data models. Pooled data SBCS tools are empirically derived, as are custom built models, but data come from multiple lenders rather than from a single institution, as well as from credit bureaus. For example, Fair Isaac developed the first pooled data SBCS model in the 1990s which incorporated SME customer data from 17 unrelated financial institutions; the most recent version of this product included information from 32 institutions and more than one million business transactions. Including information from multiple institutions increases the diversity of the data sample thus avoiding the primary technical limitation of custom models. Pooled data SBCS tools are the most commonly used SBCS tools in the U.S. market, but are only found in a few other countries[3] because of the difficulty in getting lenders to share data for model development.

Figure Two illustrates a hypothetical SME credit-scoring model with both the criteria for evaluation and the relative weighting of the potential results.

Figure Two

Sample SME Credit Scoring Model

Possible Criteria	Attributes with Hypothetical Weights*			
Credit History of Principal(s) Data: Consumer Credit Report	Major Derogatory (bankruptcy, collections)	Minor Derogatory (minor delinquencies)	Satisfactory	No Record:
	- 60pts	- 10pts	+15 pts	0 pts
Unused Credit Data: Consumer Credit Report	75% of Available	74%-33% of Available	<33% of Available	No Record:
	+40 pts	+30 pts	+20 pts	0 pts
Credit History of Business Data: Business Credit Report	Major Derogatory	Minor Derogatory	Satisfactory	No Record:
	-40 pts	-10 pts	+15 pts	0 pts
Industry Type Data: Federal SIC Code	Group A (manufacturing, with hard assets)	Group B	Group C	Group D (high risk, e.g., restaurant):
	+50 pts	+40 pts	+35 pts	+20 pts
Available Liquid Assets of Business (e.g., bank balances) Data: Loan Application	<85K	$6-10K	$20-49K	$50K & up
	+18 pts	+20 pts	+40 pts	+45 pts
Net Worth of Principal(s) Data: Loan Application	<$50K	$50-100K	$100-250K	$250K & up
	+10 pts	+20 pts	+30 pts	+40 pts

Source: Fair Isaac and Co. and Business Week

*** The criteria and weighting varies by both lender and model**

The Benefits of SBCS

When used appropriately, SBCS can benefit multiple stakeholders, including lenders, borrowers, and the overall economy. For the lender, SBCS increases the profitability of SME lending by reducing the time and cost required to approve loans and increasing revenues by expanding lending opportunities, including via risk-based pricing techniques. Borrowers gain through expanded access to credit, increased transparency in the decision process, and expedited loan approvals. By moving resources to productive investments in small firms, economic growth is promoted, with benefits in employment, output, and more equitable distribution of economic opportunity.

The Fair Isaac and Company estimates the total application and underwriting cost of an average SME loan, processed without scoring, to be between US$500 – $1,000. The estimated cost for processing the same SME loan, using SBCS, is between US$48 – $95. By helping to automate the decision process, processing times are also significantly reduced with SBCS, although the extent of this impact varies depending on whether the technology is used to produce an automatic decision or as a complement to traditional credit evaluation methodologies. Increased revenue can also result from the use of SBCS as lenders can safely approve marginal applicants that an individual underwriter might reject. Because credit scoring bases its results on a large pool of applicants, the scoring model may recommend accepting applicants that are “on the margin” and that would likely be rejected by the manual underwriting process. Revenues can also be positively affected by higher per loan revenues resulting from risk-based pricing. A study by the Federal Reserve Bank of Atlanta presents evidence that banks using SBCS receive a seven percent higher loan premium than banks that do not use scoring, in part due to the application of risk based pricing[4].

For the borrower, the benefits from SBCS include increased access to credit and, in some cases, lower borrowing costs. In its study of SME credit scoring’s impact on access to credit, the Federal Reserve Bank (FRB) of Atlanta found that, in general, the use of SBCS increased the amount of credit banks extended to SMEs. The study reported a 37 percent increase in the ratio of SME loans to total commercial loans among banks using SBCS. It found that banks using scoring were more likely to lend to SMEs that lacked sufficient financial information for approval through traditional underwriting methods. Presumably, this is due to the inclusion of the business owner’s personal information in the scoring process. The study also found that banks using scoring were more likely to lend in low-income areas, a fact it attributed to greater objectivity in the underwriting process. In addition, the FRB study showed increased SME lending outside of the branch proximity for banks using SBCS, likely resulting from a reduced need for face-to-face meetings with prospective borrowers. Lenders, however, should use caution in extending outside of their footprint.

How Banks Use SBCS

Banks in developed countries typically rely on credit scoring to decision only smaller loans. According to Benchmark International, most banks using SBCS use the credit score as the primary decision factor for loans up to US$100,000, which represent approximately 90 percent of all small business loans[5]. A small number of banks use scoring to decide loans as large as US$250,000 (95 percent of all small business loans). However, according to Benchmark, many institutions will use scoring to auto-decline loans as large as US$500,000, reducing the need to manually analyze those loans they are most likely to reject. While Benchmark's data indicates that the most sophisticated SME banks auto-decision up to 40 percent of their small business loans, most banks use credit scoring only within the context of their existing sales and risk management processes. Figure Three provides examples of how banks in the U.S. and UK incorporate credit scoring into their SME banking efforts.

Figure Three

Developed World Examples

Barclays Bank (UK) ***Focus: Supports the bank's focus on start-ups***	• Barclays has a niche focus on start-up small businesses • The bank bases its credit decision for the business on the credit score of the business owner • Business owner is personally responsible for repayment
BB&T (U.S.) ***Focus: One of several inputs into local decision making***	• SME banker uses credit scoring as just one of several decision-making tools • Local banker has decision-making responsibility • However, the bank has established guidelines and parameters to assist in making decisions
National City Bank (U.S.) ***Focus: Precedes manual centralized review***	• Each potential borrower is credit scored • Every application is manually, if briefly, reviewed by a centralized underwriter

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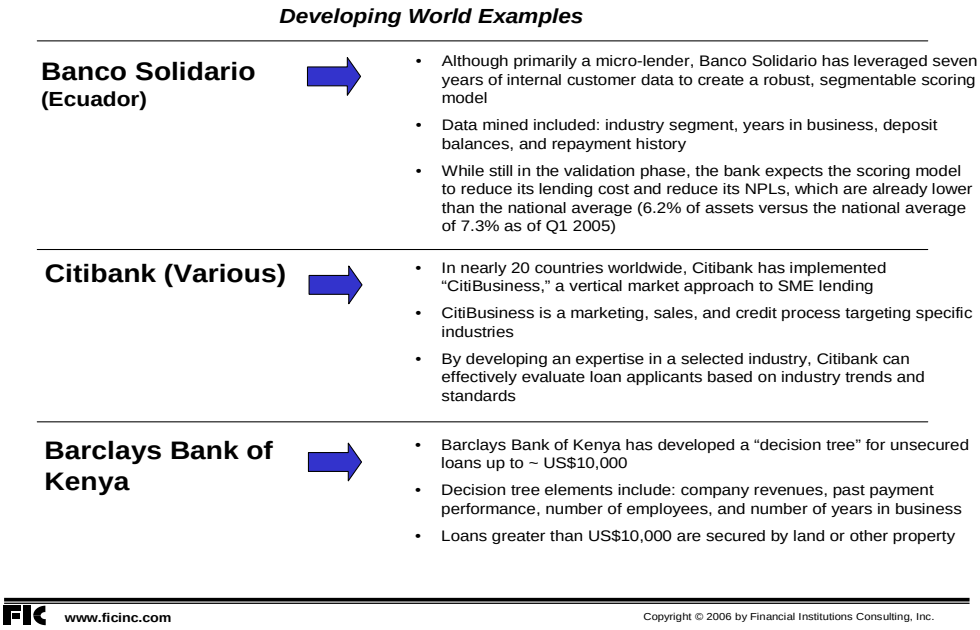
While top SME banks in some large emerging market economies have integrated credit scoring into their overall SME strategy, banks in smaller, less developed countries are only now beginning to use scoring-type approaches to standardize their SME decisioning processes. Figure Four provides examples of how several banks operating in developing markets have built scoring models that work within the context of their individual markets. Banco Solidario has created a nearly pure custom scoring model leveraging seven years of its internal customer data. The bank believes that it has enough historical data to create a highly predictive, segmentable database that will provide it a significant competitive advantage.

Citibank's model, called CitiBusiness, recognizes the limitations of a traditional custom scoring model, and, therefore, focuses only on SMEs within specific industry segments. CitiBusiness is a marketing, sales, and credit process that leverages institutional knowledge about specific industries in order to more effectively and securely lend to SMEs within those industries. For example, in India, Citibank believes that it possesses sufficient knowledge of the manufacturing sector to evaluate potential borrowers based not only on the applicant's business strength, but also on industry trends and standards.

In contrast to both Banco Solidario and Citibank, Barclays Bank of Kenya employs a more basic approach due to limitations in the availability and reliability of data. It has created a decision-tree scorecard for unsecured loans under approximately US$10,000. Elements of the decision tree include: company revenues, past payment performance, number of employees, and number of years in business. The bank has established hurdles for each element and it may deny credit to applicants failing to meet its requirements.

Figure Four



Challenges for the Adoption of SBCS in Developing Countries

There are several reasons for the limited adoption of SBCS tools in most developing country financial institutions. Challenges include the following:

1. ***Limited availability of timely, accurate, and reliable data in credit bureaus and similar data registries***. Lack of access to credit reports and other relevant financial data on both business owners and their small businesses reduces the predictive power of the models and limits the extent to which lenders can automate lending. While access to detailed data from lending institutions can partially overcome this challenge in a custom model development, SBCS models clearly perform better when they can incorporate credit bureau type data[6].

2. ***Poor record management and MIS systems in financial institutions***. Even in some top U.S. banks, the customer data required to create SBCS models may be stored in separate, unlinked databases – if it is captured at all. In our consulting work, FIC frequently encounters situations where banks are unable to link business and business owner information in order to develop a picture of the total relationship. Another problem is the fragmentation of data in financial institutions, where the more detailed information collected in the loan application is not easily combined with subsequent payment data and where information on declined loans is not maintained even though this data is critical for high quality SBCS developments.

3. ***Significant investment cost to develop SBCS tools***. The cost of developing a scoring model may also be a significant factor limiting implementation. Early adopters, such as Wells Fargo and Citibank, have invested tens of millions of dollars in their proprietary scoring models, sums that are prohibitive even for most large banks. While third-party "off-the-shelf" models are significantly less expensive, the Consultative Group to Assist the Poor (CGAP), a group working to improve access to financial services in developing countries, estimates the cost to purchase and implement a third-party model to be between US$20,000 and US$175,000, a substantial investment for smaller banks in developing countries.

4. ***Reluctance to share information on SME customers***. Banks universally view the information they have collected on their small business customers as one of their most valued assets. It is difficult to convince lenders unfamiliar with SBCS tools that they will benefit from sharing this data – with credit bureaus or with firms specialized in creating SBCS models. In cases where a few large institutions dominate the SME lending market, the obstacles to sharing information to improve risk management are even greater. These large lenders typically prefer custom SBCS tools, where they maintain control of the technology. They are likely to resist efforts to create off-the-shelf or pooled data SBCS models, which would benefit their competitors and create a more level playing field.

Conclusions

The use of SBCS in developed countries, particularly in the U.S., has allowed banks to reduce the costs associated with originating and underwriting loans to SMEs while at the same time improving the performance of their SME loan portfolios.

The impact of these benefits has been an overall increase in the amount of credit available to SMEs, which, given that sector's size and economic importance, has likely resulted in increased employment and growth.
Banks in developing countries are availing themselves of scoring's benefits to varying degrees. Even manual scorecards, such as those used by Barclays Bank of Kenya, help reduce the time and cost required to extend credit to SMEs. However, the largest benefit comes with the introduction of statistical scoring models, which require abundant and reliable information on both the business and its owner – data that are often lacking in developing country markets. Even when this information is at least partially available, the high cost of model development can put SBCS tools out of reach for all but the largest banks and financial institutions.

One possible approach to jump-starting the adoption of SBCS tools in emerging markets is to use pooled data models, which are the standard in the U.S. market. By obtaining detailed SME portfolio data from a number of lenders, deficiencies in external information sources, such as credit bureaus, can be overcome. In addition, pooled data SBCS tools can provide a lower cost alternative to custom model developments. Institutions that would be unwilling to invest in SBCS tools on their own, given the size of their SME portfolios, may be open to participating in a pooled data model development. The resulting pooled data model can be cheaper for small lenders on a per loan basis, as well as more robust and accurate given the fact that it is based on data from multiple institutions. Recent research by the World Bank and the Fair Isaac Company in several Latin American countries (Colombia and Mexico) demonstrates the feasibility of such pooled data SBCS solutions. However, without the proper incentives for banks to report their data and assurances that the data will remain secure from competitors, credit bureaus, particularly SME credit bureaus, will develop slowly, if at all, in many countries, limiting opportunities to develop and adopt SBCS tools.

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1. Source: U.S. Small Business Administration
2. Banco Solidario's model, discussed later in this article, provides one example of a custom model.
3. Pooled data models have been developed in the U.S. and Canada and are in development for Japan and Hong Kong.
4. Berger, Allan M. and W. Scott Frame, "*Small Business Credit Scoring and Credit Availability".* Federal Reserve Bank of Atlanta (May 2005)
5. Source: U.S. Small Business Administration, *"Small Business and Micro Business Lending in the United States for Data Years 2003-2004"* (November 2005)
6. Even in countries with sophisticated credit bureaus, the reliability of the information occasionally comes into question. A 2002 study conducted by the National Credit Reporting Association, an industry trade group, and the Consumer Federation of America found that 29 percent of consumer credit reports contain errors serious enough to result in denial of credit. Although there are no studies testing the accuracy of SME information, since scoring models incorporate both consumer and business data, inaccurate consumer credit reports could impact the reliability of the model.