Journal of Applied Finance & Banking, vol. 3, no. 1, 2013, 147-159
ISSN: 1792-6580 (print version), 1792-6599 (online)
Scienpress Ltd, 2013

Bank Lending To Corporations: Scenario Analysis as an Alternative to Traditional Metrics

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Abstract

For most financial institutions today, lending is a multi-step process that often is separated from credit review. In an ideal situation, the credit proposal delineates the inherent risks to the transaction. However, the thrust of the credit approval is more often the internal selling of the deal. As such, the credit proposal, if it does err, errs in overselling the strengths of the credit and in underestimating the risks in the transaction. The author examined some twenty loan agreements, and in every company or industry that was analyzed, the problems experienced could not have been discovered by traditional credit analysis.

There can be no substitute for the initial step of appropriate due diligence of past and expected results. Bankers should run scenario testing of pro forma financials, which applies probabilities to various future states, and a joint expected value is then calculated. The concept can only be effective if research is conducted to determine the causal factors that affect loan repayment. There is a gap in the literature in analyzing the behavior of corporate borrowers. The author suggests that non-performing loan experience should be studied over several years to develop regressions on various independent variables.

JEL classification number: G21
Keywords: Bank Lending, Bank Management, Commercial Lending

1 The Credit Decision Process

For most financial institutions today, corporate lending is a multi-step process that often is separated from the credit review process. For example, credit approvals for large loans at commercial banks either pass through a committee or up a chain of loan officers. In an ideal situation, the credit proposal delineates the inherent risks to the transaction;

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Article Info: *Received :* October 21, 2012. *Revised :* November 18, 2012.
Published online : January 15, 2013

however, the thrust of the credit approval is more often the internal selling of the deal. As such, the credit proposal, if it does err, errs in overselling the strengths of the credit and in underestimating the risks in the transaction.
The typical credit approval process for corporate borrowers involves a series of steps that are intended to protect the lender while ascertaining that the borrower can reasonably be expected to meet the lender's financial requirements.[2]

1. Developing a commercial lending philosophy and attitude toward calling on (marketing to) corporate customers
2. Preparing the credit request including appropriate documentation
3. Evaluating collateral in support of the loan
4. Determining whether the borrower has the potential for sufficient earnings to make periodic payments on the principal borrowed and of interest
    a. Review of audited financial statements including ratio analysis and construction of common-size financials
    b. Construction of cash flow statements showing operational, investment and financial sources and uses of cash
    c. Working with the borrower to develop financial forecasts
5. Preparing loan covenants that require specified levels of borrower performance during the period of the loan
6. Presenting the loan package to the bank's credit committee for approval
7. Drafting the formal loan agreement

Steps 2 through 5 are essentially based on various quantitative techniques, some of which use comparisons of recent performance using time honored metrics such as the current or quick ratio for liquidity, various turnover ratios for activity, the amount of debt on the balance sheet to determine leverage, and the return-on-sales or on equity for profitability. These measures focus on the past and not on expectations for future performance, although a thoughtful banker will request such forward-looking documents as cash budgets and pro forma financial statements. However, cash budgets and pro formas are largely based on the trend of past results.

2 Problems in Using Historical Data

This approach makes several assumptions that are at best problematic.

A. Recent borrower experiences cannot be simplistically extrapolated into the future. We know from various famous (i.e., Bear Stearns and Lehman Bros. in 2008) and lesser known experiences (i.e., Sunbeam Corporation[3] and Fortunoff[4]) that past success and growth are not indicators of future performance.

[2]This list and indeed this paper summarize a lending process that would require an entire textbook to explain. The interested reader is referred to Sagner and Jacobs (2011).
[3]Sunbeam, a manufacturer of small appliances, boosted earnings through inventory and equipment shipments when the then-chairman, "Chainsaw" Al Dunlap, decided to hype the company's earnings beginning in 1996 by shipping and billing consumer products to retailers, with a "side" agreement to accept any unsold merchandise for full credit. This allowed Sunbeam to report sales and earnings that met or surpassed stock analysts

B. Loan covenant requirements do not provide adequate protection against any significant deviation or deterioration. For example, a bank may demand that the current ratio not fall below 2:1, or that the company not spend in excess of $1,000,000 on capital equipment without prior lender authorization. However, for these two fairly common covenants, the current ratio may not provide an accurate measure of liquidity (reported in Sagner, 2009a), and a capital equipment restriction can be circumvented through an operating leasing of fixed assets, a non-balance sheet transaction.
C. Optimistic or incorrect numbers are often provided to the lender by the borrower. The author – a former banker – has seen numerous occasions when the future sales of a borrower may decline due to the impending failure of an important customer, competition from a lower cost vendor, a weakening industrial sector or other causes. However, the borrower wants the loan, and hopes that the situation will somehow correct itself.
D. All variables that may affect the loan may not have been anticipated during the process of credit analysis. The lending decision often focuses on the borrower, and may fail to consider important changes in the competitive environment, in technology, in regulation, and in other areas critical to the borrower's ability to repay the loan.

Data alone are not useful without context, and even upon gaining context, newly transformed information is still of limited value; Davenport and Prusak (2000). Knowledge, which requires human interpretation and judgment, is useful for decision-making but remains an ongoing challenge in organizations. Christensen (1997) has written an enormous body of material on the dangers of religiously following quantitative measurements. He cites numerous examples of well-run companies failing to capture important changes in the market because metrics led them the wrong way. Of more concern may be the statement of May (1997): "don't blame me, blame my metrics," meaning that hiding behind numbers can be comforting because of the illusion of diligence.

The immediate concern, the typical loan agreement, is essentially internal in its perspective, in that the banker's focuses are on the company and industry comparisons. This leads to the question of whether inadequate performance of a business – despite access to a credit facility – resulted from bad managerial decisions, which is the implied conclusion from traditional credit analysis. In other words, adequate past stewardship, as reflected in the appropriate quantitative metrics, may suddenly deteriorate despite access to capital, the same management team, the same product development expertise and similar resources. What is the explanation? And just as important, how can a financial

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expectations, driving the stock from $12 to $52. When the situation unraveled, Sunbeam's stock plummeted, Dunlap was fired by his Board (in 2001), and he was investigated and fined by the SEC.

[4]Fortunoff, a privately-held company, was a retailer of home furnishings and jewelry. The company filed for Chapter 11 bankruptcy in 2008 and again in 2009 due to weak sales, overexpansion, mismanagement and inadequate cash flow. Many of the company's vendors shipped increased consignments of merchandise and goods venture prior to the abrupt bankruptcy filing.

institution be protected from providing loans to such organizations that, in time, may become non-performing?[5]

3 Selected Cases on Lending

In researching a new book on corporate lending, the author (and his co-author) examined some twenty loan agreements, selecting several for inclusion in the text. Table 1 lists four of those situations with brief descriptions of the companies. In every company or industry that was analyzed, the problems experienced could not have been discovered by traditional credit analysis. Instead, they resulted from several factors: performance not essentially at variance from that of its deteriorating industry (Coldwater Creek); negative conditions in the economy (the chemical companies); apparent fraud (Krispy Kreme); and reduced demand due to the recession that began in 2008 (O'Reilly Automotive).

There is no evidence that standard lending protocols would have prevented these situations. In fact, the four cases infer that the use of restrictive covenants[6] might have led to the termination ("calling") of outstanding loans, making it extremely difficult for the companies to continue to do business and begin a recovery process after the most severe conditions had passed. Restrictive covenants are essentially short-cuts to the process of adequate *due diligence*, which involves either an investigation of a business prior to signing a contract – in banking, a loan agreement – or an act requiring a certain standard of care.[7]

These shortcuts are not always enforced; for example, a prudent banker may require the borrower to demonstrate that corrective actions are being taken and that any failures were more technical than substantive in nature. When a loan is terminated, the result can be dire. Not only is a financing source removed, but the entire financial community will become aware of the situation. In that event, the company may be forced into actions that could threaten its existence, affect its reputation with vendors and customers, and destroy goodwill that may have taken decades to build.

[5]A *non-perfoming loan* is a loan that is in default or close to being in default. Many loans become non-performing after being in default for three months, but this depends on the terms of the contract between the bank and the corporate borrower.

[6]A *restrictive covenant* is a condition in a commercial loan that requires the borrower to fulfill certain conditions or which forbids the borrower from undertaking certain actions. Typically, violation of a covenant may result in a default on the loan being declared, penalties being applied, or the loan being called.

[7]*Standard of care* was first defined in Vaughn v. Menlove (132 ER 490, Court of Common Pleas, England 1837), as whether a decision "proceed[ed] with such reasonable caution as a prudent man would have exercised under such circumstances."

Table 1: Selected Cases involving Bank Credit Agreements

Company/Industry	Time Period	Situation
Coldwater Creek: retailer of high fashion women's apparel	2007-2010	Operating losses in two of the past four years due to competition in the industry. Ratio analysis was not a strong predictor of mediocre performance as peer companies also suffered from weak business conditions and a lack of pricing power.
Dow Chemical, DuPont, Huntsman: organic and inorganic chemical manufacturing	2008-2009	Due to the credit crisis that began early in 2008, demand for manufactured products declined. As chemicals are in a situation of derived demand based on general economic conditions, the resulting poor financial performance could not have been anticipated by banks providing credit.
Krispy Kreme: retailer of premium bakery and other products	2002-2004	The appeal of freshly baked doughnuts was quickly offset by the premium price charged for the product. Difficulties experienced by numerous franchisees resulted in repurchasing of their operations, leading to various financial difficulties.
O'Reilly Automotive: retail replacement auto parts	2007-2009	Somewhat reduced sales of replacement auto parts due to temporarily weak economic conditions, which affected the company's performance against loan covenants and earnings as measured against prior years.

4 Where was the Due Diligence?

The due diligence noted in the previous section is not conducted by many banks for two reasons: a lack of resources and a lack of money.

4.1 Lack of Resources

Except for the largest banks, financial institutions do not have sufficient resources to investigate and understand complex companies. Until the past two decades, some banks either required their lenders to attend an internal credit training program or an external course often offered through a university or an expert organization.[8] This training exposed aspiring lenders to the quantitative procedures noted in an earlier section, using cases to discuss situations in a variety of industries. However, most banks have eliminated such training in the effort to control expenses.

However, only the largest banks are specialized by industry sector, providing the expertise and insight that is unavailable to smaller banks. Even super-regional banks – those of less than $100 billion U.S. in assets but more than $15 billion U.S. – see only a few companies in a particular industry.[9] This lack of industry experience inevitably leads to the use of the short-cut of covenants that may or may not be appropriate for a particular company.[10]

[8]For the content of one respected bank training course, see the University of Wisconsin's Graduate School of Banking program (2012). For an expert organization's training, see Standard & Poor's (2012).

[9]Other characteristics include a significant presence in one or more geographic regions, a small international presence, and a fairly extensive retail branch network.

[10]An unfortunate example of the shortcomings of loan covenants was the failure of Wachovia Bank in 2008 and its later acquisition by Wells Fargo. Wachovia Bank's loan portfolio showed a

4.2 Lack of Money

Profitability for any company requires that returns exceed the cost of capital. Banks either just earn the cost of capital or actually lose money on certain corporate lending activities. Lines of credit are among the most important of these products, probably constituting 15 percent of all bank lending activity. Returns on lines of credit were previously estimated by Sagner (2002); the methodology used in that model was extended for the purposes of developing the analysis reported in this paper.

Risk-adjusted returns are provided in Table 2, showing returns on committed lines, and in Table 3, showing returns on uncommitted lines. The allocation of capital to each loan type is based on standard risk-adjusted return on capital standards as required in the Basel protocols.[11] The revenue reported to the bank is net of the costs of officer calling, credit review and loan documentation but before any defaults from non-performing loans.

Research conducted for the book referenced in footnote 1 indicates that U.S. bank cost of capital is 12.9%.[12] When compared to Table 2 and 3 returns, it appears that banks can only make break-even (but not positive) returns when at least a nominal committed fee is earned and *before* default losses are included. Uncommitted lines return about 7.3%, which is substantially *below* the bank cost of capital even given the customary imprecision in compiling these calculations.

Table 2: Calculation of Returns on Committed Lines of Credit

	Return before Credit Underwriting						Return after Credit Underwriting	
	Revenue to Bank ($000)	Fee (in bp)	Credit Facility	Capital Alloca-tion (Cap All)	% Cap All	% Return	Reven-ue to Bank ($000)	% Return
Short-Term	$ 50.0	20	$25MM	$0	0%	INF	$ 25.0	INF
Long-Term	$ 125.0	25	$50MM	$1.0MM	2%	12.50%	$ 85.0	8.50
Total Return	$ 175.0			$1.0MM		17.50%	$ 110.0	11.00

significant jump in real estate loans during the mid-2000s with an increase in non-performing loans from 2006 to 2007 of nearly four times; see Wachovia Bank Corp. (2007).

[11]The Basel protocols involve two agreements and a third proposed agreement on the capital requirements of global banks; developed to provide some protection against illiquidity or failure; Bank for International Settlements (2012). Basel 1: The first international agreement on minimum capital requirements for global banks, approved in Basel, Switzerland, in 1988. Basel 2: Recommendations on banking laws and regulations issued by the Basel Committee on Banking Supervision. The purpose is to create international standards that banking regulators can use regarding the amount and types of capital banks must maintain. Basel 3: Draft regulations developed as the result of the credit crisis that began in 2008; involve increased common equity with banks required to hold 4.5% by 2015, then a further 2.5%, totaling 7%; the introduction of a debt leverage ratio requirement; and other measures to prevent a global financial system collapse.

[12]It is significant that in seven of the countries (excepting Japan, Canada and Great Britain), the after-tax cost of capital for the banking sector during the study period was between 11 and 12 percent. See Sagner and Jacobs (2011), Table 7-3, page 129.

Short-Term	$ 137.5	55	$25MM	$1.3MM	5%	11.00%	$ 112.5	9.00
Long-Term	$ 400.0	80	$50MM	$2.5MM	5%	16.00%	$ 360.0	14.40
Total Return	$ 537.5			$3.8MM		14.33%	$ 472.5	12.60

Notes: MM: millions, INF: infinite
Drawn (borrowed) credit facilities display fee income for 3 years.
Interest calculated as simple interest, without regard to the time value of money.
% Return: $ Revenue divided by Capital Allocation
Assumptions: For drawn (borrowed) lines of credit, the fee includes the commitment fee from the not drawn portion + 35 bp above LIBOR for short-term and 50 bp above LIBOR for long-term. Credit underwriting costs are $25,000 for short-term and $40,000 for long-term lines of credit. Fee in bp is multiplied times the credit facility to derive the revenue to the bank.

Table 3: Calculation of Returns on Uncommitted Lines of Credit

	Return before Credit Underwriting						Return After Credit Underwriting	
	Revenue to Bank ($000)	Fee	Credit Facility	Capital Allocation (Cap All)	% CapAll	% Return	Reven-ue to Bank ($000)	% Return
Short-Term	$ 87.5	35 bp	$25MM	$1.25MM	5%	7.00%		5.00%
Long-Term	$ 250.0	50 bp	$50MM	$2.50MM	5%	10.00%	$210.0	8.40%
Total Return	$ 337.5			$3.75MM		9.00%	$272.5	7.27%

Notes: See Table 2
Assumptions: See Table 2.
In addition: For drawn (borrowed) lines of credit, the fee includes the commitment fee from the not drawn portion + 35 bp above LIBOR for short-term and 50 bp above LIBOR for long-term. Credit underwriting costs are $25,000 for short-term and $40,000 for long-term lines of credit.

5 Are Banks Behaving Irrationally?

Why would banks offer credit at a loss at worse, or at break-even at best? This seemingly illogical decision appears to be due to various factors.

5.1 Strong Borrower Control

Banks have used profitability models only since about the mid-1980s, and the assumptions in these models are of questionable validity given the strong negotiating position of large corporate borrowers, at least until the present credit crisis. In other words, a strong corporate can negotiate reductions in commitment fees and loan covenant

conditions, and U.S. banks have been unwilling to hold the line on cost recovery strategies.
The largest companies take uncommitted lines, paying no fees, on the assumption that they are in a buyers' market – that banks will provide credit lines because of the prestige of the relationship and the potential for other product sales. It is only since 2008 that credit has become scarce and the control of the market – for the time being – has swung to the lenders.

5.2 Subsidization of Credit by Non-Credit Products

Credit products have been subsidized in the past by non-credit products and by investment banking since the passage of the Gramm-Leach-Bliley Act of 1999. Banks may knowingly (or unknowingly) provide no or low return credit products such as credit lines in order to have the opportunity to sell higher return products.
However, recent attempts at price increases to cover costs for certain non-credit bank services have experienced buyer resistance, and non-bank vendors offer competitive versions of several these products.[13] The strongest hope for the realization of this assumption clearly lies in investment banking fees, particularly given the collapse or forced merger of certain of these institutions in the past few years.

5.3 Selected Profitable Borrowers

Some groups of companies *are* profitable to banks for credit products. This group includes middle market and small businesses, and situations where reasonable returns can be earned in specific industries due to the absence of lending competition. Examples of the latter include the brokerage industry, where certain banks dominate securities lending, e.g., Bank of New York Mellon and J.P. Morgan Chase; commodities lending, J.P. Morgan Chase, Northern Trust and Bank of America; and factoring, which has been largely provided by non-bank financial companies (i.e., GE Capital) and a few selected banks.

6 Scenario Analysis

Industries, companies, and products are trapped in interrelated lifecycles. These patterns are not linear; they rise and fall driven by a variety of factors. In analyzing a borrower's capacity to repay a loan, banks should develop high and low thresholds of performance. A critical aspect of Christensen's work is the notion of disruptive innovation that radically alters the lifecycle of a business and its environment. Acknowledging these inevitable changes with a dynamic algorithm would be an important development in improving bank performance.
There can be no substitute for appropriate due diligence of past and expected results. However, this is only an initial step. Bankers should run scenario testing of projected

[13]For data on pricing, see Phoenix-Hecht (2012). For vendor information, see Politzer & Haney (parent company, ACI Worldwide) (2012).

future cash flows, income statements and balance sheets. In its most basic form, scenario analysis applies probabilities to various future states and a joint expected value is calculated. The technique is used in finance for risk management and in structuring portfolios of investments, but banks do not generally apply it in the consideration of alternative (particularly worst case) borrower outcomes.
Many authorities recommend that at least three "cases" be considered:

- A most likely case representing a defensible expectation for future results.
- A worst case that represents the greatest dangers and threats to the company's attaining its goals.
- A best case showing optimistic results from an improving economy and customer acceptance.

The forecast of financial results is then assigned probabilities for each scenario, which will vary depending on the bank's perception of the borrower's position. For example, the most likely could be assigned a 60% probability, while the worst case could receive a 25% probability and the best case a 15% probability. The result provides a range of possible results, and defines the riskiness of the loan.

7 Applying Scenario Analysis

Scenario analysis can be applied to any business organization; Table 4 shows the three scenarios developed for a privately-held consumer products company in the fast food business. The following assumptions were made in developing the most likely case, and others were constructed for the best and worst cases.

- Sales assumes growth at a slightly higher rate as experienced from 2009 to 2010
- Cost of goods sold assumes better cost control through inventory and purchasing management programs
- Operating expenses are assumed higher due to marketing and legal costs

Table 4: Scenario Analysis Applied to Expected 2011 Results (in millions of $)

	Most Likely	Worst Case	Best Case	Probable Outcome
Probability	60%	25%	15%	100%
Sales	$317	$308	$340	$318
Less: Cost of goods sold	$226	$257	$238	$235
Gross profits	$91	$51	$102	$83
Less: Selling and administrative expense	$50	$42	$55	$49
Less: Depreciation expense	$11	$11	$11	$11
Operating profit	$30	- $2	$36	$23
Less: Interest expense	$7	$7	$7	$7
Earnings before taxes	$23	- $9	$29	$16
Less: Corporate taxes (at 35%)	$8	0	$10	$6
Net income after taxes	$15	- $9	$19	$10

The relative evenness of these results is not surprising given the stability of this industry. The probable outcome shows net income after taxes of $10 million (and a worst case of a $9 million loss), which should be an acceptable risk in making a line of credit loan of $15 million.[14]

7.1 The Role of the Accountant

A case was deliberately included in this paper – Krispy Kreme – which had problems that could not have been detected by scenario analysis. The projections provided by that company included sales that were essentially based on accounts receivable which largely proved to be uncollectible. This is a situation where the customary process of financial ratio and common-size financial statement analysis is not terribly revealing. Bankers depend on representations made by accountants in their audited statements, and cannot go terribly far beyond that work in preparing analyses and developing conclusions.[15]

7.2 The Role of the Regulator

We depend on bank regulators (in the U.S., the Office of the Comptroller of the Currency) to protect depositors, stockholders and taxpayers from inappropriate lending practices, including too much concentration on a particular industry or geographic sector, offering credit to insufficiently experienced businesspeople, and the misappropriation of funds for purposes not intended when the loan was made. However, regulators are document and credit history-oriented, and do not consider changes in circumstances, a deteriorating business climate, actions of competitors or other forward-looking concerns that may have critical effects on the repayment of a loan.

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[14]Most lines of credit are structured as bullet loans, with the principal rolled over at maturity. The interest only payments on this bullet loan are $825,000 a year.

[15]In January 2005, the chairman, president and chief executive officer of Krispy Kreme retired under pressure when the possible fraud was detected. The board of directors engaged a corporate recovery and advisory firm to provide interim executive management services to the company. Since that time, the company has undertaken a number of initiatives designed to improve the company's operating results and financial position. These include the following: closing a substantial number of underperforming stores; reducing corporate overhead and other costs to bring them more in line with the company's current level of operations, recruiting new management personnel for certain positions; restructuring certain financial arrangements associated with franchisees in which the company has an ownership interest and with respect to which the company has financial guarantee obligations; and selling certain non-strategic assets.

8 Future Research

The concept of scenario analysis in bank lending can only be effective if research is conducted to determine the causal factors that affect loan repayment. There is a gap in the literature in analyzing the behavior of corporate borrowers. Various credit analysis systems have been developed in recent years to predict the likelihood that a firm will face financial distress or enter bankruptcy during the period of the loan; see Table 5 for a partial list of such systems.

Arguably the best known of these procedures is Altman's Z-score, which uses various corporate income statement and balance sheet values to evaluate a borrower's financial condition. The Z-score is a linear combination of five common business ratios, weighted by coefficients which were estimated by identifying a set of firms which had declared bankruptcy and then collecting a sample of ongoing businesses, matched by industry and size. Altman applied the statistical technique of discriminant analysis to datasets for publicly-held manufacturers, private manufacturers, non-manufacturing companies and service companies. The model was thought to be approximately 70 to 90% accurate in predicting bankruptcy shortly before the event, and has been accepted by auditors and some banks in support of credit analysis. Careful studies of other systems of credit analysis have generally disparaged these approaches as too simplistic and not capable of consistent prediction of credit outcomes in a dynamic economic environment; see, for example, Johnson, Nenide and Pricer (2004).

Table 5: Selected Credit Analysis Systems

Note: For the systems noted below, a bibliographical reference(s) is provided where the concept is not well established in practice.

- Altman's Z score: predicts the probability that a firm will become bankrupt within two years using various corporate income and balance sheet values (Altman, 1968, 2000)
- Cash flow models: accrual and cash flow variables in an attempt to predict firm failure (Aziz, 1988)
- Expert systems (also known as artificial intelligence and knowledge-based decision systems): proprietary systems (usually developed by banks or credit rating agencies) that attempt to clarify credit decision uncertainties (Duchessi, Shawky and Seigle, 1987, 1988)
- Emergence-from-bankruptcy prediction matrix: interaction model using solvency risk and liquidity risk (Bryan, Tiras and Wheatley, 2002)
- Inductive learning: refines the credit decision over time to improve the accuracy of the learning process using an 80 variable model (Shaw and Gentry, 1988)
- Moody's KMV RiskCalc: combines risk factors that reflect individual firm data from financial statements with systematic market factors, industry-specific and economy-wide market information (Bohn, 2002)
- Net Balance Position (5 step): estimates the cash liquidity of a business over an operating period using financial statement data
- Net Balance Position (9 step): uses recursive learning (Marais, Patell and Wolfsen, 1984) to extract logic dependencies in predicting loan defaults (Johnson, Nenide and Pricer, 2004)
- Rough set theory is a tool for studying imprecision, vagueness, and uncertainty in data analysis. It focuses on discovering patterns, rules, and knowledge in large pools of data (McKee and Lensberg, 2002; McKee, 2003)

Non-performing loan experience should be studied over several years to develop regressions on such independent variables as the following (as measured in company to industry and company to industrial sector comparisons):

- total receipts-to-cash flow (see Sagner, J. 2009b)
- return-on-equity (ROE)
- financial leverage
- inventory turnover
- accounts receivable turnover
- revenue growth (or decline)
- competitive initiatives
- technological initiatives
- the management of expenses
- senior officer stability and experience

Certain of these measures can be developed directly from a company's financial statements. Others (i.e., senior officer stability and experience) will require new measures and techniques of analysis.

While there may be a dearth of specific applications to assist with banking lending decisions, there is a body of knowledge that addresses overall organizational performance. Most notably, the Baldrige Award outlines the system competencies that organizations should build as a way to consistently achieve excellence. In much the same way, quality researchers such as Crosby, Deming and Juran designed programs that promote continuous improvement.

The common element in these programs is that financial metrics are not a reliable predictor of future organizational success because they are rearward facing and do not factor in organizational competency to consistently deliver favorable results. The initial step is recognition of the problem in bank credit decision-making; the next step will be to develop a rigorous analytical model.

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