Credit-Risk Analysis; Cutting Through the Fog

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Much can be done to improve the process of managing risk in the commercial lending environment. Recent advances in technology, continuous academic progress and a groundswell of practitioners motivated by the state of the economy create the ideal atmosphere for change. While pessimists remain paralyzed in the midst of what many refer to as the 'perfect economic storm', tomorrow's leaders are busy retooling processes that will make them stronger and better able to compete. This paper puts forth one change-opportunity that vastly improves the commercial lender's insight into loan-portfolio risk and opens the door to a new era of better risk management.

In a recent Harvard Business Review article, (Sull, 2009) postulates a brilliant example of the importance that reflexes and reaction-time plays in the corporate setting using the incomparable athlete Muhammad Ali to make his point. Indeed, (Sull, 2009) and others have marveled at the speed with which Ali recognized and processed his opponents' slightest and most subtle movements, allowing the great boxer to launch a spontaneous attack or defense. Many believe that it was precisely Ali's ability to detect and process *movement* that led to his extraordinary success. In stark contrast, business decisions related to credit-risk are often based upon events that have occurred in past history, severely limiting the opportunity to react and respond with the optimal strategy.

In fact, credit-risk management is especially prone to decision delay. The root cause of this delay is that the risk-analysis process is constrained by a decades' old approach commonly used to expedite, collect and analyze historical financial statements that are oftentimes a full fiscal quarter back in time. This rear-view mirror approach affords little opportunity to mitigate risk in today's environment where change may occur in months if not days. The process was developed during a time when creating and exchanging financial statements was considered burdensome and problematic. Indeed, during the pre-technology era where the speed-of-business was decidedly slower, the process was appropriate and served the lender well. Such is no longer the case.

To overcome this problem requires a departure in the way that we think about, and measure risk. Like Muhammad Ali, the idea is to recognize subtle changes much faster in order to create a valuable window of time from which to execute the appropriate strategy. To do this effectively requires the credit manager to shift his or her analytic focus from one that is static or fixed, to one that recognizes changes to measures that represent risk. Measuring the rate of change of any metric versus a fixed-point in time not only makes intuitive sense but has been validated by academics including (Carton & Hofer, 2006) and others who clearly demonstrate that changes to the output of financial metrics may be more important than the measure itself. Indeed, (Carton & Hofer, 2006) state that the rate of change may provide as much as five times more information about what lie ahead compared to the static measure. This is especially important in the lending environment where change is analogous to volatility and volatility is analogous to risk.

Measuring change and movement requires data to be captured and analyzed more frequently. Indeed, it only makes sense to compress time increments to allow for greater opportunity to identify and interpret subtle changes that tell the story that lie ahead. Since business models vary, the change must be expressed using measures that reflect the individuality of the company. Finally, and perhaps most important is that the measure must be universally understandable to the extent that it can be used practically in the context of the relationship with the client.

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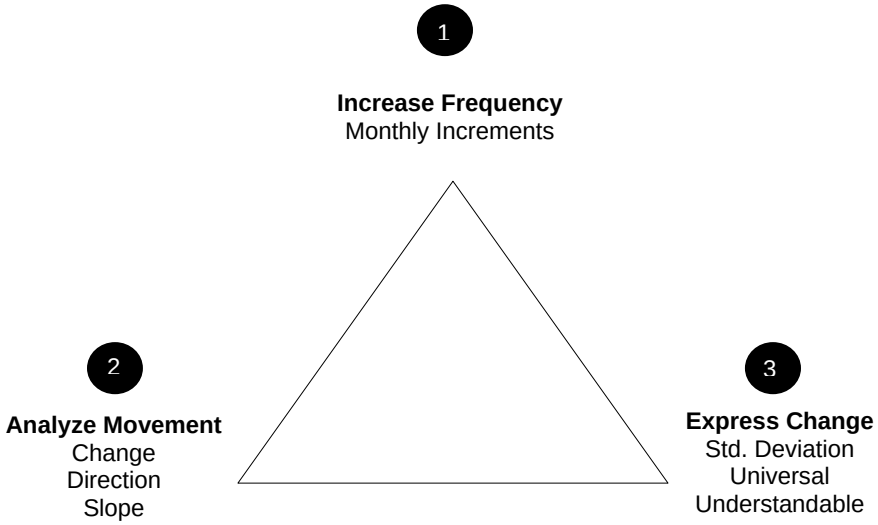
The way forward-
Too often, credit analysts are forced to quantify risk based upon data that represents a historical snap-shot in time. Further, most metrics are geared to work with a full year's worth of data making it difficult for analysts' to detect change that has occurred between the two periods. As a consequence, most risk assessments reflect a past-tense position of risk that leaves little if any time to respond.

To overcome this problem-
Improving the risk management process requires a shift in focus from one that is *static* and historic to one that is forward looking and proactive.

❶ **Capture and analyze monthly data.**
- Increasing frequency from quarterly to monthly intervals does not result in output that is 4X more meaningful, it may be 100X more valuable or greater depending upon the metric.

❷ **Shift analytic focus away from one that is static toward one that measures *movement* and change.**
- Observing movement, direction and trend supports a forward looking assessment of risk.

❸ **To analyze and express movement and change effectively, both the metric and the measure of movement must *'fit'* the company.**
- Choose the right measure for the job.
- Express risk using standardized statistical techniques. See (Grabski, 2009).



Practical Example-
One ideal tool for measuring risk is the *Z*-score. The *Z*-score is a multivariate equation developed by Edward Altman, a renowned Professor at New York University's Stern School of Business. The principle use for the *Z*-Score is to determine the company's relative solvency. Academic literature shows that the Z-score provides an accurate indication of default up to two years prior to distress and subsequent failure (Altman, 2000). Developed in 1968, the *Z*-score is used around the world by financial professionals to measure the degree of financial distress. First developed for public companies, the *Z*-score is widely accepted among academics and practitioners alike to be the empirical standard by which other distress models are compared. The *Z*-score has gained widespread recognition as a reliable predictor of bankruptcy with statistically significant accuracy levels of 93.9% within one year of default (Altman, 2000).

Making the most of the *Z*-score

The *Z*-score is a discrete measure that represents one static moment in time. However considerable power and insight can be gained by evaluating the incremental *behavioral trend* of the *Z*-score. That is, the direction and slope of the *Z*-score versus time provides considerably more insight into firm viability than one discrete measure of the score itself. Put simply, a low but steadily inclining *Z*-score provides more useful information than one specific snap shot in time since it provides insight into the future direction of the firm. A recent study performed by Carton and Hofer (2006) for example demonstrates that observing the change to the *Z*-score provides five times more information than when compared to a snapshot of one moment in time. Indeed, such a scenario provides some indication of the position of the firm in the subsequent period for which the analyst is concerned. For example, a trailing twelve month trend line updated each month provides the analyst with powerful insight into the likelihood-of default that may far exceed the single moment in time snapshot that pays no respect to either the direction or the trajectory of company performance.

More meaningful still is embracing a strategy to measure the actual movement of the *Z*-score itself. Financial distress is often preceded by a single erratic fluctuation of the *Z*-score that occurs months before simple covenant ratios or other financial metrics show any sign of stress. Thus, capturing this movement provides an extraordinary early warning signal that may significantly lengthen the time-window to respond with the appropriate strategy.

Measuring Movement

Measuring the intrinsic volatility of the *Z*-score and other measures provides critical insight into firm-specific or idiosyncratic risk that far exceeds that of traditional methods. Indeed, statistical measures can be leveraged to express behavior in the form of increments of the standard deviation to provide output that is both meaningful and universally understandable. More importantly, this approach widens the default time horizon and significantly increases the lender's time to respond.

Conclusion-

By identifying early-warning changes in movement faster than his opponent, Muhammad Ali increased the time-window to respond. Likewise, the lender that identifies a problem months ahead of financial distress is provided with considerable opportunity to mitigate risk. This can be accomplished today by compressing time-intervals and drawing upon risk analytics that provide advance warning of financial stress.

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