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Credit Policy:
On The Art And Science Of Credit Analysis

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Table Of Contents

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On The Art And Science Of Credit Analysis

There are two different approaches to credit analysis and each has its role and purpose. Fundamental credit analysis performed by professional credit analysts remains, in our view, the most powerful type of credit analysis for market participants who take credit risk. However, it may not always be the fastest or the cheapest mode of analysis. Quantitative credit models introduced over the past 20 years can provide low-cost, high-speed alternatives, but they inherently lack the ability to capture qualitative nuance or to filter out those times when market participants may not be acting rationally. Sometimes, too, highly complex credit models can rely on assumptions for which the empirical support may not be relevant to--or sufficient to address--conditions going forward. Because of the numerous limitations of quantitative credit models, rating agencies continue to emphasize fundamental credit analysis as the mainstay of their ratings. To be sure, rating agencies use models extensively in combination with fundamental analysis, but not as a substitute.

Credit Model Pros And Cons

The pros

In general, one can divide quantitative credit models into two major types: models that infer default risk from financial data and other quantitative inputs related to the business fortunes or financial condition of an issuer; and models that infer default risk from bond prices or credit default swap (CDS) spreads. The first are sometimes called "structural models" because they attempt to capture the underlying drivers that could make a credit default--such as when a company's liabilities exceed its assets. The second are sometimes called "reduced-form models" because they skip over the underlying drivers and use bond prices or CDS spreads as direct indicators of riskiness. Both kinds of models appear in many forms and with varying degrees of complexity.

Both offer the strongly positive features of being fast, cheap to use, and consistent. Given the necessary collection of input variables, a quantitative credit model will produce an "answer" almost instantaneously. Too, the incremental cost of running a model on one more set of inputs is minimal. And, given the same inputs, a model is generally designed to produce the same output every time.

Models have a natural appeal to many business professionals. They use the highly evolved techniques of statistical inference and data analysis developed and tested in engineering and the physical sciences. The education that many financial professionals receive in math, science, or statistics classes can make them predisposed to view a model's results as particularly credible.

Many credit risk models produce output in the form of numerical estimates of default probability or expected loss. The exactness of the output helps to meet professionals' desire to have tools that offer the highest precision. Some models go even further, using statistical concepts such as standard deviation to produce confidence intervals (i.e., margins of error) around their primary estimates. Those additional measures help guide professionals in using model outputs by adding insight about the reliability of the primary estimates.

The cons

But there is a negative side, as well. Both types of models rely on the notion that there is a generally stable relationship between their input variables and credit risk. This is an important point because relationships that seem stable during benign conditions may not be so during times of stress, which is exactly when it becomes most important to have meaningful assessments of credit risk. In this vein, rapidly changing conditions--whether relating to a specific credit, to the credit markets broadly, or to the entire economy--pose some of the toughest challenges for quantitative models. These situations sometimes provide stark reminders that credit analysis (and finance in general) is not a physical science.

Many structural models for corporate credit use the price of a company's stock as a key input variable. If stock prices become irrationally inflated, a structural model may underestimate credit risk. Likewise, reduced-form models may underestimate credit risk when bond prices or CDS spreads reflect unjustified optimism about credit conditions.

Another key shortcoming of quantitative models is that they inherently de-emphasize qualitative factors. Models are biased toward variables that reflect easily quantified phenomena and ones for which available data are abundant. Indeed, models implicitly encourage their users to disregard phenomena that are difficult to quantify. In essence, quantitative models take qualitative factors off the table, given the way they infer default risk from purely quantitative factors. In this way, the exactness of the outputs from some models may reflect a false precision that can lure professionals into overreliance on their models. Moreover, even when models provide confidence intervals around their estimates of default probability (or expected loss), the confidence intervals themselves may not fully capture reality. This can be especially important when the key drivers of uncertainty about the future are difficult or impossible to quantify.

A further shortcoming of models that infer default risk from bond prices or CDS spreads (i.e., reduced-form models) is that they may rely on several questionable--but often unstated--assumptions. For instance, such models implicitly assume that bond prices or CDS spreads carry all the necessary information from which to gauge credit risk. This amounts to assuming the validity of the efficient markets hypothesis (EMH) from economics. The EMH states that the price of a security always reflects all available information and, therefore, that a marginal investor should not be able to outperform the market by analyzing publicly available information. However, important kinds of real-world events appear to contradict the EMH, such as when bubbles occur or when security prices move sharply in the absence of relevant new information.

Another theoretical shortcoming of reduced-form models is their implicit assumption that the effect of non-credit factors is negligible. That is, many models contain the implicit assumption that differences or changes in prices and spreads reflect differences or changes in default risk, rather than differences or changes in non-credit factors. For CDS, examples include differences or changes in liquidity, as well as differences or changes in legal risk, settlement risk, and counterparty risk.

Finally, there is the issue of model risk--the risk that a model does not sufficiently describe reality to produce useful results. Model risk can arise if the empirical basis for key assumptions could also support alternative assumptions. For example, some portfolio credit risk models use assumptions about the correlation of default risk among the items in the portfolio. Such assumptions may address both the framework for correlation (e.g., Gaussian copula, time-varying correlation, regime switching, etc.), and the degree of correlation between individual items. Even if the empirical evidence supports the chosen assumptions, it may equally support alternatives. In such circumstances, it may be impossible for the model's designer to determine which assumptions would give the model the greatest fidelity to the real world. In such as case, there may be model risk.

Fundamental Credit Analysis Pros And Cons

The pros

Fundamental credit analysis offers the ability to consider qualitative factors, even when they are difficult to quantify. Fundamental analysis can take a view on the strength of an issuer's management and the effect of strategies for introducing new products or for diversifying into different businesses or regions. Fundamental analysis can consider the effects of conflicting agendas, different political environments, and different organizational structures for governmental issuers. Also, professional analysts performing fundamental credit analysis can adapt their analyses in response to rapidly changing market conditions or to unanticipated events. We believe fundamental analysis has the ability to handle mergers, acquisitions, wars, natural disasters, and the simple bursting of irrational market bubbles better than quantitative credit models can.

Another positive feature of fundamental credit analysis is that it provides explanation and insight behind its bottom-line conclusions. That is, professional analysts performing fundamental credit analysis supply a rationale in support of their conclusions, not simply "naked" conclusions.

A third positive feature of fundamental credit analysis is that professional analysts can use quantitative credit models as part of their analysis and thereby harness some of the advantages of those models, while retaining the benefits of fundamental analysis in their overall process.

A fourth positive feature is that fundamental credit analysis generally avoids false precision. It recognizes the inherent limits to the precision of the analytic process. Practitioners generally do not express their conclusions in the form of point estimates of default probability or expected loss. Rather, they usually communicate in terms of ranges. Rating agencies do this through the use of rating scales, in which each rating symbol corresponds to a range of creditworthiness, as defined by the rating agency. In addition, because key drivers of uncertainty may be qualitative in nature, we believe the holistic approach of fundamental analysis can often yield better insights about the main conclusion.

Another positive feature is that fundamental credit analysis often includes various types of stress testing and scenario analysis. These forms of analysis can be quantitative, but they are distinct from both structural models and reduced-form models. We believe stress testing and scenario analysis are properly viewed as aspects of fundamental analysis because qualitative judgment informed by historical experience--i.e., fundamental analysis--provides the basis for defining stress scenarios for testing.

The cons

Nevertheless, fundamental credit analysis can have certain significant disadvantages. Because it is inherently labor-intensive, it is slower and more expensive than purely computerized analysis. It can be particularly time-consuming when a large number of credits must be analyzed in a short time. It can also be expensive when risks other than default risk are present and available resources need to be concentrated on achieving the best possible analysis of those other risks.

Also, human credit analysts, like all humans, can be influenced by bias from any number of emotional or psychological factors. Different analysts can reasonably reach different conclusions when examining the same situation. More pointedly, the same analyst might reach different conclusions at different points in time in light of intervening events.

A further shortcoming is that the supply of skilled analysts to perform fundamental credit analysis is relatively limited and, as a general proposition, cannot be quickly increased. A proficient credit analyst cannot be made in a day, or even a year. As in other professional disciplines, it takes years of education and experience to make a skilled analyst.

Another issue for fundamental analysis is the potential for users of the analysis to misinterpret the conclusions. Because conclusions often are communicated in the form of symbols, users need to understand the vocabulary (i.e., the symbol definitions) in order to understand the conclusions fully. This can be difficult if similar symbols mean different things in different contexts or if different analytic firms use similar symbols to mean different things. (Standard & Poor's intends for its rating symbols to connote a reasonably comparable level of creditworthiness across all product areas. See "Understanding Standard & Poor's Rating Definitions," published June 3, 2009. The calibration of Standard & Poor's rating scale is independent from how other rating agencies calibrate their rating scales.)

Finally, like models, fundamental analysis is grounded on the notion that knowledge of the past can serve as a guide for understanding the future. In this respect, even though a professional analyst generally can handle unprecedented situations better than a computer model, that ability is far from perfect. Unexpected events that rise to the level of a "paradigm shift" or "regime change" may thwart the analytic efforts of even the sharpest analysts.

The Right Tool For The Job

Computerized models and fundamental analysis each present a combination of advantages and disadvantages. We believe computerized credit models generally are likely to excel over shorter time horizons and at addressing scenarios reasonably close to the status quo, while fundamental credit analysis typically is likely to excel over somewhat longer time horizons and at addressing more stressful scenarios. Arguably the best overall approach is to use both together, each focused in its area of relative strength.

Although computerized credit models have a number of desirable features, they cannot, in our view, deliver a complete solution that meets all needs and covers all situations. The models necessarily treat the real world as simpler and more orderly than it really is.

The answer to the question of which tool to use is almost self-evident: Do not oversimplify. But this cannot mean not using models. Models offer real benefits that should not be ignored. Rather, it means understanding the limitations of quantitative credit models and using them in combination with solid fundamental analysis.

The Bottom Line

The purpose of all credit analysis is to help investors make real-world decisions. Computer models may be the tool of choice for guiding decisions that focus solely or primarily on quantitative factors. Fundamental analysis can offer a preferred approach for decisions that require business judgment, experience, intuition, imagination, and common sense. We believe using each approach in its area of relative strength offers the best overall strategy for addressing credit issues as an aspect of risk management or investment decisions. Understanding when to use each is critical because the ultimate responsibility for those decisions rests on professionals and not on their tools.