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CHAPTER 11

# A STRATEGIC MANAGEMENT INSIGHT INTO MODEL RISK IN RATINGS

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## ABSTRACT

In the present chapter, we propose a strategic management simulation approach to model risk in ratings. As companies prosper in developed or emerging markets, and they duplicate their successes in these areas, they have a template that deals exclusively with risk and this gives them the first mover advantage over their competitors. This simulation permits insight into forecasting sales volume, costs, and other influential factors.

The approach adopts elements of strategic management, risk tools currently in use and a performance management tool too creating a new risk management template that will attempt to be conducive to model risk in ratings. In essence the proposed template will heighten the elements in regard to model risk and look at new ways to approach it.

## INTRODUCTION

Strategic management is the management art of guiding an organization to reenergizing its goals and to work in tandem, all within a company and responding to a changing environment. It is a disciplined approach to induce fundamental decisions and actions that shape and articulate the organization to focus on the future.

In order to be strategic the organization requires a clear distinction of what are their objectives and to incorporate at a conscious level their responsiveness to operate within a dynamic environment. Strategic management is a discipline, and a sense of order and rigidity needs to be applied, but also requires a certain amount of flexibility, as the dynamics of the environment changes it needs to adapt, yet still maintain a focus and productive approach.

There are issues raised that assist the strategists to examining issues, test assumptions, collate and retrieve data, from a historical point and to rationalize within an educated best guess on how the organization will be positioned in the future.

The dynamics include fundamental decisions and courses of actions, as the choices include the what, why, and how the company does things. In applying an effective strategy this includes a myriad of questions posed, and the choices made are tough, challenging, and may even bring discord, but these in reality are the challenges that need to be faced in bringing the organization to compete in the global market.

The basics of a supportive strategy should be the backbone of strategic thinking: Are we basing our decisions ethically and on soundness, do we fully understand the environment we operate in, and are there any internal and external mechanisms that hinder us to attain our goals? In short, it can be stated, that strategic management prepares and gears the organization to interact accordingly.

Since strategy is an evolving dimension and nothing in its environment remains stable, organizations need to reshape themselves as they encounter new environments and hindrances arises. This includes the willingness to be flexible, psychologically sound, and to effectively make proper judgments. There is a sense of creativity involved in strategy and the tools utilized and data analyzing is not the only ingredients in articulating a strategy, but only the rationale of the people involved. Strategy does not fly straight and deviations along its path will disrupt the process.

Twenty years and more ago the world was a comparably stable and predictable place and on the one hand, strategist could plan over several years to ascertain the goals. Now, all has changed, markets are volatile and one financial crisis can topple markets and cause a worldwide catastrophe. To critically formulate a workable strategy is at best said difficult and fundamentally only a course of actions that the organization proposes and foresees as the best alternative. The approach taken in this insight is essentially a strategic thought, but the management of how the model risk in ratings also needs to assess on the impact of the efficiency and effectiveness of the

support systems that organizations use in providing accurate information and to reducing their risks.

As for the development in providing new insight, previous literature requires a thorough examination and a definite need to identifying the key points. This approach is also argued in the development of strategy and evaluation and alignment with its environment, with specific focus on a framework that develops the strategic plan. External market data and program evaluation results provide critical data to support strategy development. Without this information and insight, the organization's strategies will not be in alignment with or effective in the marketplace. The critical issues list serves as the specific focus and framework for the activities of the organization and the pattern of these activities (developing and selecting the strategies). Issues would include: Do the issues that relate to the company's overall strengths and knowledge base and how to integrate these two and propel ahead; is the approach sound; does it answer the right questions; and are we structured accordingly to meet future demands on the existing framework and, if not, what do we need to change?

The inclusion of having the right information and enabling the correct actions is a factor that cannot be underestimated and especially in ratings this is essential in making the right assessment. The need to properly assess the data, how it was acquired, and verifying and disseminating is all crucial to the overall process. This is a systematic approach and has been well documented, but there still seem to be flaws in the generic makeup and this needs to be addressed. Ultimately the strategic management insight is also to reduce the cost overlay, alleviating a high degree of uncertainty and risk, yet still adding value to the decision and creating information that is useful to third parties alike. This concept should be rational, within reason, and reflect adequately to what is being assessed and given the context of the purpose be clear of bias and partiality, and provide information.

The decisions gleaned should derive from a sound framework and has check points and if need be stop gaps where the process can be halted, if deviations occur and correction measures taken. Previously it was mentioned that ultimately people are involved in the overall decision making process and it is within this context that the decision makers would rationalize to make the correct decision, but as we have seen with the subprime crisis and eventually leading to the credit crisis, analysts grew bolder and started to take larger risks.

These decisions ultimately led to the crisis unfolding and it was quite clear that the decisions made were unsatisfactory and the focus was not from an objective and realistic point of view. With regard to these decisions and the

adaptation of a strategic point of view, the following themes would be incorporated within the insight proposed: Assessments are to be tailored on the evaluation approach to the specific decision proposed and critical information easily obtainable and based on a mixture of financial and strategic decisions.

In 2008 we saw a new phenomenon occurring: Governments nationalized financial systems and a major bailout from the United States government in order to subvert unemployment and restore stability in order to foster a burgeoning economy; and investment banks that were common employment haunts for MBA graduates either shrunk, disappeared, or were merged with the their more robust competitors. The all-too-common energy source, oil, spiralled, while in some countries the residential properties derailed and expectations are more to come.

The uncertainty within the economy has bought some valuable lessons and this will make the proposed model sturdier and more able to withstand the knocks of this new global order that will emerge after the crisis has dissipated; lessons learned and knocks taken will not be easily repeated. Governments will intervene and regulate their national financial systems and this in turn will lead to a more robust global financial system, but it is still up to industry to ultimately be the players in the financial world and this will determine if industry will be able to avoid a decline and respond accordingly.

According to what we know:

- The financial drive within a global context is not functional.
- Governments are trying to stimulate their economies.
- Globalization has introduced trade and growth and free movement of capital.
- The 2008 U.S. domestic crisis has spread globally.
- Already in certain economies, foreign direct investment has shrunk.
- Unemployment is at an all-time high and looks to escalate further.
- The thought of nationalizing certain industries is under consideration.
- Short-term and long-term government intervention is proposed and initiatives undertaken.
- New models are proposed and undertaken.

The models proposed are being envisaged and introduced; it is within this context and time of volatility that we propose a strategic management insight into model risk in ratings.

Thus far, we have provided a basis of what is strategy and have included the elements of strategic decision making and also looked at the uncertainty that lies ahead. The template this is proposed consisted of the process of strategic making, but as stated in the abstract, it would be and includes risk

tools currently in use, as this has to a degree provide the essentials to promulgate the proper choices to a certain degree. What is new is the tool of a performance management element will enhance a new risk management template and focus on the internal as well as the ultimate outcome for the decision makers.

In essence the proposed model will heighten the elements in regard to model risk and look at new ways to approach it.

## DESCRIPTION OF A TYPICAL RATING METHOD IN THIS CATEGORY

Within the scope of a commissioned research project by Germany's Saxon State Ministry of Economics and Labor, which conducted the Institute for Practical Economic Research and Economic Advice together with the Technical University of Dresden, Germany as well as the advisory association WIMA GmbH, RMCE RiskCon GmbH, and the FutureValue Group AG, for the first time in the determination of a rating for about 150 Saxon companies, a simulation model as a stand-alone rating system has been introduced that can

- Directly reduce the chance of insolvency from the simulation and therewith
- Make rating prognosis possible

A simulation allows a company to forecast sales volume, costs, and other influential factors that would appear on balance sheets, for a project-leader through a planning period of over five years in consideration of the interrogated risks. With the help of simulation-based calculation methods, one can receive an allocation for the balance sheet profit and of the liquidity of the company, whereby the chance of insolvency through excessive indebtedness or liquidity over a period of five years can be directly determined. Then a rating-note or a rating-grade rank can be aligned to the subject, in such a way that the probability of failure can be determined. The initial point of derivation for this rating is the description of the probability of insolvency. The cause of insolvency is self-evident in the following situations:

- An excessive indebtedness, meaning the figure of (economic) capital is smaller than zero
- Liquidation, meaning that the payment obligations are no longer covered through liquid funds and an agreement for short-term credit is made

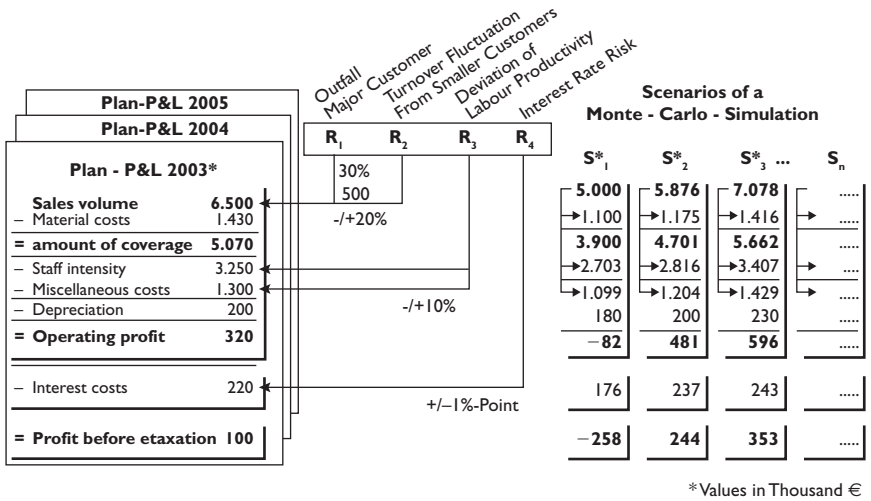
In order to be able to determine the probability for excessive indebtedness, the allocation function of the owned capital has to be determined in each period. This result defines the capital acquired over a period of time from the capital acquired in the previous period, plus the changes of the surplus saved capital and of the deposits and withdrawals, as well as of the retained balance sheet profits, whereupon an alternation of capital-similar funds such as bonds and bindings against allied companies or associations or deposits of informal associates are not included in the planning period. Then with yearly records and analysis of acquired capital, a probability of a nonpositive capital can be determined, which precisely matches the cause for insolvency: "excessive indebtedness."

However, since, as a general rule within companies, no excessive documentation of indebtedness exists, as there is concentration on the vital assets, excessive indebtedness occurs. If the companies have hidden reserves in a larger amount, the probability of default will be estimated too high. If on the other hand high derivative company values, through acquisition, are in the balance sheet, it is possible that the probability of default can be underestimated. The situation of liquidity occurs for a company, if its payments-out exceeds the payments-in plus liquid funds plus not yet exhausted credit lines. But before this situation occurs, the company still has several adaptabilities. Especially investments that can be delayed or even abandoned. Through downsizing or short-term work from personnel, a state of liquidity can also be salvaged.

Main components (regarding the company model, which was the basis of such planning) are the calculation of profit, and the calculated estimate of loss as well as the budgeted balance sheet (see Figure 11.1). The interest applies for the allocation function of capital as well as liquidation. For the aforementioned indicators of profit are modeled according to the formula "profit, is sales volume minus expenses," this means, on one hand, sales volume process and, on the other hand, costs process, and its details must be described.

In determining the probability of insolvency for the period of mid-term company planning, the company is seen through randomly determined processes, means, and affine-linear dependencies on the sales volume (detailed specifications are found in Leibbrand, 2002 and 2004, as well as Gleißner and Leibbrand, 2004a and 2004b). As randomly defined processes establish the sales volume, the material recovered paper utilization rate, the personnel costs, and the interest rates could be modeled, whereby the aforementioned processes make the base variation possible and thus the calculation of the insolvency probability. As a means for discovery, the attitude towards investing, the personnel adjustment, the distribution politics, and the setting of a credit line would be appropriate. Affine-linear dependencies of different balance sheet

**Figure 11.1 Randomly Determined Company Model**




and profit-and-loss positions of the sales volume define the penetrating power of turnover fluctuations on the acquired capital and liquidity.

Risks that exist within the company like machine failure or miscalculations are considered as separate stochastic processes.

At the execution of the simulation in one run, for example (see scenario S1 from Figure 11.1), it is assumed that in the company that the greatest client drops out (which is why the sales volume in Figure 11.1 drops from the estimated value of 6,500 to 5,000), a major order gets miscalculated (the other expenses rise from 20 percent of the sales volume to 22 percent) and personnel expenses rise (the personnel expenses rise from 50 percent of the sales volume to 54 percent). The accumulation of these unfortunate circumstances leads to an annual loss of €258,000.

If assuming only an acquired capital volume of €150,000 is at hand, this loss cannot be absorbed, so that insolvency on the basis of excessive indebtedness comes into existence. In another scenario, in which the sales volume rises by 9 percent, the material-recovered paper utilization rate stays constant; at constant wages, productivity growth can be reached (scenario S3 in Figure 11.1) and the company reaches an annual surplus in the volume of €353,000 before taxes and at a tax rate of 44 percent €198,000 after taxes, thus an extraordinarily good result. Ten thousand simulation runs stated that the frequency diagram from Figure 11.2 (354 simulation results can not be displayed because they are located outside of the area from −230TE and +250TE).

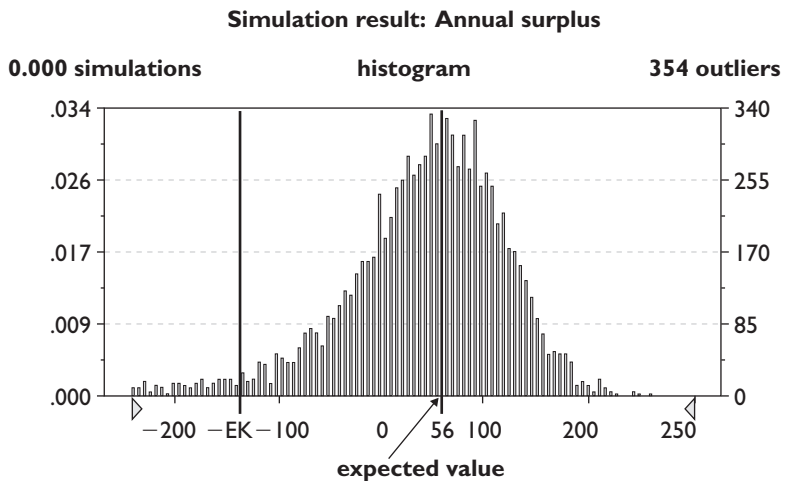
The determination of rating through randomly defined company planning has a crucial theoretical advantage compared with traditional rating systems; that fluctuations of the income level are modeled and that it is solely aimed towards the future. Theoretically, over time, the randomly defined company planning model is the optimal path, which although requires careful consideration, can prove itself as worthwhile, if, for example, it becomes laborious, complex, or even impossible for a credit institution to receive the relevant information.

## CONCLUSION

Through increased simulations, the probability of insolvency can be user-defined, approached delicately, and without information being given directly at a desk. Whether the calculated probability of insolvency matches the actual, depends on two set screws: the quality of the company model and the quality of the assumed stochastic processes.

From the Saxon rating project, it is known that the modeling of the company has a crucial influence on the probability of insolvency. If, for instance, for an East German enterprise, the accelerated depreciation remains unconsidered, the probabilities of insolvency will be displayed as far too high. It is also easy to understand the modeling sensitivity for the effect of a sales collapse on the annual surplus. If, for example, no personnel are dismissed at a sales volume calibration, then as a general rule, insolvency has already occurred.

**Figure 11.2 Simulation Result of the Randomly Defined Company Planning for Annual Surplus**



The second big lever on the rating result comes from the modeling of the stochastic processes and their correlation structure. For instance, are the expenses for products and the staff members positively correlated, how high is the risk of flood water damage? Also, here the Saxon rating process showed that on the part of the enterpriser, the risk situation is not adequately evaluated (see also Leibbrand, 2004).

Since the prognosis of insolvency probability depends mainly on the use of randomly defined processes, the end quality comparison for finance ratings, that is, for the short term, is not at all impressive. However, it seems to be desirable that the companies start to think in density functions, so that the responsible individuals within the companies become more able to observe the randomly defined processes more precisely.

This is particularly helpful, in order to show, for example, the consequences of alternative strategies and planning in rating prognosis, and to make a contribution to crisis prevention in this way. Prognosis for insolvency probabilities through stochastic simulation are then incredibly meaningful, when for a company (for instance, because of great structural changes, growth, or distinctive coincidental effects through historical annual closing data) occurring risks for last annual closings are not representative of the future.

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