

On Risk Appetite

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Being in Business Is About Taking Risks

- ERM attempts to view all risks that a firm undertakes in a holistic way.
- Risk management and Capital management are closely related.
- In the heart of ERM is the definition of the so called Risk Appetite.
- Central to the discussion about Risk Appetite is the role of equity capital and of economic capital.
 - However one should bear in mind that economic capital targets the case of solvency, while the level and usage of capital in general, is closely related to the efforts of the firm to optimise its risk – return trade off under the constraints that are imposed by the perspectives and preferences of the different stakeholders.

External Pressure for Adoption of ERM

- The firms are called to effectively combine:
 - Risk Management (*the rating agency's demand*)
 - Capital management (*the regulator's demand*)
 - Value creation (*the investor's demand*)
- Rating agencies:
 - started taking into account ERM and a “well established” risk appetite into their ratings
- Regulators:
 - Basel II and Solvency II suggest the explicit linkage of risk management and capital within a holistic framework

The Rating Agency's Point of View

The Rating Agency's Point of View (1)

- Standard & Poor's sees ERM as:
 - An approach to assure the firm is *attending to all risks*
 - A set of expectations among management, shareholders and the board about *which risks the firm will and will not take*
 - A set of methods for avoiding situations that might result in losses that would be outside *the firm's tolerance*
 - A method to shift focus *from "cost/benefit" to "risk/reward"*
 - A way to help fulfill a fundamental responsibility of a company's *board and senior management*
 - A toolkit for *trimming excess risks* and a system for intelligently *selecting which risks need trimming*
 - A *language* for communicating the firm's efforts to maintain a manageable risk profile
- » S&P, Enterprise risk management: S&P to apply enterprise risk analysis to corporate ratings, 7/5/2008

The Rating Agency's Point of View (2)

- Typically ERM covers all aspects of a firm's processes and activities and enables enterprises to manage a wide array of risks in an integrated and holistic manner.
 - When implemented successfully, ERM benefits firms by enhancing their ability to.
 - Align their *risk appetite* with strategy,
 - Minimize operational surprises,
 - Decrease earnings volatility,
 - Manage cross-enterprise risks,
 - Increase capital efficiency, and.
 - Heighten risk awareness and support prudent strategic decision making.
- » S&P, evaluating risk appetite: A fundamental process of enterprise risk management, 31/10/2006.

The Rating Agency's Point of View (3)

- S&P assesses the process by which the *Risk Appetite* at the aggregate level is established for the firm.
- We look to see whether it is *consistent* with the firm's *business strategy* and how the firm quantifies that appetite into a *tangible metric or risk tolerance*.

» S&P, Evaluating Risk Appetite: A Fundamental process of Enterprise risk management, 31/10/2006.

S&P's Risk Appetite Definitions

- S&P defines *Risk Appetite* as the framework that establishes the risks that the insurer wishes to acquire, avoid, retain and/or remove.
- We define three further terms:
 - *Risk preferences*, as qualitative risk appetite statements that guide the insurer in the selection of risks.
 - *Risk tolerances*, as quantitative risk appetite statements that guide the insurer in the selection of risks.
 - *Risk limits* as quantitative boundaries that serves to constrain specific risk taking activities at the operational level within the business.
- While we have given our view on a number of terms, our analysis concentrates on the processes around the establishment of risk appetite rather than the precise definitions used by an insurer.
 - » S&P, refined methodology for assessing an insurer's risk appetite, 30/3/2010.

Capital and Risk Management

In a Free Tempo

- *Risk appetite* expresses the willingness of an enterprise to take on risk (in order to achieve the desired returns).
- The aim is to strike some balance between the enterprise's risk and regret.
 - The definition is clearly deceptively simple, as we can feel both the vagueness and the implementation difficulties of it.

I Have a Plan ...

(but the Plan Has Risks)

- Suppose that you are the CEO of a firm who tries to do the best for the firm.
- You want to please the *various stakeholders* of the firm, but you also seem to “favor” one particular class, the shareholders, who are calling for the increase of the *enterprise value*. There are other stakeholders as well with different priorities. So, you need to strike some balance.
- You have some *strategic/business plan* and if everything goes well the firm will be achieving its nicely planned positive *cash-flows* that will *increase shareholder value* by producing returns well above the risk free rate.
- However, this clearly entails taking risks, which means that *there is some non-zero probability* that the firm may experience severe cash-flow *shortfalls* that may force you to alter drastically or abandon altogether your nice strategic plan (not to say to go bankrupt). And what if this probability is rather high?

Do I Understand My Plan?

(The Plan Looks Good, but Is It Good for Our Firm?)

- So you start asking questions
 - What are the risks that this plan faces?
 - Is the firm capable or willing to cope with these risks? What is the maximum amount of risk that the firm is willing to take?
 - Do we need to take all those risks? Can we get rid of some of them in a cheap way?
 - Do we need more (or less) capital to support our plan? How much will it cost?
 - Is the expected return “appropriate” for the risks that we take? Can we do better? Can we reduce the uncertainty of the eventual outcome?

Do I Understand My Plan?

- If things go extremely bad, will the company be in the position to say honestly and convincingly that this happened only because of very bad luck ?
- At the same time you feel your responsibilities towards policy holders and employees and the pressure of the regulators and the rating agencies. If we only had some more equity (or even debt) capital? But this certainly does not come for free!
- In a similar vein
 - To what extent do I understand my plan (both the risks and the rewards)?
 - Do the stakeholders understand it? Do they like it?
 - Do the stakeholders trust my understanding?

Cashflow Shortfalls

- Cash-flow shortfalls may have deadweight costs.
 - The firm may need to raise additional funds to support its business. But this is costly, especially during financial stress.
 - So, it may be forced to forego opportunities by cutting back on planned potentially profitable investments (underinvestment and opportunity cost).
 - Thus, it becomes tougher to achieve its strategic goals.
 - Moreover, this may cause a “permanent” reduction to the value of the firm.
- For financial firms the implications are even worse since their liability side, which is very valuable to them, is very sensitive to the credit standing of the firm.

Can Risk Management Help?

- Risk management can be seen as a guard of the firm's ability to carry out successfully its business and strategic plan.
- This ability depends on the probability of shortfalls that may lead the firm to start cutting back on valuable investments or abandoning scheduled profitable projects.
- This probability can be monitored and “controlled” through appropriate risk management.

Which Risks Should the Firm Assume

(and Which Should It Lay Down?)

- Core Risks (retain)
- Non-Core Risks (hedge)
- Comparative advantage in risk taking
- By reducing non-core exposures, ERM enables the firm to take more strategic business risk

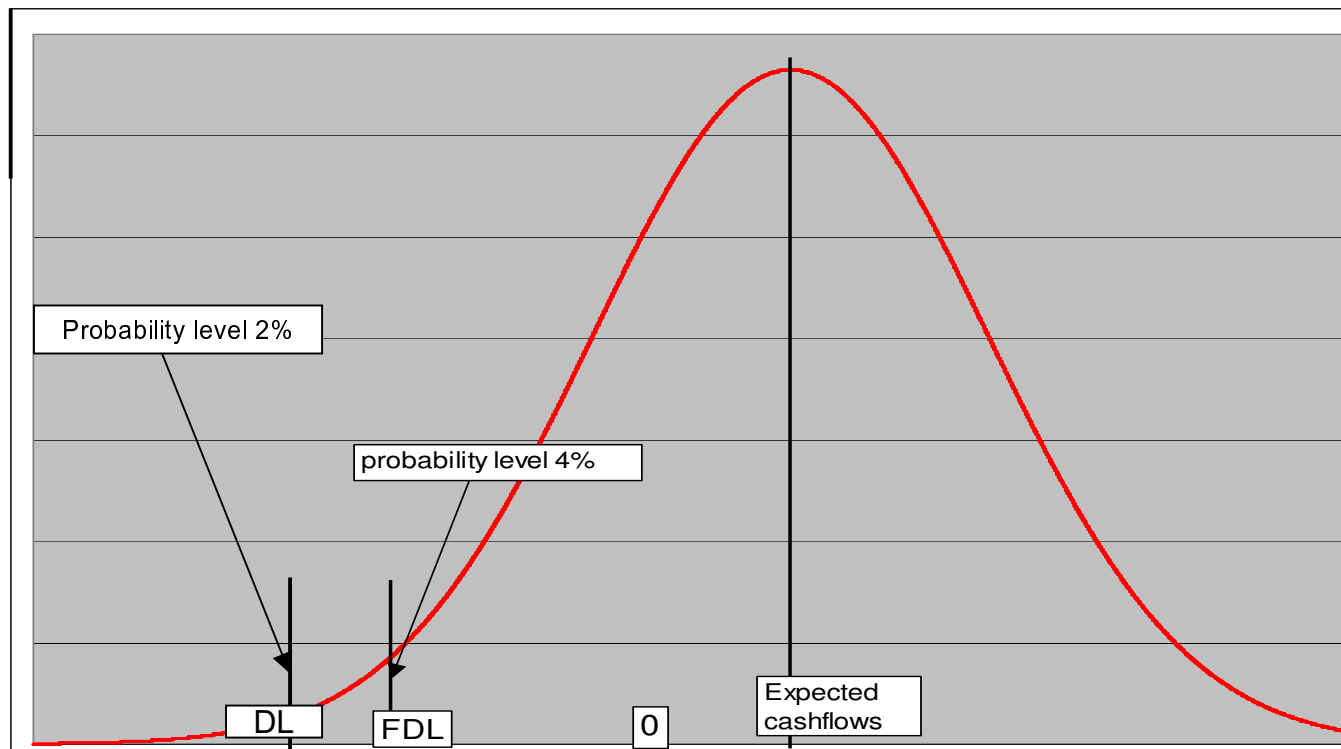
The Right Amount of Risk

- *Risk Management can be thought as substitute (or alternative) to excess equity capital.*
 - Enough (or unlimited) capital invested in “safe” liquid assets \Rightarrow no risk from cashflow shortfalls.
 - But excess capital may be very costly.
 - Less risk \Rightarrow less capital needed (for supporting operating risks).
- *Little equity capital \Rightarrow shortfalls may be inadequately absorbed \Rightarrow financial distress \Rightarrow underinvestment (due to cancelling of strategic plan, cutting of promising NPV projects, growth reduction) \Rightarrow (permanent) *loss of value.**
- Financial distress (FD) = the situation where a firm is feeling pressure to cut back on positive NPV activities.
- Both Capital and Risk management are costly. Therefore, need for some balance.

Trying to Approach the Problem

- A firm looks at its current status and at its strategic business plan and determines that a shortfall (of cashflows, returns, credit rating, market value, volatility of earnings or whatever) to or below a certain level FDL (financial distress level) will ask pressure to the firm for cutting valuable projects , i.e. The firm will face financial distress (fd).
- In the same vein the firm determines its default level (DL) as the level of shortfall below which the firm is leaded to default.
- Typically, $DL < FDL$.
- Focusing on DL we focus on solvency.
- Focusing on FDL we focus on optimization of shareholder value (through the unproblematic execution of the strategic plan).
- Clearly, for default to occur a company will go through financial distress first.

- Assume that the firm can model its target variable(s) (let's say cashflows) and for some time horizon it produces a distribution of future cashflows
- In this example the firm notices that its probability of getting into financial distress is $\text{pfd}=4\%$ (and its probability of default is $\text{pd}=2\%$)



Bad for One Firm, Optimal for Another

- Depending on the type of the firm the same probability may be considered high or low.
 - *Mature firms*
 - Possibly few growth opportunities \Rightarrow No costs of foregoing new opportunities \Rightarrow better idea to raise debt capacity (i.e. tax benefits) and return excess capital to shareholders.
 - For such firms this pfd may be OK or even low. It may though want to manage its pd in a separate manner.
 - *Growth firms*
 - No luxury to forego valuable growth opportunities \Rightarrow they don't like at all the idea of getting close to the FDL.
 - For such firms the same pfd may be very high.
 - *Financial firms*
 - The *liabilities side* has paramount importance and it is very sensitive to the credit standing and to the reputation of the firm.
 - Need to target for a much smaller pfd (and of course for an even smaller pd).

Balance Between Risk and Return

- The firm clearly does not want to minimize pfd, since this would imply lower return, thus it may fall short of investors expectations. The firm clearly needs to target returns above the risk free rate, otherwise there is no reason to be in business, and this requires assuming some risk.
- The firm may not want to accept a too large pfd, since it will affect customers expectations about its growth credit worthiness.
- The firm does not want to accept a too large pd, since it will fall short of regulators demands or customers expectations about its credit worthiness.
- Therefore the firm needs to find a balance between assumed risk and expected return.

A Strategic Decision Problem

- For a given FDL determine the pfd that optimizes the shareholder value (in other words that it makes the company to feel comfortable with).
- If the pfd of the FDL is optimal for the firm then it is OK. If it is considered to be too high (unacceptable), then it needs to take actions to reduce it.
- The firm has two solutions.
 - Raise new equity capital (and invest it in safe liquid assets to be used as a buffer against possible cash shortfalls).
 - Active risk management (to hedge or get rid of various risks).
- Both solutions have costs.
 - Risk management for core risks may be prohibitively expensive.

Increasing Equity Capital

- Suppose that the firm has determined its FDL and found out that this implies a pfd that is too high. Suppose furthermore that the “optimal” pfd that maximizes shareholder value has been determined as well.
- In order to alter the existing pfd to the optimal pfd without altering its business or strategic plan, the firm needs to raise new capital C . This will alter DL and FDL to $DL^*=DL-C$ and FDL to $FDL^*=FDL-C$ and as far as C is not huge and has been invested prudently to low return riskless assets, the distribution of expected cashflows will remain almost unchanged. Thus the pfd (and pd) will move to lower values (the firm is better capitalized).
- If using a coherent or convex risk measure, once we have the acceptance set, C should be the minimum capital that when added to the firm makes the investment (strategy) acceptable. So if we already have a coherent risk measure that we “believe in”, then the optimal pfd can be determined through this risk measure.

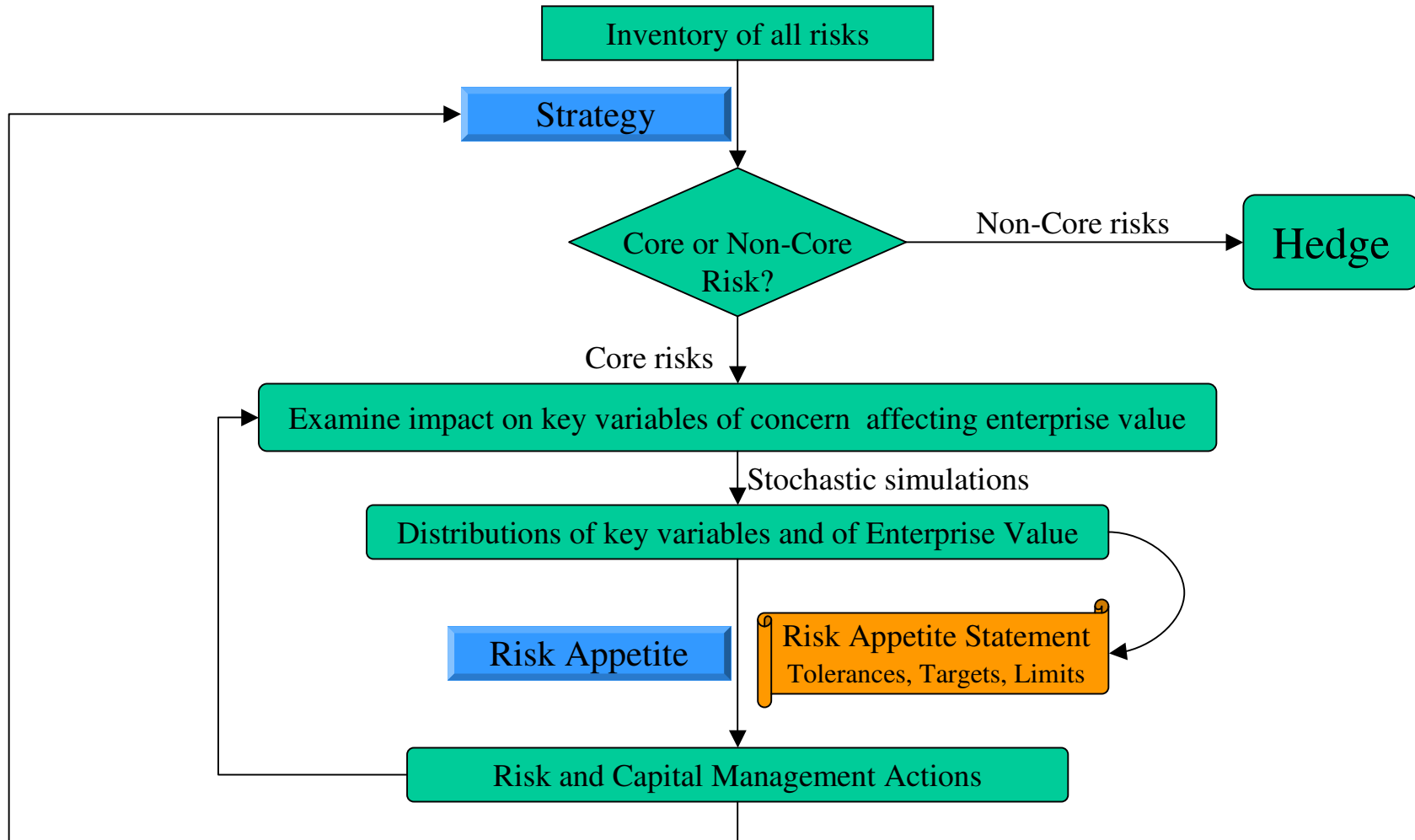
Capital Increase or Active Risk Management or Both

- An alternative route to achieve a similar result could be to invest in active risk management.
- If the available choices are either the one or the other, the one with the lower cost is to be preferred.
- But of course a mix of risk management and capital increase can be chosen that would result in a similar reduction of the pfd. Which combination is the “right one”?
 - The one that leaves the firm marginally indifferent between decreasing risk by risk management and decreasing risk by capital increase.
 - When this has been achieved, the marginal impact of a project on its risk of default (or risk of fd) can be evaluated as the extra capital needed to retain the same pd (or pfd).

Various Themes of Consideration

- The previous discussion was rather general and pointing to the general principles and ideas underlying a normative approach.
- In practice a firm may find it more convenient to assess financial distress through a series of alternative (and possibly complementary) and independently manageable criteria.
 - Credit Rating.
 - Volatility of Earnings.
 - Economic Capital.
- For each of these criteria, target levels and acceptable tolerances should be set, maybe through VaR or other measures.

Sketch of the Process



Risk Appetite Revisited

Risk Appetite Statement

- A general statement.
 - at enterprise level,
 - delineating the risk profile of the firm,
 - setting the tone over risk attitudes of the firm.
- It can be thought of, as an extension (or rather a necessary complement) of the mission statement that hints on the firm's self-knowledge by emphasizing the way that the firm is treating risk (and of course return).

Needs to Take Into Account and Balance

- The perspectives of the firms **stakeholders** (and implicitly weighting them) by:
 - Marking out and prioritising the **key themes/risks** of consideration (That evolve around the firm's strategic objectives),
 - Outlining the firm's general attitude (**preferences, tolerance**) towards these key themes,
 - With a clear linkage between management options and risk profile.

Stakeholders (1)

- Management and employees.
 - They formulate and implement the strategy of the firm.
 - Interested in the firm's risk appetite, so that they can make the appropriate decisions to achieve a good performance.
 - In need of a good and clear communication scheme.
- Policyholders.
 - Interested in secure contractual payments under their policies.
 - Interested in extreme downside risk.
 - Their main concern is the credit standing of the firm and consequently its level of capital and its risk management practices.
 - Not interested in the nature of the risks that the firm takes (as long as they do not affect negatively its ability to honour their policies).

Stakeholders (2)

- Debtholders.
 - They provide debt capital and liquidity to the firm.
 - Interested mainly in downside risk.
 - Watching also future upside potential (to provide longer duration debt).
 - Therefore interested to see good capitalization, enterprise risk management and well articulated risk appetite.
- Regulators.
 - They safeguard the stability of the system.
 - Interested in extreme downside risk.
 - Main focus on ensuring an “acceptable” base level of capitalization, as protection to downside risks.
 - Their role is important primarily to policy holders.

Stakeholders (3)

- Rating agencies.
 - They express an “independent expert opinion” on the credit worthiness of a firm.
 - Interested in downside risk.
 - Their opinion is important to policy holders and to debt holders.
 - Thus they influence decisively the cost of debt of the firm and its growth potential.
 - Increasingly interested in the Risk Management level of the firm and in its ability to articulate its risk appetite.

Stakeholders (4)

- Shareholders
 - They provide equity capital to the firm
 - Need to make informed decisions with regard to their portfolio structure, so they ask for adequate information on the risk profile of the firm
 - Their main target variable is RoE and RAROC (or similar performance measures).
 - Therefore interested in all components that influence ROE and their corresponding distributions
 - Interested in all aspects and in the nature of risks that the firm faces
 - Interested in the whole distribution of risk, including its shape (.eg. Volatility of returns, expected returns, fat tails, diversification of business, volatility of sales, dividends policy etc.)
 - Different types of shareholders (long term (value), short term (share price))

Themes at the Board Level

- Capital
 - Statutory capital
 - Economic capital
 - Regulatory capital
- Earnings
 - Volatility of earnings
 - EaR
 - EpS
- Financial ratios
 - Leverage ratio
 - Liquidity measures
- Ratings / Credit Standing
- Shareholder value
 - Risk adjusted returns (e.g. RAROC)
 - VaR
 - RoE
- Concentrations
- Customers
- Governance
- Regulatory aspects
- Reputation

Risk Appetite Statement

- For example the risk appetite statement can refer to notions like “strong capitalization”, “above average returns”, “strong ratings”, “volatility of returns” etc. However, these notions are quite general so they are in need of further specification and structure, to make the message more clear.

	Risk Appetite				
	Low		Medium		High
Earnings Volatility				*	
Capital	*				
Credit Rating		*			
Reputation		*			
<i>Each of these basic themes requires some kind of justification and explanation</i>					

Operationalising Risk Appetite

- The risk appetite statement should be complemented or further detailed through a clear articulation of.
 - Risk Preferences,
 - Risk Tolerances,
 - Risk Targets.
- These are more detailed aspects of the Risk Appetite process but they are still at the enterprise level.

Risk Preferences

- The Risk Preferences express preferences of the management over various risk – return tradeoffs and give a first indication of which risks are considered to be acceptable and which not.
- E.g. We do not want to bear fx risk or i.r. risk as long as we can hedge it at a reasonable cost, since it is not an operating aspect of our business and because we do not feel that we have any comparative advantage in taking a non neutral position in such a risk.
- E.g. We prefer lower or even zero expected profitability in sector X, if this lowers significantly the probability of facing losses that will force us to close down this sector.

Risk Tolerance

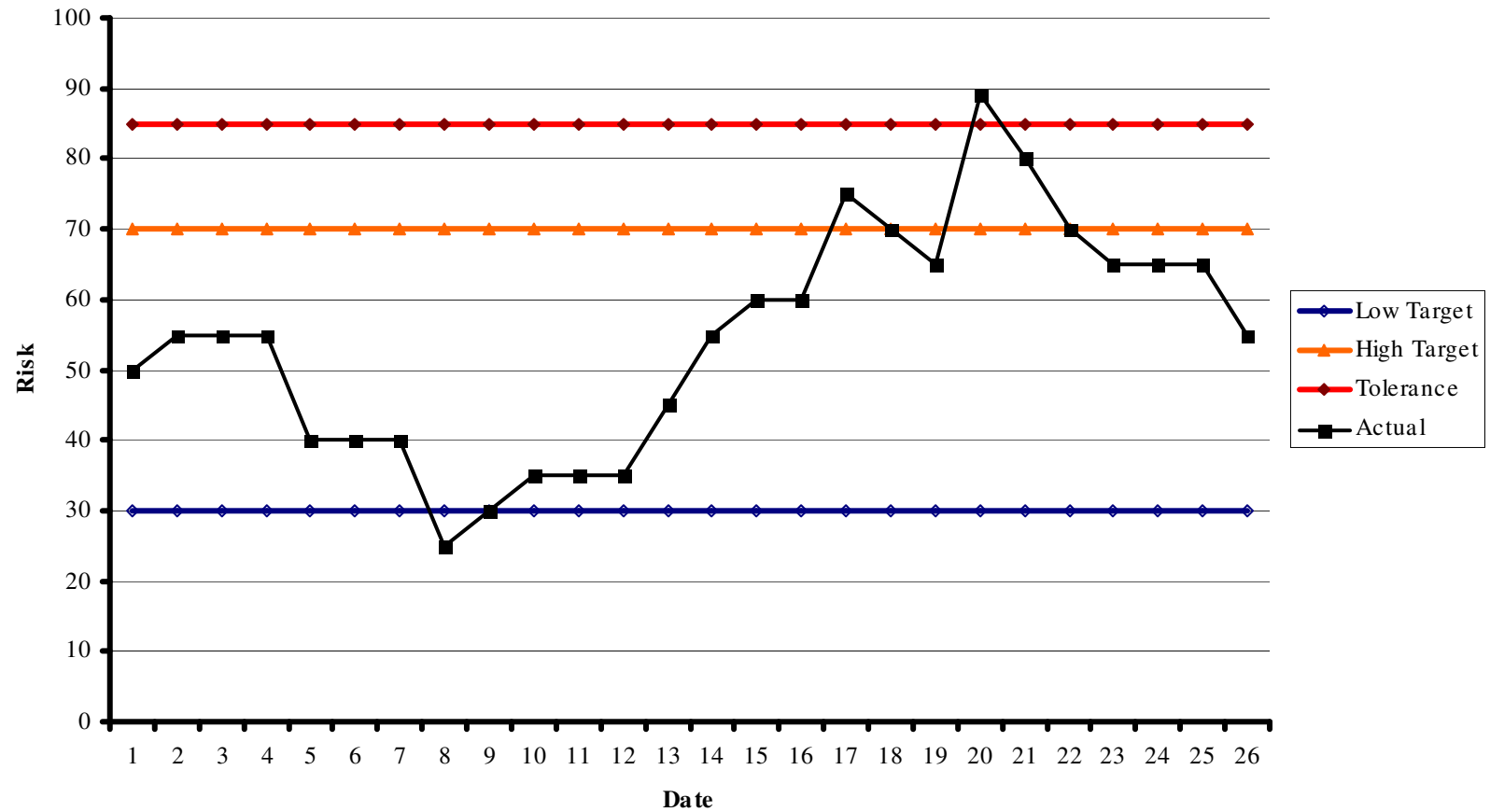
- The Risk Tolerances aim at quantifying the risk appetite at the enterprise level. Through the appropriate risk metrics, specific maximum limits are set for each risk. These limits reflect in a more specific manner the maximum risk that the enterprise is accepting to take in the pursuit of its strategic goals and objectives. These limits should clearly be set in such a way that both individually and in aggregate are in accordance with the general risk appetite statement.
- The risk tolerances statement is the first serious step to make the risk appetite operational.
- VaR, EaR, CaR, loss amounts, greeks, outstanding credit etc can be used to express risk tolerances.
- The risk tolerances measurements should allow for clear characterizations of levels of risk as “unacceptable” or “acceptable.”

Themes	Attitude	Management tools	Relevant stakeholders
Credit rating	Target Aa, always above Ba	Economic Capital Key metrics and ratios	Debtholders Rating agencies Customers Employees Shareholders
Earnings Volatility	Dividend amount ... Variance less than...	Stress testing of business plans	Shareholders Employees
Probability of Solvency or Financial distress or maximum loss	No more than x at the y% confidence	Stochastic models	All stakeholders
Liquidity	Keep liquidity to meet requirements at x% confidence	Liquidity model	Regulator Shareholders Debtholders
Reputation	Highest standards	Code of conduct manual	Regulators Customers
Governance	Policies / processes To be followed at all times	Auditing Compliance dept.	Regulators Shareholders
Growth	All new projects to be appropriately risk examined	New projects policy Risk controls	Shareholders

Risk Targets

- Once the organization has stated how much risk it can tolerate, it is time to say something about the optimal amount of risk that is willing to assume in order to achieve its strategic goals and objectives.
- The Risk Targets (or optimal risk ranges) attempt to do exactly this.
 - They express optimal ranges within which the various risk types are expected to optimise the risk return trade off for the achievement of the strategic goals. Clearly the risk targets should be within the risk tolerances limits.

Evolution of Risk



Risk Limits

- Up to now we work at the enterprise level and in a rather strategic framework.
- However it is the front lines, the business units that will implement the (risk tolerance) strategy.
- For this they need to understand clearly what is expected from them and how this affects their performance evaluation.
- Therefore they need to have a good grasp of the whole idea on the one hand and more detailed guidelines on the other hand.
- This calls for the introduction of Risk Limits.
- Risk limits are some kind of projection of the risk tolerances and risk targets to the business units in the form of practical constraints.
- They are to be determined by the management in such a way that their aggregate effect is in accordance to the enterprise risk tolerance. This is easier said than done since usage and correlations have to be taken into account.

Example

- *Risk appetite statement*
 - (1.) Strong capitalization
 - $Pd < 0,1\%$
 - Prob (capital increase within the year) $< 2\%$
 - We use our stochastic models
 - (2.)
- *Risk tolerance*
 - (1.1.) Credit risk: Prob (losses more than regulatory capital) $< 1\%$
 - (1.2.) Concentration risk: capital to sustain losses at 99.9% confidence.
 - (1.3.)
- *Risk limits*
 - (1.1.1.) Rating of reinsurer = AAA
 - (1.1.2.) Diversification: no more than 15% with a single reinsurer
 - (1.1.3.) Investment portfolios: diversification, rating of banks,
 - (1.1.4)

Useful Readings

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