

## WHITEPAPER

# A Unified Approach to Accounting for Regulatory and Economic Capital

### About

This whitepaper was derived from a Moody's Analytics Modeling Methodology Whitepaper entitled, A Unified Decision Measure Incorporating Both Regulatory Capital and Economic Capital.

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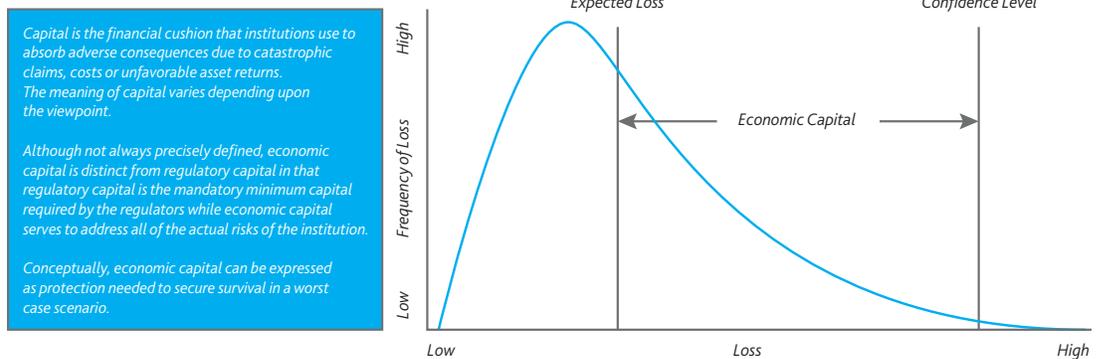
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With the advent of Basel III and the overall increase in regulatory requirements stemming from the recent crisis, financial institutions face regulatory capital (RegC) mandates that have strained strategic plans more than ever. As a byproduct of the increased focus on RegC, some financial institutions have reduced their attention to economic capital (EC), arguing that with a binding RegC constraint, EC is less relevant.

Some institutions have even taken the extreme strategy of completely focusing on RegC. Unfortunately, this orientation misses the valuable and essential insight that the EC framework provides. EC accounts for diversification, concentration effects, and other economic risks that are not captured in RegC. Our research indicates that both RegC and EC should influence decision-making. By ultimately combining the two measures into one unified approach to portfolio management, institutions can benefit from informed decisions.

In this paper, we introduce two new measures that incorporate both RegC and EC: return on risk-adjusted capital (RORAC) and economic value added (EVA™). These measures allow institutions to rank-order their portfolios and potential deals in a way that accounts for economic risk and regulatory charges.



## Economic Capital and Regulatory Capital

### Two Vital Measures

EC provides critical insights that help institutions to evaluate the risks associated with their business allowing for improved decision-making. EC accounts for diversification, concentration effects, and other economic risks when used in measures such as return on risk-adjusted capital (RORAC) or Economic Value Added (EVA™).

RegC, on the other hand, does not account for diversification or concentration. However, when RegC is binding, an institution faces tangible costs, in that additional capital is needed for new investments that face a positive risk weight.

Intuitively, RegC and EC should both influence investment decisions. Given two otherwise identical deals (including EC), the deal with lower RegC is preferable. Alternatively, given two otherwise identical deals (including RegC), the deal with lower EC is preferable.

Incorporating both RegC and EC into a unified decision measure enables institutions to easily rank-order their portfolios and potential deals to account for economic risks and regulatory charges. Institutions today typically take a different approach to accomplishing this objective. For example, they may take the maximum of RegC and EC as the risk measure, or allocate top-of-the-house RegC using EC. These approaches fail to differentiate across deals in a way that accounts for both RegC and EC. This new unified approach allows organizations to better optimize risk/return profiles, facilitate strategic planning and limit setting, and define risk appetite.

### A Unified Decision Measure

#### Significance of Using Both RegC and EC to Influence Decision Making

While it is clear that firms focusing only on RegC or EC will find managing both risk and performance challenging, it has been less clear how to formalize a decision-making variable that incorporates both regulatory and economic considerations.

Financial institutions face a fundamental question of how to choose a combination of investments that maximizes value for stakeholders. Models such as the capital asset pricing model (CAPM) are typically used to describe investment choices for individuals, but can also be used to describe a firm's optimal choice of investments. In fact, economic decision-making rules such as RORAC and EVA can be derived using these same frameworks.

Stakeholder preferences regarding risk are typically aligned around concentration and diversification. Institutions complying with RegC requirements are often required to limit borrowing. In essence, the regulations impose an external constraint on leverage, which must be taken into consideration during the original investment decision. This constraint is not always aligned with stakeholder preferences, and requires the institution to solve a constrained optimization problem. Using traditional methods of solving for constrained optimization, institutions have identified a number of decision variables (see figure below). Those variables remain the same when using unified measures to solve the constrained optimization problem. The only difference is that accounting for RegC results in an effective RegC cost or tax, which decreases the return on investment.



The unified RegC and EC measures are intuitive and have the following appealing properties:

- » They account for the economic risks coming from concentration and correlation effects. An asset's risk measure will be higher if, all else being equal, it is more correlated with the portfolio or if it is more likely to be in distress.
- » They account for cross-sectional variation in regulatory charges. Investments with higher regulatory risk weights are less attractive, all else being equal.
- » They go beyond common approaches used to bring together RegC and EC (for example, taking the maximum of RegC and EC as the risk measure), which invariably lose important information. The measure incorporates both RegC and EC in a unified fashion, so that both ultimately influence decision making.
- » As with traditional measures, the institution can utilize a single unified decision variable to rank-order deals and portfolios in a way that accounts for economic risks and regulatory charges. The measures can be easily integrated in an institution's investment decision process and strategic planning.

Accounting for the RegC charge has economic significance as instruments that were otherwise viewed as "favorable" can become "unfavorable" in reference to the overall portfolio, and vice versa, when considering both RegC and EC.

## Summary

### Bringing Together the Best of Both

RegC and EC are both valuable in determining a firm's investment decisions. The challenge is that two variables cannot be used to rank-order investments at the same time, so a single decision-making statistic is necessary. This challenge can be addressed by following traditional portfolio theory and formalizing the notion of a regulatory constraint to derive a decision-making variable akin to RORAC or EVA that incorporates both regulatory and economic considerations. RORAC and EVA models have been used in decision making for decades, and the accounting rules that underpin RegC constraints are well understood and actively used.

As financial institutions focus more on their regulatory capital requirements, attitudes regarding economic capital have shifted. Some practitioners have reduced their attention to EC, claiming it has limited relevance, while others have attempted simplistic RegC and EC integration techniques. Our view is that EC models are as relevant today as they have ever been. They provide economic insights, such as diversification and concentration that are not part of the regulatory capital framework, yet critical for disciplined financial management.

Recognizing that EC models should be responsive to industry, regulatory, and firm-specific demands, these new unified metrics bring together the best of both approaches. They allow institutions to leverage the utility of their existing EC models in the context of real-world regulatory capital charges. When accounting for both RegC and EC, the impact of an institution's strategic planning and decision-making can be significant.

For detailed instructions on integrating your RegC and EC measures, read our methodology paper, [\*A Unified Decision Measure Incorporating Both Regulatory Capital and Economic Capital\*](#).

## Appendix A

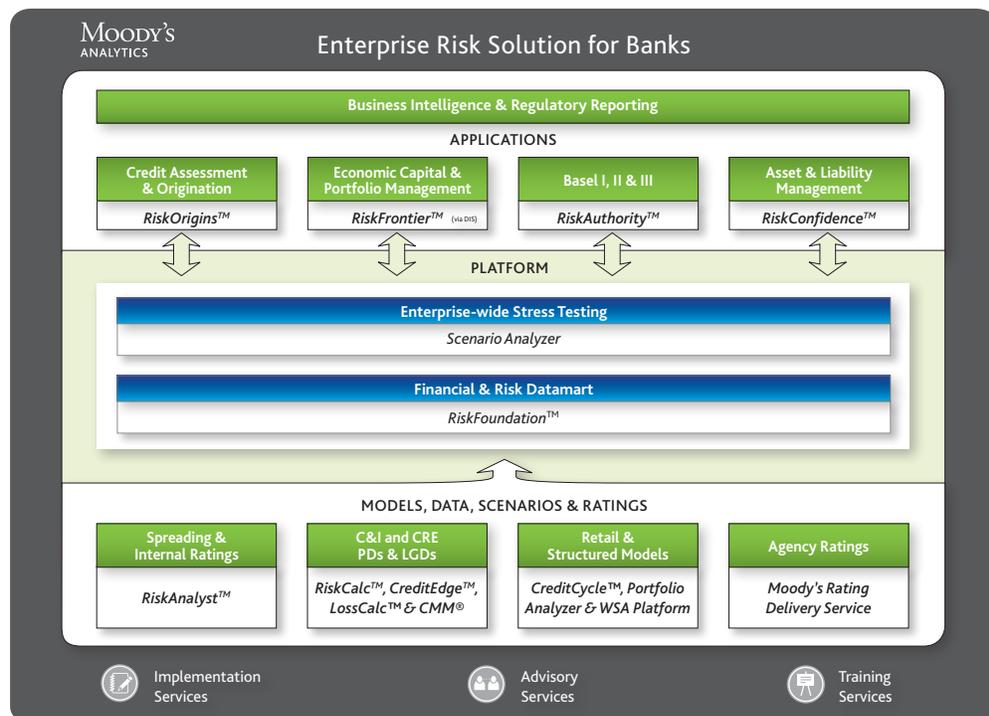
### Moody's Analytics Delivers Comprehensive Solutions Related to the Calculation of Regulatory Capital and Economic Capital

Moody's Analytics helps risk management professionals worldwide respond to an evolving marketplace with confidence. The company offers unique tools and best practices for measuring and managing risk through expertise and experience in credit analysis, economic research, and financial risk management. Moody's Analytics offers a suite of solutions to help financial institutions optimize their portfolio management while also complying with related regulatory requirements, including RiskAuthority™ and RiskFrontier™.

**RiskAuthority** delivers comprehensive regulatory capital calculation, management and reporting for Basel I, II and III requirements.

**RiskFrontier** is a portfolio management and economic capital solution and provides the calculation of the unified risk metrics, integrating regulatory capital constraints into our existing economic capital framework.

The below diagram shows our suite of Enterprise Risk Management solutions.



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