Financial InterGroup

28 Sept 2016

To: COSO

We welcome this opportunity to comment on the consultative paper *Enterprise Risk Management (ERM) - Aligning Risk with Strategy and Performance* (the "COSO Paper"). We applaud COSO's renewed focus on ERM as an area requiring greater clarity and broader acceptance by business organizations. We particularly welcome the underpinning of the updated ERM Framework through a foundation of well defined 'Components and Principles' summarized in Chapter 5 that sets up the remaining chapters describing the COSO ERM Framework in greater detail.

However, it is our view that the managerial usefulness of the updated framework is limited by its ongoing dependency on risk assessment rather than risk measurement. This is evident in the 'Risk in Execution' component of the framework (Para 85):

> *"An organization identifies and assesses risks that may affect an entity's ability to achieve its strategy and business objectives. It prioritizes risks according to their severity and considering the entity's risk appetite. The organization then selects risk responses and monitors performance for change. In this way, it develops a portfolio view of the amount of risk the entity has assumed in the pursuit of its strategy and business objectives."*

We note the juxtaposition within this paragraph of assessment (*"An organization identifies and assesses risks"*) and measurement (*"it develops a portfolio view of the amount of risk the entity has assumed"*). It is axiomatic that assessment based risk management techniques cannot produce measurement based risk reports. The result is a portfolio of risks that can neither be combined or aggregated in any meaningful way nor linked directly to accounting data. Notwithstanding these limitations this is the practice that has been universally accepted in connection with ERM systems.

Resolving this issue has been the focus of ongoing research in which Financial InterGroup has collaborated with academic institutions, risk management professional associations and financial market participants. This has culminated in the codification of a new accounting technique 'Risk Accounting' which is described in a recently published peer-reviewed paper: *Risk Accounting - The Risk Data and Risk Reporting (BCBS 239) Foundation of Enterprise Risk Management (ERM) and Risk Governance*[1].

[1] Hughes PJ, Grody AD. "Risk Accounting: The Risk Data and Risk Reporting (BCBS 239) Foundation of Enterprise Risk Management (ERM) and Risk Governance", Journal of Risk Management in Financial Institutions, Part 1 - Vol 9/No 2/Spring 2016, pp 130-146 and Part 2 - Vol 9/No 3/Summer 2016, pp 224-248 http://ssrn.com/abstract=2726638

The COSO Paper rightly positions the 'portfolio view' as a fundamental output of an ERM Framework. However, only through a measurement based portfolio view of enterprise risk is it possible to adopt important strategic and performance management techniques such as trend analysis, benchmarking, ranking, comparison and the monitoring of actual usage (risk exposure) against predetermined limits (risk appetite).

While this new effort by COSO to update and create more relevance to its earlier work *Enterprise Risk – Integrated Framework (2004)* is notable as a comprehensive 'framework' view to improve ERM, the continued dependency on assessment based techniques, discussed above, creates two critical issues: (1) an inability to integrate and aggregate diverse risk types into meaningful metrics for the desired "portfolio view" of risk; and (2) an absence of any metricized link to management accounting on which business organizations invariably base their strategic and performance management systems.

The COSO Paper's foreword highlights the concerns attributable to the evolving risk landscape exclusively from an ERM perspective; *"the complexity of risk has changed, new risks have emerged, and boards have enhanced their awareness and oversight of enterprise risk management while asking for improved risk reporting"*. In our view, the evolving risk landscape also raises accounting concerns in that management accounting's primary metric is 'accounting profit' determined in conformity with prevailing accounting standards such as IFRS or US GAAP. The result is a representation of net income before tax (NIBT) and financial condition that does not consider the likely financial consequences of accumulating exposures to risk.

The combination of the dramatic changes in organizations' risk profiles that have occurred over a decade or more and accounting standards that have remained largely insensitive to accumulating risks has become a source of deep concern for CFOs. As recent events have demonstrated, the global financial crisis of 2007/8 in particular, such occurrences can be severe, even life-threatening. This has led to a growing focus on economic profit as an organization's primary strategic and performance management metric due to its risk-adjusted properties.

Risk Accounting is an extension of management accounting that has the potential to resolve both the ERM and accounting issues discussed above through its ability to provide an accounting based portfolio view of enterprise risks expressed in terms of economic profit. It incorporates a common method of risk quantification using a standardized risk metric - the 'Risk Unit' or 'RU' - that is used to express all forms of risk thereby enabling effective aggregation.

Risk accounting tags transactions with a standardized calculation of exposure to risk expressed in RUs so that risk reporting is tied to official accounting records. The pairing of accounting and risk values at the transaction level enables risk/return reporting that is fully aligned with management reporting at the portfolio 'enterprise' level and by organizational unit, product, customer, and location. The risk weighting techniques used in Risk Accounting are also closely aligned with two previous COSO papers: *Internal Control – Integrated Framework (2013);* and, *Leveraging COSO Across the Three Lines of Defense (2015)*.

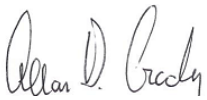
Organizations that successfully migrate their strategic and performance management systems to economic profit using Risk Accounting will have access to a single management accounting solution that will incentivize investment optimization, operating efficiency and effective risk mitigation.

Risk Accounting is the focus of ongoing research. It is expected that the next phase will involve further testing and validation of the theoretical model codified in the aforementioned research paper through simulations in selected businesses in live operating environments. Accordingly, we welcome the interest of COSO, business enterprises, practitioners and academics in these endeavors.

The pages that follow present an overview of Risk Accounting and how it addresses COSO's aim of aligning ERM with strategy and performance to achieve more effective governance. References in this paper denoted 'Para *n*' refers to the paragraphs numbered in the COSO Paper. While Risk Accounting is applicable to all businesses, the examples described in the comments that follow are banking related.

I am grateful to Peter Hughes for his assistance in preparing this paper. Peter is Chairman of Financial InterGroup's advisory board, a visiting research fellow at the Leeds University Business School and a member of Durham University Business School's banking, risk and intermediation research advisory board.

Sincerely,



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Comments on COSO's Enterprise Risk Management — Aligning Risk with Strategy and Performance

Introduction

The absence of a standardised, replicable and universally adopted method of quantifying the risk exposures accepted by business enterprises represents a severe impediment for their effective management, public disclosure of financial condition and regulatory supervision. In particular, there is no universally established accounting framework in which business enterprises can validly consolidate, aggregate and compare their accumulating exposures to risk - what COSO's ERM Framework refers to as an enterprise's 'portfolio of risks'. The result is an inability to inform, in a meaningful way, boards, senior management, regulators, auditors, customers, investors and other stakeholders of the amount of risk exposure business enterprises accept absolutely and in comparison to others in their pursuit of shareholder value creation.

In the banking sector the Basel Committee on Banking Supervision (BCBS) acknowledged the financial industry's poor track record in this area. Indeed, regulatory concern was such that the BCBS issued its 2013 mandate, "Principles for effective risk data aggregation and risk reporting"[2] which included the observation, "Many banks lacked the ability to aggregate risk exposures and identify concentrations quickly and accurately... Some banks were unable to manage their risks properly because of weak risk data aggregation capabilities and risk reporting practices." The BCBS further acknowledged that their acceptance of internal quantitative modelling techniques to determine capital adequacy rather than accounting standards had resulted in an overly complex regulatory framework that inhibits comparability. This was discussed by the BCBS in its 2013 paper "The regulatory framework: balancing risk sensitivity, simplicity and comparability"[3].

Such impediments were a primary cause of the financial crisis as banks failed to identify, quantify and report their accumulating portfolio of risks in a complete, accurate and timely manner. As the global economy entered its severe downturn in 2007 the result was a high incidence of material unexpected losses that were later found to be inadequately buffered by protective capital and liquidity reserves which led to institutional failures, government bailouts and forced mergers and acquisitions of many financial firms around the globe.

Risk Accounting – A Brief Overview

Risk Accounting aligns itself with the COSO ERM Framework's desire to 'build enterprise risk management into the fabric of the entity' (Para. 34). It also aligns with and embeds the responsibility for its novel risk weighting process under operating managements' purview, the organizational group that constitutes an enterprise's first line of defense as described in COSO's *Three Lines of Defense* thought leadership paper.

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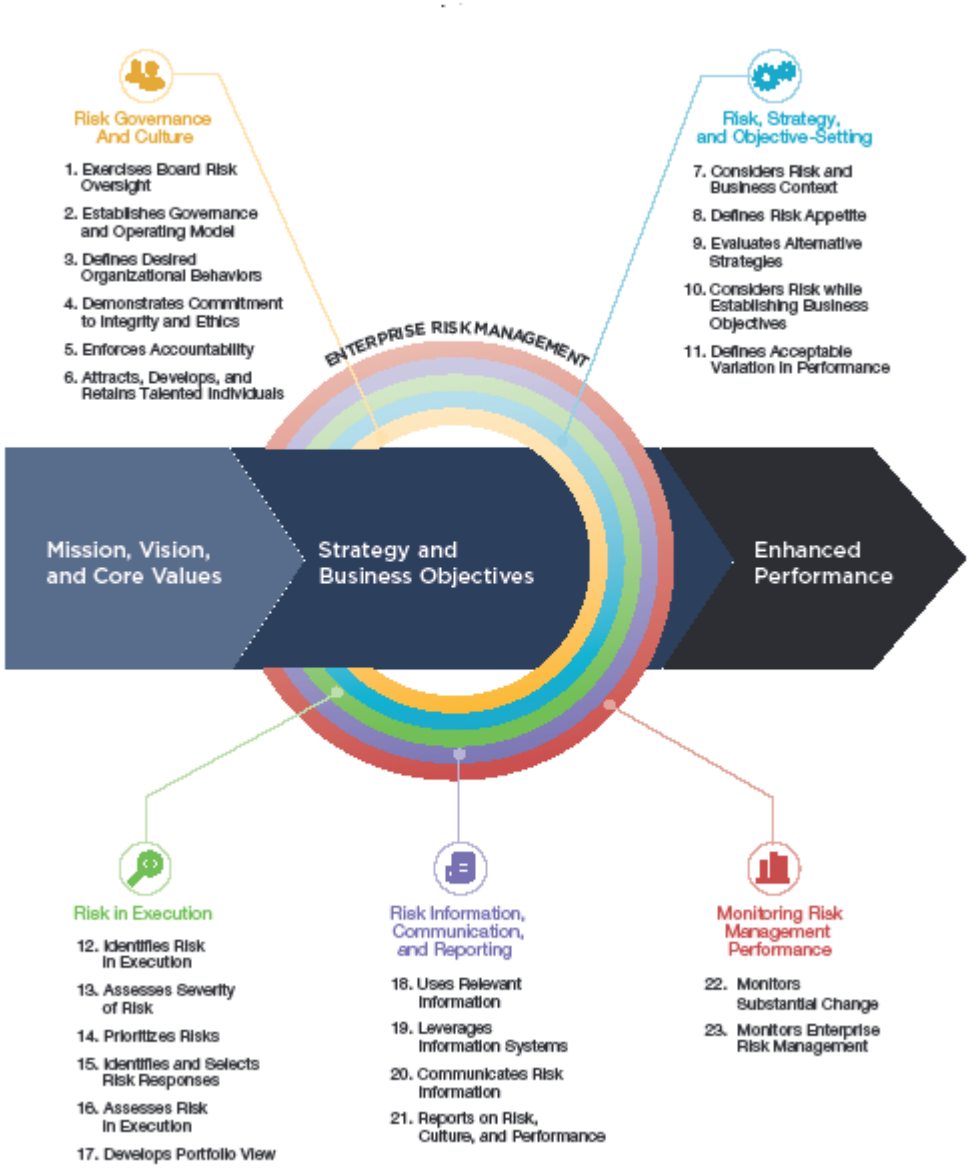
[2] Basel Committee on Banking Supervision (2013), 'Principles for effective risk data aggregation and risk reporting', Bank for International Settlements, available at http://www.bis.org/publ/bcbs239.pdf (accessed 8th September 2016)

[3] Basel Committee on Banking Supervision (2013), 'The regulatory framework: balancing risk sensitivity, simplicity and comparability', available at http://www.bis.org/publ/bcbs258.pdf (accessed 8th September 2016)

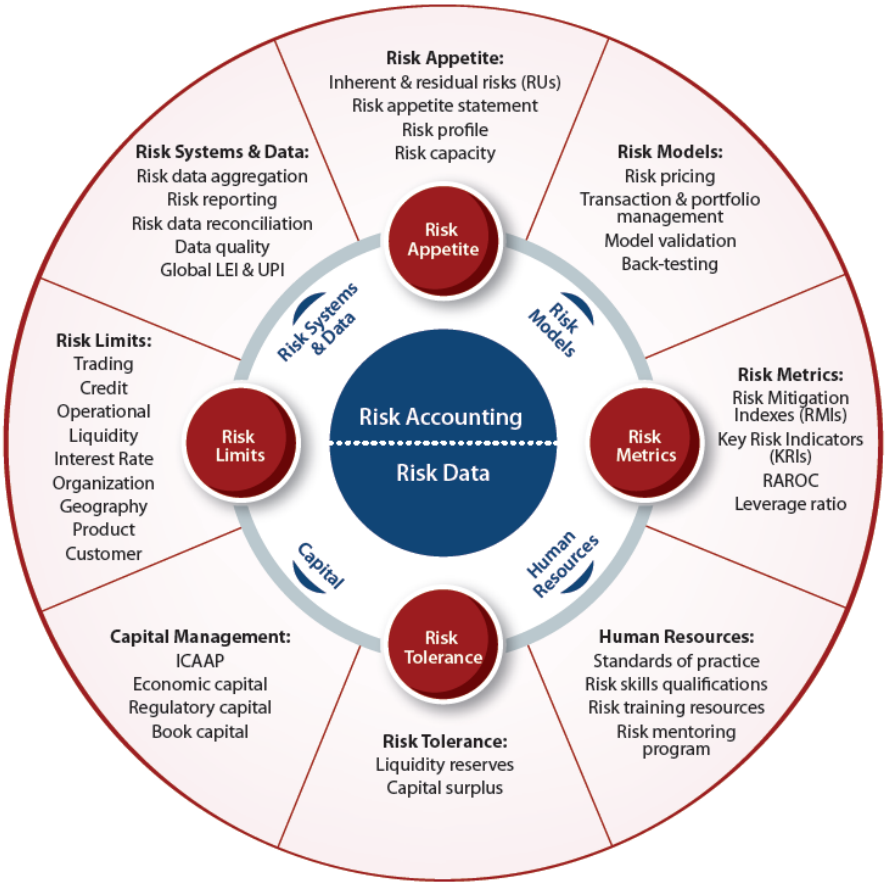
COSO describes its ERM Framework graphically in its paper. See below.

***COSO** Enterprise Risk Management — Aligning Risk with Strategy and Performance*



Risk Accounting is graphically described within an ERM framework in similar fashion, but in more granular detail, focused on implementation in financial institutions. See below:

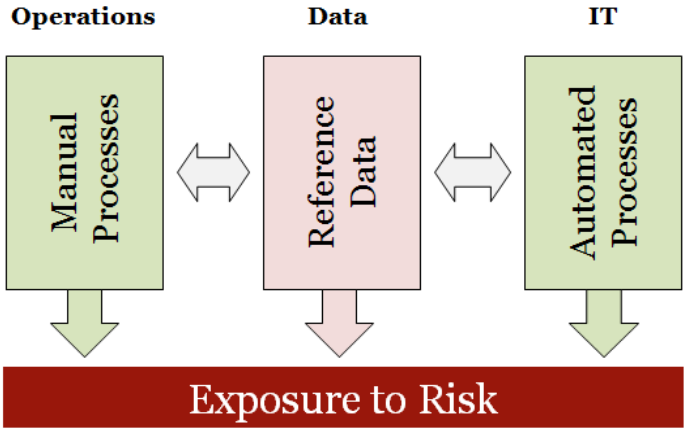
Risk Accounting's Enterprise Risk Management Ecosystem



A major difference with Risk Accounting is that COSO's ERM Framework describes aggregating risk data through use of a taxonomy (a means of categorizing risk by common definitions, i.e. technology risk, credit risk, etc.). At Para. 346 it states "Using a taxonomy helps organizations aggregate risk data and information consistently in order to understand the exposures and to identify concentrations of risk." Risk Accounting's ERM framework goes a step further, in our view a very significant step further, in organizing risks through the common metric of the RU so that all risk categories, regardless of the qualitative or quantitative method used to evaluate risk, can be aggregated.

A further difference, again we believe a significant difference, is that Risk Accounting's ERM framework recognizes the complexity of different data definitions and identifiers for the same product or client or supply chain participant across the many operating systems of a large organization. Such diversity of data definitions and identifiers in the same organization across its many internal strategic business units and across its external supply chain leads to increased risks that data will not be mapped nor aggregated correctly. In financial institutions, especially large multinational systemically important ones, this reference data issue is a most significant challenge.

The Risk Accounting ERM framework recognizes the importance of standardized high quality data in financial institutions as one of the three interacting pillars of risk exposure creation. This is depicted graphically below.



The COSO ERM Framework touches on the issue of data but addresses it as one of proper data architecture. Para. 342 states "Data management architecture refers to the fundamental design of the business and technology that supports data management. It is composed of models, policies, rules, or standards that dictate which data is collected, and how it is stored, arranged, integrated, and put to use in systems and in the organization." It goes on to further state in Para. 348 "*Consistency and standards*: How is the technology or tool used to help consistently apply and standardize enterprise risk management (e.g., Does the technology require a common taxonomy)?" This, however, does not deal with the issue of significant risk exposures created by non-standard identifiers and data components that are associated with them (reference data) that is pervasive throughout the financial industry and is the subject of intense deliberations by regulators and financial industry members at the highest level of global standards setters.

Risk Accounting – A Method for Implementing COSOs ERM Framework

The first step in the Risk Accounting method is to identify the primary risk types to which each industry is exposed. For example, in banking these risks are deemed to be operational, credit, market, liquidity, interest rate and conduct risk.

Three sets of standardized tables provide the risk-weighted factors used in the calculation of exposure to risk:

- **Product Risk Table**: provides risk-weights reflecting the risk characteristics of each marketed product according to criteria such as complexity, toxicity, rate of decomposition, method of distribution, method of trading etc.
- **Value Table**: is used to convert revenue amounts according to accounting records into scaled value band weightings (VBWs)
- **Best Practice Scoring Templates**: are used to calculate the risk mitigation index (RMI) based on key risk indicators (KRIs) that reflect the operational/control status of each department involved in the production, selling and control of marketed products

These risk-weighted factors are then used to calculate three core metrics for each risk type triggered by the product in question, noting a similar concept embedded in the ERM Framework (Para. 264 “Inherent, Target and Residual Risk”):

- **Inherent Risk:** is the risk-weighted transaction value, expressed in risk units (RUs), that represents its maximum possible loss
- **Risk Mitigation Index (RMI):** is a dynamic measure on a scale of 1 to 100, where 100 is consensus agreed best practice, that represents, in percentage terms, the portion of Inherent Risk that is mitigated through the effective management and control of the firm’s operating environment
- **Residual Risk:** is the portion of a transaction’s Inherent Risk, also expressed in RUs, not covered by effective risk mitigation - represented by the RMI – that represents its probability of loss

RUs are numeric values that can be aggregated across products, processes, departments, divisions and drilled into for determining causal factors. RUs as a measure of risk gain credibility when benchmarked against similar activities in multiple banks or in silo business units of a single bank. They become relevant in the absolute in the same manner as credit ratings (‘AAA’ is the epitome of creditworthiness) or human body temperature (37.0oC / 98.6oF is the standard of a healthy human). Over time risk exposure metrics can be correlated to expected and actual losses thereby imparting a monetary value to the RU. It captures a diverse set of risks into a single metric, not unlike FICO scores capturing a diverse set of human behavior for credit evaluation into a single metric. The RU is potentially valuable for other risk and performance techniques such as adjusting capital-at-risk calculations and the betas of the CAPM.

The pairing of accounting and risk values in a single source of controlled and audited accounting data at the transaction level enables the production of combined finance and risk reports and the computation of enterprise-wide risk/return metrics. Feedback loops give managers real-time or near real-time information on risk mitigation initiatives together with

calculations of the associated improvement in RMIs and reduced residual risk expressed in RUs.

Risk Accounting uses a methodical analysis process to implement its ERM system. When combined with techniques such as Six Sigma (quality Improvement), reengineering (cost and efficiency improvement) and internal audit control reviews (internal control improvements) it results in an efficient implementation process and an ERM system that continually monitors risk as well as quality, efficiency and controls.

Risk accounting's exposure calculation method is applied at the individual transaction level so that risk exposure metrics are established upon transaction capture. Thereafter, downstream systems can use these embedded metrics to consolidate and aggregate transactions for risk analysis linked to established management accounting systems.

The Risk Accounting implementation process is in effect a reengineering program that spawns projects that leaves the enterprise with lower risk exposures and reduced costs. The desired ERM Framework outcome "An organization that integrates enterprise risk management into daily tasks is more likely to have lower costs compared with one that "layers on" enterprise risk management procedures" (Para 35) will be achieved. Further, projects that reduce residual risk, measured in reductions in RUs, allows management to more precisely quantify, monitor and "identify opportunities that can move the entity closer to the desired residual risk profile" (Para. 265).

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Enterprise Risk Management (ERM) Limitations

Conventional ERM systems, including COSO's ERM Framework, are universally assessment based. Consequently, they typically report results via an assessment metric based on colors, whether it be a heat map or, as in banking's best practices, three colors… red, amber and green. The managerial usefulness of such systems, even when combined with other quantitative methods is limited for a number of reasons. First, 'assessment' as opposed to 'measurement' is inherently subjective and not easily audited; second, an assessment metric cannot be aggregated to support important management techniques such as trend analysis, benchmarking and ranking nor useful in comparing accumulating risk exposures to specific risk limits or the enterprise's overall risk appetite. To state the obvious, colors can neither be aggregated nor compared.

The evolving risk landscape in which firms operate has undergone dramatic change in little more than a generation due primarily to:

- advances in science and technology and an ever-growing dependency on globally interconnected electronic data and information networks;
- globalization and geopolitical uncertainties leading to supply chain vulnerabilities; and
- the use of increasingly complex and sophisticated financial products to manage financial risks.

This has caused boards of directors, chief executive officers and other senior executives to become increasingly concerned with risk and its potential to trigger material unexpected losses

which, as recent events such as the financial crisis of 2007/8 demonstrate, can severely impact or even wipe out firms' capital.

Whereas accounting standards are aimed at ensuring that enterprises present a fair view of financial condition, there are no equivalent standards that apply to risk. In other words, a firm's stakeholders - investors, regulators, customers and auditors – receive little or no information on the risks firms accept absolutely or in comparison to others in order to create shareholder value.

Economic Profit vs. Accounting Profit

There have been numerous instances in the recent past of enterprises suffering material unexpected losses where it was evident that boards and senior executives first became aware of the accumulation of excessive risk exposures after they had turned into losses. This should have alerted accountants to the possibility that accounting standards and reporting practices[4] may not have kept pace with the dramatic changes that have occurred in the risk landscape in which modern business enterprises operate as discussed above. Nevertheless, prevailing accounting standards have remained largely insensitive to these changes in that accounting profit and financial condition reported in financial statements are based on fair value accounting, that is, they are not intended to consider the likely economic effects of accumulating exposures to risk.

Chief Financial Officers (CFOs) have responded by promoting "economic profit" as a preferred primary financial performance metric given its risk-adjusted properties. The arguments in support of migrating to economic profit are compelling provided it is accepted that a core function of capital is to act as a buffer against unexpected losses. This is particularly the case where prudent enterprises build deep capital reserves well in excess of their basic operating needs to compensate for their limited ability to observe and manage accumulating exposures to risk. It follows that imposing capital charges on business lines according to the capital they consume would better align performance reporting with modern realities. But this presupposes that the risk exposures business line managers accept in order to create shareholder value can be reasonably and consistently identified and quantified. If that were possible, a major role for management accountants would emerge aimed at institutionalising economic profit as the primary performance metric.

If management accountants were able to go one step further and apply such a capital charge to each business line's marketed products and services, then a comprehensive and effective enterprise risk management (ERM) system will be the outcome. This arises because the resulting management accounting system will oblige business lines to price their products and services after accounting for a risk-based capital charge that will also be charged to their respective profit and loss (P&L) accounts thereby creating an in-built incentive to mitigate risk based on reported economic profit.

There is a potentially compelling logic here if it is accepted that exposure to risk is ultimately transferred to consumers through defective and/or mispriced products and services. The extreme unexpected losses suffered by enterprises in the recent past – the so-called 'fat tails' or 'black swans' – were invariably associated with defective and/or mispriced products and

[4] For example, International Financial Reporting Standards (IFRS) and Generally Accepted Accounting Principles (GAAP)

services. That was certainly the case with the large-scale, in some cases life-threatening unexpected losses experienced by financial institutions through the financial crisis of 2007/8 that were mainly attributed to defects in, and the mispricing of sub-prime products.

Techniques that assign costs to individual products and services have already been refined by management accountants. One such technique is Activity Based Costing (ABC). ABC identifies the activities involved in the manufacture of products and services, calculates the cost of such activities and assigns the resulting costs according to actual activity consumption. The 'fully loaded' cost of production provides the basis on which products and services can be competitively priced. If ABC is extended to incorporate the cost of capital on the basis of ERM system outputs, operating management will be incentivised to achieve improvements in both operating efficiency and risk mitigation that will, in turn, lead to improved economic profits and even more competitive pricing of products and services. An improved foundation for the more effective management of capital will also be provided.

Risk Accounting can provide such a structured and controlled foundation as an extension of management accounting on which capital can be allocated to marketed products. The result is a true measurement based ERM system that is fully integrated with a business enterprise's strategy and performance framework. It utilizes the enterprise's three lines of defense in creating the system, thus embedding its peoples' intellectual capital into the system, making it both practicable and, most importantly, understandable to those who rely on the reports to manage the enterprise's risk, performance and strategy.

Finally, reports to the Board and at all levels of senior and operating management are aggregated, risk adjusted and measureable against performance, risk appetite and strategy as desired and described in Para. 369 "Risk information presented at different levels cascades down into the entity and flows up to support higher levels of reporting. For example, reports to the board support decisions on risk appetite and company strategy. Reports from senior management present a more granular level and support decisions on strategic planning and budgeting, as well as decisions at the divisional and/or functional level. The next layer of reporting is even more granular and supports divisional and functional leaders in planning, budgeting, and day-to-day operations. This level of reporting should align with senior management reporting and board reporting. At higher levels, risk reporting encapsulates the portfolio view."

See graphic below for a sample report generated from Risk Accounting in keeping with the above principle – the enterprise's total view of product risk expressed in RUs below.

Total All Products	Inherent Risk (Risk Units)	Risk Mitigation Index (RMI)	Residual Risk (Risk Units)	Actual and Maximum Aggregate Algorithms	
FX Forwards	1,092	72.6	299	**58,711,787**	**80,856,680**
Commercial Loans (Secured)	1,754	70.1	524	**25,482,516**	**36,350,420**
Fixed Term Deposits	351	74.2	91	**13,415,490**	**18,090,000**
Repos	513	73.2	137	**16,574,490**	**22,636,800**
Cross Currency Swaps	1,454	74.1	377	**80,002,908**	**107,989,200**
Futures	1,571	72.0	440	**113,501,524**	**157,709,200**
CDOs	5,218	69.2	1,608	**169,255,839**	**244,612,500**
Equities	1,390	71.6	395	**77,599,640**	**108,369,400**
Fixed Income	2,550	71.6	725	**139,169,984**	**194,420,980**
Payment Orders	162	73.9	42	**10,110,420**	**13,672,800**
Total	**16,057**	**71.5**	**4,580**	**703,824,598**	**984,707,980**

For more granular view's Risk Accounting provides further breakdowns by various groupings. Below is a breakdown of risk exposures for each of the enterprise's business components.

Total All Products	Inherent Risk (Risk Units)	Risk Mitigation Index (RMI)	Residual Risk (Risk Units)	Actual and Maximum Aggregate Algorithms	
Processing Risks					
Transaction Processing Risk					
Product & Service Pricing	1,186	66.8	393	4,755,860	7,116,000
Deal Structuring	1,186	60.7	466	4,317,040	7,116,000
Order Management	4,420	65.2	1,540	17,281,418	26,518,800
Pre-Trade Validation	4,420	70.0	1,326	18,563,160	26,518,800
Quote/Price Management	5,586	70.0	1,676	23,461,620	33,516,600
Trade Execution & Capture	4,916	79.2	1,024	23,352,425	29,497,800
Cash Management	5,748	68.0	1,839	23,452,248	34,488,600
Trade Confirmation & Matching	4,916	56.0	2,163	16,518,768	29,497,800
Position Control & Amendments	4,916	79.7	1,000	23,499,914	29,497,800
Transaction Reporting	4,916	70.8	1,434	20,894,275	29,497,800
Credit Limit Monitoring	4,916	85.2	729	25,122,293	29,497,800
Trading Limit Monitoring	4,916	86.7	656	25,564,760	29,497,800
Trade Settlements	4,916	85.8	696	25,318,945	29,497,800
Depot/Custody/Collateral Management	4,636	64.5	1,646	17,940,546	27,814,800
Loans Processing	265	53.4	123	848,834	1,588,800
Payments	5,748	92.5	431	31,901,955	34,488,600
Nostro Reconcilement	5,748	91.7	479	31,614,550	34,488,600
Trading Account Reconciliations	4,230	67.2	1,389	17,044,885	25,377,000
G/L Proofs & Substantiation	5,748	86.3	786	29,775,158	34,488,600
Management Reporting	5,748	64.2	2,060	22,130,185	34,488,600
Regulatory & External Reporting	5,748	62.0	2,184	21,382,932	34,488,600
Transaction Processing Risk	**5,748**	**74.6**	**1,457**	**424,741,771**	**568,983,000**
Data Quality					
Client & Counterparty	5,748	63.9	2,073	20,578,198	32,189,360
Market Data	4,230	56.6	1,835	13,407,515	23,685,200
Products & Instruments	5,748	88.6	657	28,510,576	32,189,360
Data Quality	**5,748**	**71.0**	**1,669**	**62,496,289**	**88,063,920**
Core Applications					
Client & Counterparty Data	5,748	78.9	1,215	28,108,209	35,638,220
Market Data	4,230	54.5	1,924	14,295,710	26,222,900
Products & Instruments Data	5,748	66.6	1,919	23,739,653	35,638,220
Trading System	4,392	48.4	2,267	13,174,500	27,227,300
Global Loan System	265	60.6	104	995,648	1,641,760
Funds Transfer System	5,586	65.8	1,910	22,791,288	34,633,820
Global Nostros System	5,748	88.1	686	31,384,626	35,638,220
Global Ledger System	5,748	60.6	2,262	21,612,856	35,638,220
Funding & Liquidity System	5,748	76.6	1,344	27,303,475	35,638,220
Core Applications	**5,748**	**68.5**	**1,813**	**183,405,965**	**267,916,880**
Total Processing Risks	**5,748**	**72.5**	**1,580**	**670,644,025**	**924,963,800**
Financial Risks					
Market Risk	1,766	52.8	834	5,776,616	10,947,960
Credit Risk	2,397	51.8	1,155	7,450,546	14,383,200
Liquidity Risk	2,080	62.9	772	8,110,830	12,894,140
IRRBB	1,430	61.9	544	5,492,736	8,868,480
	7,673	**57.0**	**3,302**	**26,830,728**	**47,093,780**
Conduct Risk					
Conduct Risk	2,636	50.2	1,313	6,349,845	12,650,400
Total Product Risks	**16,057**	**71.5**	**4,580**	**703,824,598**	**984,707,980**