

# **Operational Risk Appetite**

Why, What & How



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**About the author**

John Cyriac is a process control engineer by profession with a master's degree in Corporate Finance Law. He is passionate about Operational Risk Management and Compliance and enjoys challenging consulting assignments. He has implemented various risk and compliance assignments with major banks in the UK. Currently he runs ComplianceTrack.Com – compliance software as a service designed as a first step before implementing GRC.

## Abstract

Operational Risk Management (ORM) is undergoing a transformation and it is widely getting recognised as a major area of risk for financial organisations.

Major high street banks in the UK have already implemented BASEL II requirements for Operational Risk (OR) and now they are looking to reap more from their investments. There is a great emphasis on coordinated risk management and organisations have started adopting Enterprise Risk Management (ERM).

The main objective for financial institutions in these efforts is to grow beyond compliance requirements and reap business benefits from their investments in OR.

One such concept associated with reaping business benefits which is often considered as part of ERM is Risk Appetite. However, there is very little guidance available in the industry for applying the concept of Risk Appetite for OR.

This study was conducted as an Action Research to provide a thought leadership in the area of Operational Risk Appetite (ORA). During this study, we initially analysed the regulatory landscape for OR and studied the way it is implemented in a major financial institution in the UK.

We then conducted several interviews with senior decision makers within that institution to understand their views about ORA. Further to that, we conducted an industry-wide survey on the concept. We then supplemented these inputs with the study of existing research and academic articles in this area.

The result of this study identifies the unique nature of ORA in comparison to Risk Appetite for credit or market risks.

Therefore, we created a more appropriate definition for ORA. We then created an implementation framework for ORA based on the ORM framework.

## Introduction

### Objective

Operational Risk Management in the banking industry has grown from its infancy to an established risk profession in the last decade. Even then, standard risk concepts when applied to operational risk causes confusion. One such concept is risk appetite.

The concept of risk appetite is attracting a growing attention among risk professionals, especially in the current market situations. However, there seems to be a lack of clear insight in this area, especially when it is applied to the operational risk profession.

This project aims to answer the following questions.

1. Why should a financial institution consider ORA?
2. How do you define ORA?
3. How to implement ORA?

The scope of this study limited in providing a direction on Operational Risk Appetite and not necessarily the detailed steps in implementation.

### Inputs for this research

The data for this research comes from three sources.

1. Qualitative data from interviews of various senior decision makers (predominantly operational risk professionals) across business units of a major UK financial institution
2. Quantitative data from a survey on ORA, which includes inputs from risk professionals around the world (The survey was conducted for 14 days and 48 practitioners participated in the survey. Please refer to Appendix II for the list of job title of respondents and Appendix III for a copy of the web survey.)
3. Study of existing research and academic articles in the area of operational risk and ORA.

**Structure of this document**

This document is divided into three sections. The first section deals with the 'why' of ORA, second with the 'what' of ORA and the final section deals with the 'how' of ORA. Finally, we conclude by summarising our thoughts.

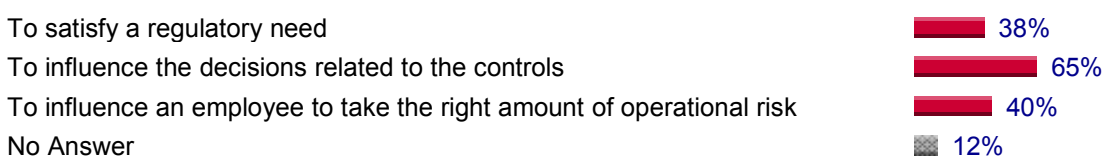
## The 'why' of ORA

Most of the time, the answer to the question of 'how' starts by answering the question of 'why' and 'what'. Answering 'what' often leads to a definition, and definitions most often contain the 'why' of a concept. Therefore, in this section, we will first discuss the 'why' and 'what' of operational risk appetite and consider if we need a separate definition for ORA.

As operational risk is a newer risk profession compared to credit risk and market risk, naturally there is a trend to follow the practices in those professions and apply it to operational risk management. Therefore, it is important to objectively consider the reason for setting an ORA limit.

During the interviews with various senior banking decision makers, the responses differentiated ORA from market and credit risk appetite and the main reason for ORA emerged as a concept to decide on investments in controls. This view emerged as the majority view during the survey conducted to a wider audience as depicted in Figure 1.

However, other reasons were also cited by a considerable proportion of respondents, therefore we will analyse these reasons in detail in this section.



**Figure 1** Survey result for "Why should an organisation define its Operational Risk Appetite limit?"

### Regulatory reasons for implementing ORA

Businesses operate in an environment with regulatory and self-imposed constraints and the goal is to deliver shareholder returns by working within these constraints.

During our research, 36% of the survey respondents considered that there is a regulatory need to establish ORA. (Please refer to Figure 1).

Principle 6 of Basel Committee on Banking Supervision states that "banks should periodically review their risk limitation and control strategies and should adjust their operational risk profile accordingly using appropriate strategies, in light of their overall risk appetite".

In a survey conducted by the FSA in the UK, it was found that “almost all TSA (Basel II – Standardised Approach) and limited license firms and two-thirds of BIA (Basel II - Basic Indicator Approach) firms claimed to be using the concept of risk appetite in some form. The uses ranged from deciding whether risks, as identified in risk matrices and self-assessment processes, were above appetite and required corrective actions, setting tolerance levels to determine incident escalation criteria and as key indicator triggers. Some firms expected to do more work on this as they develop their Pillar 2 Internal Capital Adequacy Assessment Process (ICAAP)”<sup>1</sup>.

The FSA’s “Supervisory Review and Evaluation Process”<sup>2</sup> (SREP) reviews ICAAP under the Capital Requirement Directive (CRD) obligation to issue Individual Capital Guidance (ICG). “The results and findings of the ICAAP should feed into an institution’s evaluation of its strategy and risk appetite”<sup>3</sup>. “Pillar 2 may require additional capital to be held for those risks not captured at all by Pillar 1”<sup>4</sup>.

FSA’s ICG may reflect the additional capital required based on the Pillar 2 review.

“Where the firm’s own assessment is that it needs less internal capital for a particular risk than appears to be implied by the Capital Resource Requirement (CRR) calculations, the FSA may need to know the reason behind this – it could be because of a different risk appetite”<sup>5</sup>.

In addition to the SREP, the EU’s CRD stipulates that the “operational risk measurement system shall be closely integrated into its day-to-day risk management process”<sup>6</sup>.

The analysis of the regulatory need for ORA takes another twist when we read the FSA paper on Operational Risk Appetite. It states that “there is no explicit requirement or provision in the FSA rules, or guidance for firms to set or define an ORA. However, the evidence suggests that articulating an ORA, either explicitly or implicitly, may provide an important mechanism for demonstrating compliance with the general “SYSC”<sup>7</sup> requirements and/or the ‘use’ test”<sup>8</sup>.



## Operational Risk Appetite and control decisions

“In making risk/reward decisions, a bank can often expect to gain a higher rate of return on its capital by assuming more market risk or credit risk, i.e. with these types of risk, there is a trade-off between risk and expected return”<sup>9</sup>.

Therefore, it is important for organisations to influence the employees to take the right amount of credit and market risk that is not too high or too low compared to a defined organisational appetite level. Setting the risk appetite for market and credit risk thereby influences an employee’s decision with a banking activity. For example, the bank may set the maximum limit of credit available to a major account, (credit risk appetite).

The employee decision of lending to that major account will then be influenced by that risk appetite limit. The employee is influenced to take the risk (so there is potential for gain), but not beyond a limit.

Can we say the same for operational risks and the employee attitude towards an appetite limit?

“A bank cannot generally expect to gain a higher expected return by assuming more operational risk; operational risk destroys value for all claimholders”<sup>10</sup>.

It “differs from the usual types of unsystematic risk in that it is asymmetric, primarily causing losses and not gains. Hence, to the extent that operational losses have a negative mean, it makes sense for financial institutions to make expenditures on managing operational risk at least to the point where the marginal expenditure equals the marginal reduction in expected losses from operational events. Operational loss events may serve as signals of poor management quality and operational controls, leading the market to reduce expectations of future cash flows”<sup>11</sup>.

A possible argument against this negative nature of OR is the very activity of doing business. There is operational risk in any business; therefore one could argue that you take operational risk for returns. To clarify this situation, let’s take the example of a banking business. One enters a banking business, say lending, to make gains from lending decisions (credit risk). Operational risks are inherent in this activity and no-one is intentionally taking them.

However, during the survey, we received a contrasting answer suggesting that operational risks are taken for a gain (please refer to Figure 2) whereas during the in person interviews within the selected UK bank, we received a majority view confirming the above analysis confirming the negative nature of operational risk.

## Operational Risk Appetite: Why, What & How

Yes, I totally agree 56% May be 10% No 18% No Answer 15%

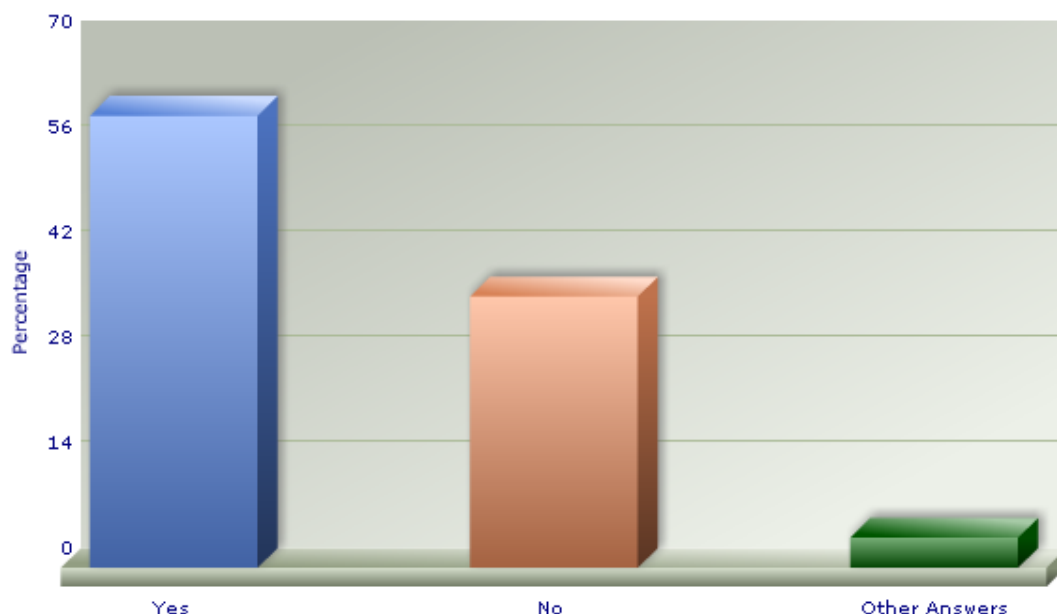
**Figure 2** survey result for the question; “Businesses take financial risks as part of their business strategy to achieve a gain. Similarly, can we say that businesses as part of their strategy take on operational risks to realise a gain?”

One possible explanation for this anomaly could be that the current definitions of risk appetite which were originally meant for credit and market risk is applied to operational risk and is misleading the practitioners.

If the intentional taking of OR cannot increase gain, then it is natural to question the need to set an ORA limit. Future cash flows can be negatively affected if you set a very high appetite for operational risk. However, if you need a very low/zero effect on future cash flows from operational risk, your control expenses will increase and still affect the future cash flows.

Therefore, the purpose of setting a limit on operational risk appetite is to find the point where “the marginal expenditure equals the marginal reduction in expected losses”<sup>12</sup>.

During our interviews and during the surveys, we received a consistent feedback supporting this view (please refer to Figure 3). The “FSA paper on ORA”<sup>13</sup> also points out the tolerable level of OR as the “residual”<sup>14</sup> level of OR where cost of mitigation is more than the loss.



**Figure 3** survey result for the question; “The main use of having an Operational Risk Appetite limit is to influence control investments. Do you agree?”

**Other commonly stated reasons**

Operational Risk Appetite is also meant to influence employee decisions, but it is important to consider the type of decisions. As already discussed in the previous section, setting the operational risk appetite may not influence the normal decision-making on banking related activities but it is about whether to apply or invest in controls.

Determining the risk appetite is an important step in implementing an Enterprise Risk Management (ERM) program. “ERM is a process, effected by an entity’s board of directors, management and other personnel, applied in strategy setting and across the enterprise, designed to identify potential events that may affect the entity, and manage risk to be within its risk appetite, to provide reasonable assurance regarding the achievement of entity objectives”<sup>15</sup>.

The availability of a business unit level ORA in line with a group level ORA gives a framework for business unit heads to decide which projects to undertake in a 12-month period. For example, for a given budget, they may decide to undertake say three control improvement projects.

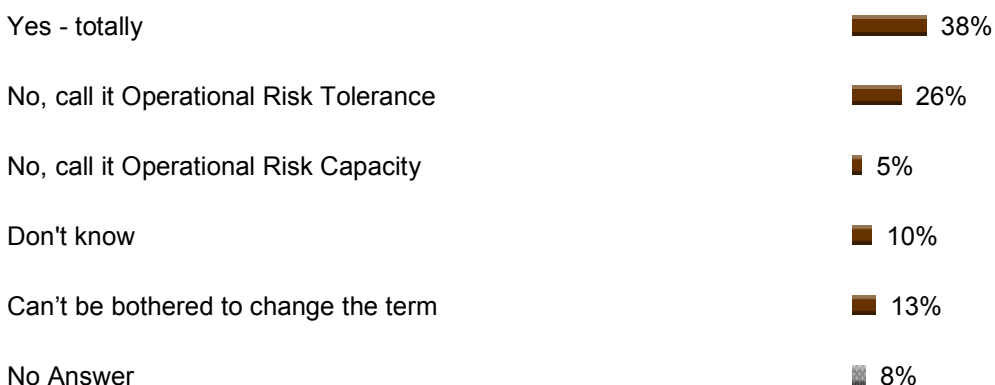
This decision could be based on 1) number of controls which require immediate improvement and 2) the number of complex projects which can be handled in a given time frame by the business without disrupting the normal business operations.

This gives business units a platform for communicating control strategy to internal audit teams, even if, say, there are four controls which need improvements, the business unit has chosen to take up only three as per a control improvement plan derived from an agreed ORA limit.

## The ‘what’ of ORA

During the interviews with various senior risk managers in the selected UK bank, there was a predominant opinion against the term risk appetite for operational risk.

Most of the interviewees preferred the term risk tolerance. However, during the survey to a wider audience, we received a mixed response as in Fig. 4.



**Figure 4** Response to the survey question; “Operational Risk Appetite – Are you happy with the terminology?”

This type of mixed response (please refer to Figure 4) and the contrasting response on the objective of ORA as described in the last section (please refer to Figure 2) is disturbing at first glance.

The “FSA paper on ORA”<sup>16</sup> also states their finding about the predominant usage of the term tolerance along with the term appetite.

However, this confusion is to be expected as we are discussing a concept related to OR. It is an accepted fact that OR is a difficult risk type from a measurement point of view, making it a difficult one to define (‘what’). This difficulty of OR made it the “only risk type with an official definition”<sup>17</sup>.

The Basel Committee deliberately created an official definition for OR, but did not create official definitions for credit or market risk, as they are easily understood.

Therefore, for a consistent approach towards ORA, one needs to have a definition for ORA where practitioners attach ORA to the same intended concept. In this section, we will first revisit the definitions of OR and then we will enumerate the commonly used definitions of risk appetite. Finally, using our understanding of the ‘why’ of ORA, we will try to define ORA.

## Definitions and history of operational risk

The following paragraphs enumerate various definitions of Operational Risk and give an evolutionary history of the discipline in the context of financial industry starting from 1991.

“The generic term ‘operations risk’ existed as a generic term of COSO in 1991.”<sup>18</sup>

“Risk that deficiencies in information systems or internal controls will result in unexpected loss is the definition of Operational Risk as per Volume 16 of the Basel Committee’s Risk Management Guidelines published in 1994.”<sup>19</sup>

“Operational risk is the risk of everything other than credit and market risk as per BBA survey of 1999.”<sup>20</sup>

As per Basel Committee on Banking Supervision, we got similar definitions from 2001 through to 2004. “Operational risk is defined as the risk of loss resulting from inadequate or failed internal processes, people and systems or from external events. This definition includes legal risk, but excludes strategic and reputational risk.”<sup>21</sup>

A very interesting definition with an upside consideration is “Operational risk is the risk that the operation will fail to meet one or more operational performance targets.”<sup>22</sup>

## Definitions of risk appetite

Following are some of the definitions of risk appetite in the industry.

“The level of aggregate risk that a company can undertake and successfully manage over an extended period of time”<sup>23</sup> – Society of Actuaries

“A company’s ability and/or willingness to absorb declines in the value of an asset, liability, trade, transaction, or portfolio”<sup>24</sup> – CFO Research Services

“The broad-based amount of risk a company or other entity is willing to accept in pursuit of its mission or vision”<sup>25</sup> – Basel Committee

“Risk appetite sets out the level of risk that the bank is willing to take in pursuit of its business objectives”<sup>26</sup> – Barclays Bank

“Risk appetite is an expression of the maximum level of residual risk that the group is prepared to accept in order to deliver its business objectives and is assessed against regular (often daily) controls and stress testing to ensure that

the limits are not compromised in abnormal circumstances”<sup>27</sup> - The Royal Bank of Scotland Group





“The optimal level of risk can be defined as the level that best serves the primary stakeholders (shareholders) while satisfying the constraints of other stakeholders (rating agencies, regulators, customers, the public etc)”<sup>28</sup>.

### **Drawbacks of the definition of risk appetite when applied to OR**

Some of the contrasting responses received during our study as outlined in the previous sections could be because of the interpretation of the risk appetite definition for operational risk.

The following are some of the drawbacks of the definition of risk appetite when applied to OR:

1. The definition of risk appetite when applied to OR, gives the impression that an organisation is actually taking OR willingly. It is only tolerating OR as the “bank cannot generally expect to gain a higher expected return by assuming more operational risk”<sup>29</sup>. The organisation is tolerating the residual element of OR losses. This view was confirmed during our research. (please refer to Figure 5)
2. If we understand risk appetite for OR in its current fashion, there is no incentive for an OR practitioner to innovate and reduce the residual risk level and thereby promote organisational performance.
3. It is an organisational objective in credit and market risk for the employee to take the risk to the appetite level where taking less risk than appetite is not desirable. However, it is desirable in OR to tolerate below the appetite level if the cost of controls is lower than the expected loss.

Yes  42% Not sure  15% No  28% No Answer  15%

**Figure 5** Response to the survey question; “Operational Risk Appetite for a business unit is the residual risk as perceived by the business. Do you agree?”

### Who are the users of ORA

Before we debate or conclude on the terminology or the definition of ORA, it is best to consider – who wants to know about ORA in an organisation and their motivations. Please refer to Table 1 for an analysis of the users of ORA and their motives.

Main consumers of ORA	Objective	Usage of ORA	Challenges
Board (Finance Director on behalf of the board sets strategic constraints)	Provide confidence in the ability to pay dividend, maintain target capital ratios and credit rating, avoid losses which can materially affect share price and support future balance sheet growth.	Considers overall risk appetite and its changes in stressed situations. (credit, market and operational) Not necessarily interested in ORA alone, OR loss is budgeted as part of the plan.	Is the budgeted OR showing the residual level of OR after all control efforts? Is it possible to reduce OR and allocate capacity to profit generating risk types? What should be the budget for control expenses?
Business units	Create business unit level business plan aligned with the overall appetite constraints as directed by the board.	Considers overall risk appetite and its changes in stressed situations. (credit, market and operational) Not necessarily interested in ORA alone, OR loss is budgeted as part of the plan.	Is the budgeted OR showing the residual level of OR after all control efforts? Is it possible to reduce OR and allocate capacity to profit generating risk types? What should be the budget for control expenses?
Operational Risk function	Reduce expected losses and reduce the likelihood of suffering unexpected losses Help the business to run more effectively/efficiently and provide improved customer service.	Interested in an ORA limit to reallocate to principal risk owners/business units etc and provide risk management function.	Will the current concept of risk appetite for OR help to reduce expected losses or will it try to maintain the same level or possibly incur more losses when business volume grows?
Principal risk owners (Ex. Head of HR – People risk)	Direct, Assess, Control, Report, Manage/Challenge	Need to set and allocate (direct) risk appetite for the principal risk to corresponding risk owners ( ex. Business unit HR) and assess, control, report, manage/challenge	How to consistently translate an allocated appetite to thresholds for risk indicators?

**Table 1** Users of ORA and their motivations

**Definition of ORA**

The analysis in the above sections including its usage by various parties points towards a 'tolerance' of OR rather than an 'appetite'. If one needs to consider a terminology, Operational Risk Tolerance is more appropriate than Operational Risk Appetite. Alternatively, if one does not want to change the terminology, give ORA a distinct definition to differentiate its application and interpretation. The following can be a definition that can identify ORA along these lines.

Operational risk appetite (or Operational Risk Tolerance) sets out the level of residual operational risk tolerated by an organisation in the pursuit of its business objectives.



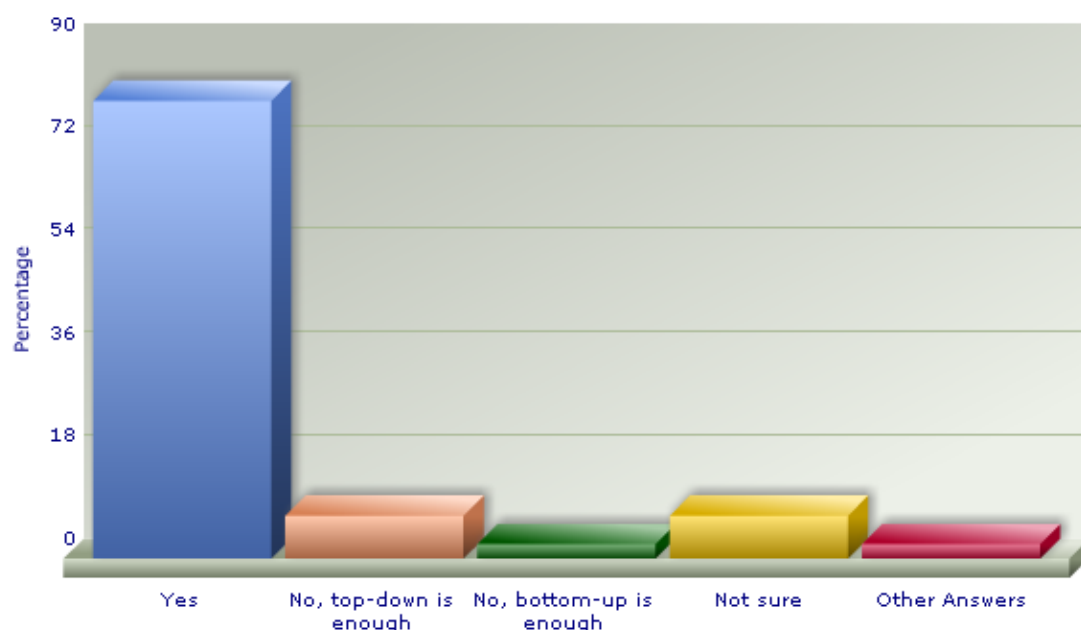
## Operational Risk Appetite – How to implement it?

During our study on ORA, we came across various suggestions and approaches for implementing ORA in an organisation. There was a predominant debate between top-down and bottom-up approaches.

The top-down approach considers risk appetite as expected by the business strategy of the company articulated as a specific limit for the business unit/principal risk, and the bottom-up is determined by the business unit as part of their risk management framework.

The main reasoning for practitioners preferring bottom-up approach was that it is the best way to identify the residual level of operational risk. (Using loss data, risk & control self assessments etc). Such reasoning agrees with our definition of ORA that it is the level of residual operational risk tolerated by an organisation in the pursuit of its business objectives.

However, during our study, majority of people interviewed and participants responded to the survey provided the feedback to consider a combination of top-down and bottom-up approaches to implement ORA. Please refer to Figure 6 for the results of the survey.



**Figure 6** Answer to the survey question; "A successful Operational Risk Appetite framework needs a combination of top-down and bottom-up approaches to reduce the gap between board level and business level views on appetite. Do you agree with this statement?"

### Overview of the top-down approach for risk appetite

As part of the business planning process, the Finance Director on behalf of the board, sets strategic objectives for the business. These objectives may include the organisations ability to pay dividend, maintain target capital ratios and credit rating, avoid losses which can materially affect share price, support future balance sheet growth etc.

Based on these objectives, an overall risk appetite is set by the Finance Director. The capital models provided by credit, market and operational risk teams are used for this quantification exercise. The overall risk appetite set at this level is a combination of all risk types (credit, market & operational risks). This is an annual process and the overall constraint directs individual business units to create their business plans in line with the total group level risk appetite.

For the business strategy to deliver as expected, the board has an appetite for risk at the expected loss level (mean of the distribution, please refer to Figure 7, this is budgeted and there is no need to set aside capital for this level of loss).

The utilisation of the risk appetite is then monitored regularly (say quarterly). If utilisation has increased, then the available capacity reduces and vice versa.

As per FSA survey in the UK, many firms use an economic capital model to derive their appetite numbers. It states, “every firm used its economic capital model to verify its solvency – half to charge their business units, just over half to derive a risk-adjusted return on capital and half convert to give an appetite number”<sup>30</sup>.

From a regulatory point of view, ORA also needs to have stress testing as part of the framework. “GENPRU 1.2.42R requires stress tests for major sources of risk and, for most firms, OR ought to be such a source”<sup>31</sup>.

Therefore, as part of “Pillar 2 assessment, FSA expects to see stress testing and scenario analysis for operational risk”<sup>32</sup>. This is applicable for BIA or TSA firms also.

During this study on ORA, we found that similar top-down approaches for risk appetite which utilise stress testing on their existing capital models are used in major UK banks like “Barclays” and “RBS”<sup>34</sup>.

In this section we will give a summary of some of the common top-down approaches followed in the industry to articulate the risk appetite.

This method is proven to be practical in articulating board level risk appetite and risk appetite for financial risks (credit and market risks). We have looked at some of the publically available resources by some of the UK banks for this purpose.

## Risk Appetite concepts (diagram not to scale)

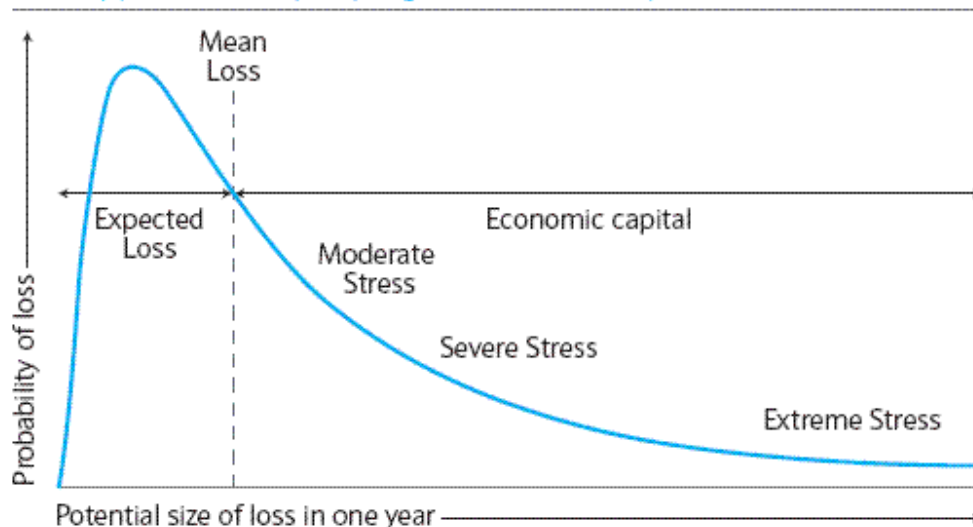


Figure 7 Risk Appetite concepts <sup>35</sup>.

### Overview of some standard top-down risk appetite frameworks

As outlined in a publically available annual report, Barclays follows two approaches for Risk Appetite a) Financial Volatility and b) Mandate and Scale<sup>36</sup>. Financial Volatility is the level of potential deviation from expected financial performance that a bank is prepared to sustain at relevant points on the risk profile.

It is established with reference to the strategic objectives and business plans, including the achievement of annual financial targets, payment of dividends, funding of capital growth and maintenance of acceptable capital ratios and credit rating. The portfolio is analysed in this way at four representative levels:

1. Expected performance (including the average credit losses based on measurements over many years)
2. A level of loss that corresponds to moderate increases in market, credit or operational risk from expected levels
3. A more severe level of loss which is much less likely
4. An extreme but highly improbable level of loss which is used to determine the bank's economic capital

The Mandate and Scale framework is a formal review and control of Barclays' business activities to ensure that they are within the mandate (i.e. aligned to the expectations of external stakeholders), and are of an appropriate scale (relative to the risk and reward of the underlying activities).

Appropriate assurance is achieved by using limits and triggers to avoid concentrations and operational risks which could lead to unexpected losses of a scale that would result in a disproportionate fall in Barclays' market capitalisation.

Taken as a whole, the Risk Appetite framework provides a basis for the allocation of risk capacity to each business. Since the level of loss at any given probability is dependent on the portfolio of exposures in each business, the statistical measurement for each key risk category gives the bank clearer sight and better control of risk-taking throughout the enterprise.

Capital adequacy forms a critical part of Barclays' annual strategic medium-term planning process. During the planning process, the bank sets limits for business capital demand to ensure the capital management objectives including meeting internal targets, will continue to be met over the medium-term period.

### **Top-down approach for Operational Risk Appetite using Loss data and expected revenue growth**

In the previous section, we discussed the top-down approach for risk appetite as a whole and the concept of tracking utilisation of risk appetite etc.

The business objective is to tolerate the residual level of OR and the objective of OR function is to reduce the expected level and minimise the unexpected level of losses. As we noticed, the board level calculation for risk appetite uses the expected loss and it need not be the 'actual residual level of OR' in an organisation.

"Variability that can be quantified in terms of probabilities is best thought of as risk, while variability that cannot be quantified at all is best thought of simply as uncertainty"<sup>37</sup>.

Such quantifiable variability or expected losses are generally high frequency, low impact losses whereas the uncertain losses are generally high impact, low frequency events. The distribution of operational risk has the expected losses as the mean and the unexpected losses distributed in various severely levels on the graph.

Please refer to the modified graph in Figure 8 to visualise the situation when applied to OR. An approach for ORA as used in some businesses, as identified during this study of ORA, uses expected volume growth and previous loss history to forecast a 'tolerable' level of high frequency, low impact loss estimate.

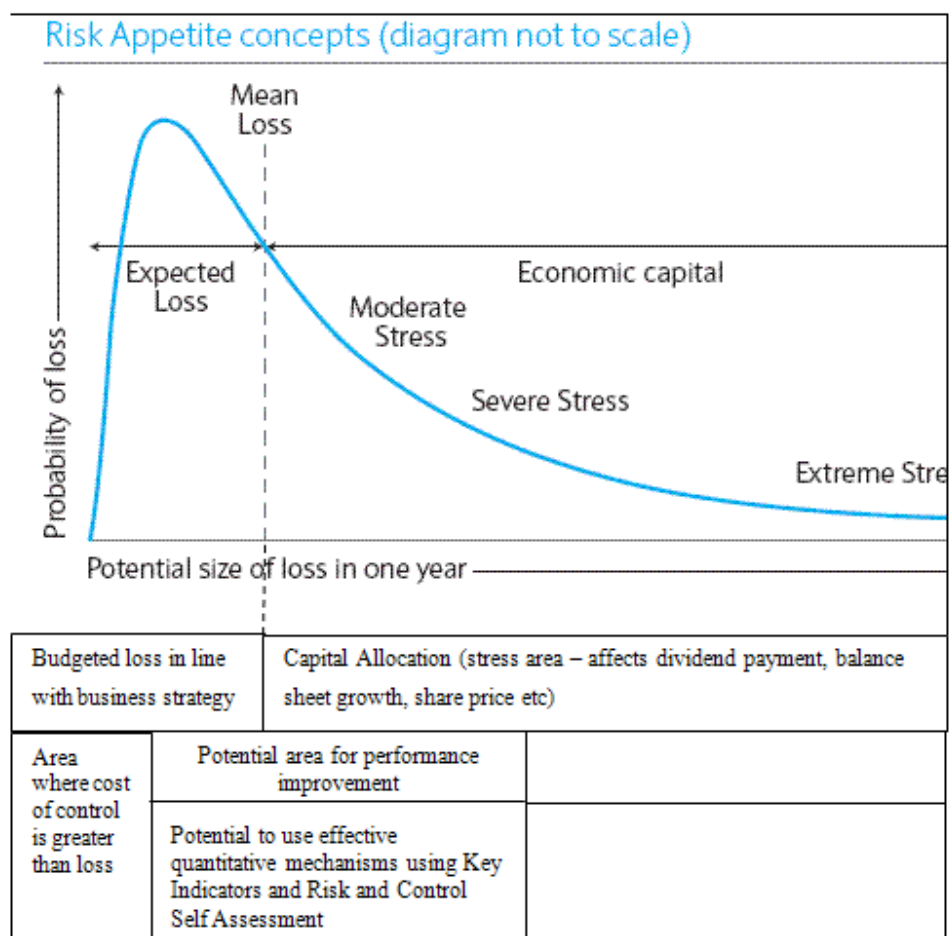
The expected high frequency, low impact (considering them to be residual in nature) loss forecast is then plotted against actual data as it becomes available for reporting and oversight.

Please refer to Figure 9 for a sample illustration.

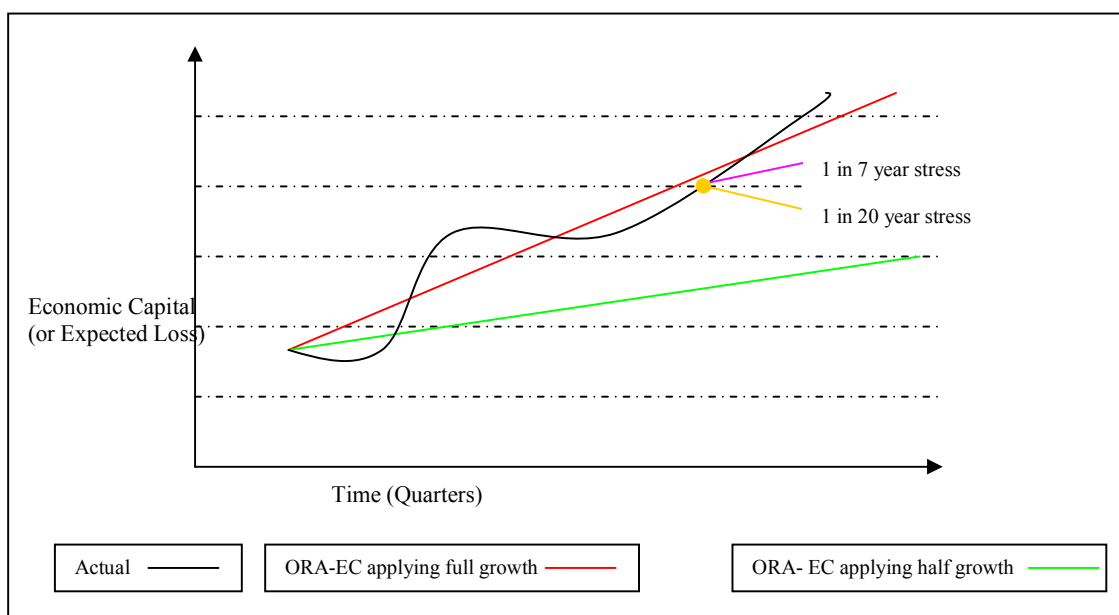
Another rule of thumb for ORA considers the expected loss to increase proportionally with business growth.

For example, for a target business growth of 10%, consider 5% growth on expected loss and the ORA on a similar level. Again, this projection can then be redistributed to business units and even to principal risk areas as categorised internal/external loss data is made available. A variation of the same approach considers the growth in economic capital based on projected business growth whereby there is a handle on economic performance.

One can apply stress levels also in this approach to see the effect of situations affecting board strategy (dividend distribution etc).



**Figure 8** Dimensions of risk appetite for OR 38



**Figure 9** ORA based on expected loss and volume growth

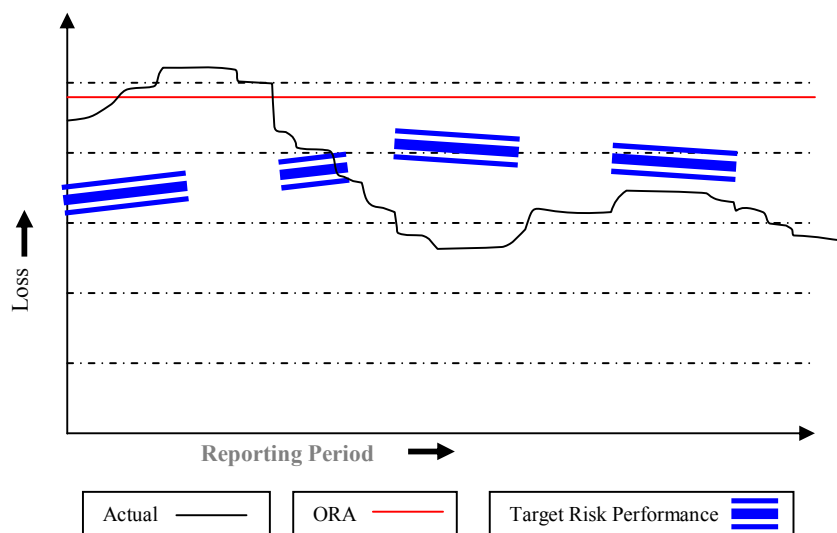
However, the function of OR is to reduce the expected level of losses, therefore the number derived in this manner (ORA) is the minimum expected performance. For the OR function to add value, there should be proactive efforts to reduce this level of loss.

Therefore, articulating and propagating ORA in this manner is not beneficial for the organisation. The OR function need to propagate a Target Risk Performance (a level less than the expected level), which is less than ORA and create a culture of innovation (controls and risk management).

In this approach, the OR function propagates a minimum level of performance (OR budget considered by the board) and a Target Risk Performance (OR target for the group). These numbers can then be split into business unit/principal risk levels to give a top-down 'direction' for OR.

Please refer to Figure 10 for an expression of this concept.





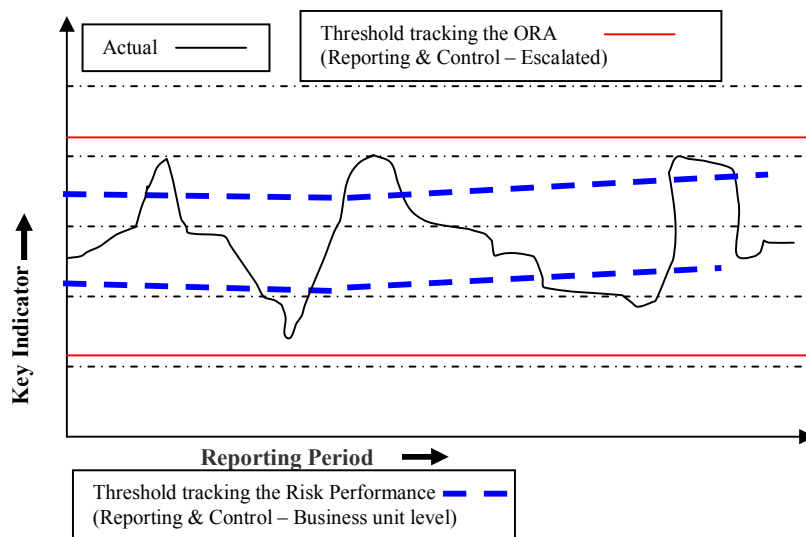
**Figure 10** Performance driven ORA

### Using KRI/KPI for ORA

Once the ORA and Target Risk Performance are communicated to business units/principal risk owners (Ex. HR Director), the next task is to use their domain expertise to translate these numbers into measurable Key Indicators and their performance. The risk owners subjectively assess the thresholds for Key Indicators to achieve these targets/directions.

“Operational risk indicators are measures that attempt to identify losses; near losses or potential losses before they happen.” Key Risk Indicators (KRI) is considered the best way to implement an ORA implementation framework. The prevalence of KRI for risk appetite among financial institutions was revealed in a recent “RMA survey”<sup>40</sup>.

Please refer to Figure 11 for an illustration of using KI thresholds as part of an ORA framework.



**Figure 11** Key Indicators – thresholds aligned with ORA framework

### Additional comments on Key Indicators

Among the compliance constraints in which a financial organisation operates, SOX, Section 404 has objectives in the area of internal control over financial reporting.

Therefore, an organisation can benefit by integrating such efforts in the pursuit of defining their ORA. There is an increasing trend to integrate process mapping, corporate governance (SOX 404) and operational risk management.

“It may seem at first that op risk and internal control over financial reporting are unrelated. There is nothing specific in the SOX 404 requirements about risk identification, assessment, monitoring, reporting, control or mitigation (beyond the identification of those control deficiencies that are significant and those that are material weaknesses), and there is nothing specific in the Basel II framework about financial reporting. However, the connection is actually quite simple, as control failures can easily lead to material financial misstatements. Thus, whether one wants to call them op risk events under Basel II terminology or internal control over financial reporting deficiencies under SOX 404 terminology is practically irrelevant”<sup>41</sup>.

There are already initiatives in Barclays to integrate SOX 404 compliance framework with the ORM framework and process mapping is ongoing. There is an increasing acceptance of six-sigma as a methodology to attain SOX compliance and at the same time improving performance.

“Bank of America saved \$2 billion in 3 years by using Six Sigma by improving process performance”<sup>42</sup>.

“Companies such as General Electric and AlliedSignal track actual and potential error rates against a ‘six-sigma’ standard, and corrective actions are taken if performance falls below that threshold.”<sup>43</sup>

An approach by the business units to align to a group’s ORA could start with defining the various processes in the bank and its performance indicators (KPI) and the tolerance for meeting those targets.

“The relationship between KPI and KRI can be stated as follows;

$$\vec{KPI} = B \vec{KRI} \quad \text{where } B \text{ is the matrix of regression coefficients.}$$

Similarly, operational risk can be deducted from the KPI measures by considering operational risk as the probability that at least one KPI will fall outside of its error tolerance

$$P(\Delta KPI_i < \text{mini or } \Delta KPI_i > \text{maxi}), \text{ for } i=1 \text{“} \text{ }^{44}$$

Implementation of a group level ORA may require the business units to define tolerances on its indicators. Based on our understanding of ORA, an effective ORA framework using KRI/KPI should have the following features.

1. It must be possible to consistently define the thresholds of the indicators.
2. It must be possible for the decision maker to decide on whether to invest in controls based on the principle of the marginal expenditure Vs marginal reduction in expected losses
3. In order to convey the context of the report, the KRI trend with respect to ORA should convey the trend over a period of time
4. KRIs should be categorised for reporting and action at the business unit level and at the group level

### Bottom-up Approach for ORA

Risk and Control Self Assessment (RCSA) is a bottom up approach for identifying, evaluating, quantifying and determining appropriate treatment of risks and controls within a business.

RCSA contain all the individual, specific, material operational risks and key controls of an area and allow management to make informed business decisions and demonstrate consideration of these risks. They assist management in identifying operational risks in the business and managing them before events occur.

They provide a forward-looking view of the risk and control environment for a business area. RCSA provide quantification of individual risks, and control effectiveness. Following is a summary of major data points from RCSA which are important in an implementation framework for ORA.

1. Material risks & estimate of impact and probability
2. Key Indicators for risks for continuous assessment
3. Control effectiveness & cost of investing in controls
4. Input data for Key Risk Scenarios ( Probability & Impact of multiple risks causing a scenario)

The material risks in a business can change over a period. RCSA gives a framework for the business to assess the material risks and bring it to the practitioner's attention along with the Key Indicator for continuous measurement.

Each material risk in a business may have a control and RCSA gives a platform for assessing the effectiveness and a forward-looking approach for improving it. The decision making for investment in controls needs a high level of managerial input.

Along with already available data, if businesses document the cost of improving controls during RCSA, managers may be able to improve their judgment on investments in controls.

### **Additional comments on investment decision making on controls**

Businesses are required to identify meaningful and appropriate Key Indicators (KRI/KPI) to monitor risk and controls within key processes and functions during Risk and Control Self Assessment and used if there is a business benefit.

The data available from the self-assessment contain individual risks, their probability, severity and the corresponding indicator. Additional information specific to controls should also be collected from self-assessments including the estimated cost of controls.

The most important factor to consider in the self-assessment is that it is based on the manager's knowledge and experience at the time of the assessment. Even then, there is a fair amount of complexity in this decision-making. The managers need to decide the most possible cause of an event (of a specified impact and probability), and the level of investment in controls which justifies the probability of reducing loss.

During an ORA project, companies may decide to stick with a manager's subjective decision making or provide him with tools to make more consistent decision making.

Bayesian Belief Networks (BBN) could give a mathematical basis to use both quantitative and qualitative information in arriving at estimates. A BBN network with decision and utility nodes (Bayesian Decision Network) can be used to create consistent management decisions, which compare the cost of controls versus the loss in the given probability.

During this process, businesses will be able to proactively consider the residual level of risk in each of the material risks and a summation of that gives a value for the bottom-up level of ORA for each material risk.

### **Putting it all together – An ORA framework**

In this section, let us consider how we can use various elements of the ORM process to develop a framework for ORA.

As part of RCSA, businesses individually assess the material risks and estimate the residual level along with control effectiveness. Key Indicators are identified, loss events are recorded and the framework is ready for 'assessment' and 'reporting'.

The Finance Director level top-down assessment articulates the cumulative risk appetite. The group level OR function uses the expected loss, volume growth estimates and a judgment of the FD's budgeted value to arrive at a minimum performance level for OR and articulate ORA and a Risk Performance Target.

These numbers are then split for business units/principal risk areas. The risk owners then subjectively estimate the thresholds for Key Indicators to achieve the target and use the 'direction' for considering investments in controls. Principal risk owners and the OR function can then 'manage and challenge' the performance as the year unfolds. Table 2 gives a summary of activities, frequency, responsibility and the inputs and outputs.

## Operational Risk Appetite: Why, What & How

Action	Frequency	Responsibility	Inputs	Output for ORA
Total risk appetite	Annual	Finance Director	Capital models from different risk types and strategic constraints of the board	Indication of budgeted OR loss
Operational Risk Appetite	Annual	Operational Risk Owner	High frequency, low impact loss history, expected volume growth, budgeted OR loss by the board	ORA – minimum level of performance for OR  Risk Performance Target(RPT) – a value less than ORA as a target to achieve by wise ORM  ORA & RPT split for business unit/principal risk owners
Budget for investing in controls	Annual	Business Unit & Principal Risk Owners	RCSA, Internal Audit Recommendations, ORA & RPT	Scheduled control improvement projects  Thresholds for Key Indicators for ORA and RPT
Business Plan	Annual	Business Unit Owners	Total risk appetite, budget for investment in controls	Agreed investment plan for controls
Key Indicator Measurement	Frequency based on the KI	Ownership based on the KI	Thresholds for ORA & RPT, Reporting standards for escalation and control	KI reports
Internal & External Loss data	Monthly	Principal risk owners	Events	Reports
Capital Model	Quarterly	Operational Risk Owner	Key Risk Scenario	Reports on OR budget utilisation

**Table 2** Summary of ORA framework



## Conclusion

As a profession, ORM is growing from being an answer to the Basel II requirements to an important driver for organisational performance in the banking industry.

Aligning ORM with the business objectives using the concept of risk appetite is therefore a major objective for Basel II compliant banks. However, this study found that the current definitions of risk appetite which were originally meant for credit and market risk is misleading when applied to Operational Risk (OR).

OR is found to be inherent in a business and the banks are not purposefully taking it. Banks take financial risks with the objective of creating a gain whereas OR causes a loss. Therefore, the term risk appetite is appropriate for financial risks and may not be appropriate for OR.

This study suggests that the appropriate terminology to use for this concept could be Operational Risk Tolerance instead of Operational Risk Appetite (ORA). We suggest that this concept be defined as the level of residual operational risk tolerated by an organisation in the pursuit of its business objectives.

If we understand risk appetite for OR in its current fashion, there is no incentive for an OR practitioner to innovate and reduce the residual risk level and thereby promoting organisational performance. It is an organisational objective in credit and market risk for the employee to take the risk to the appetite level where taking less risk than appetite is not desirable.

However, it is desirable in OR to bring the risk below the appetite level if the cost of controls is lower than the expected loss. The function of OR is to reduce the expected level of losses, therefore the number derived for appetite for OR is the minimum expected performance. For the OR function to add value, there should be proactive efforts to reduce this level of loss.

The OR function needs to propagate risk appetite for OR as the minimum expected performance and Target Risk Performance, which is less than the risk appetite to create a culture of innovation and performance.

This study identified that the main objectives for defining risk appetite for OR is to aid managers to decide on whether to invest in controls. The concept should trigger the manager's thought process to consider if there are ways to improve the existing controls to reduce the expected losses where the expenditure is lower than the reduction in expected losses.



This study suggests a combination of top-down and bottom-up approaches for implementing an ORA framework. The Finance Director (FD) level top-down assessment articulates the cumulative risk appetite. For arriving at this, credit, market and operational risk capital models are widely used.

The OR function then uses the expected loss, volume growth estimates and a judgment of the FD's budgeted value to articulate ORA (minimum performance level for OR) and a Risk Performance Target.

These numbers are then split for business units/principal risk areas. As part of RCSA, businesses individually assess the material risks and estimate the residual level along with control effectiveness and Key Indicators. The Principal Risk Owners then subjectively estimate the thresholds for Key Indicators to achieve the targets and use the direction for considering investments in controls.

Principal risk owners and the OR function can then manage and challenge the performance as the year unfolds with actual data from Key Indicators and losses become available.

## End Notes

- <sup>1</sup> Financial Services Authority Operational Risk Management Practices – Feedback from a thematic review.
- <sup>2</sup> Basel II, Pillar 2 requirement applied by FSA
- <sup>3</sup> Committee of European Banking Supervisors (2006) Guidelines on the Application of the Supervisory Review Process under Pillar 2.
- <sup>4</sup> Financial Services Authority (2007) Our Pillar 2 assessment framework.
- <sup>5</sup> Financial Services Authority (2006) Strengthening Capital Standards 2.
- <sup>6</sup> Annex X, Part 3, Section 1.1, Paragraph 3
- <sup>7</sup> Senior Management Arrangements, Systems and Controls
- <sup>8</sup> Financial Services Authority (2007) Operational Risk Appetite.
- <sup>9</sup> Crouchy, Michel, et.al (2006) The essential of risk management. p.343
- <sup>10</sup> Ibid
- <sup>11</sup> Cummins et al.(2004) The Market Value Impact of Operational Risk Events For U.S. Banks and Insurers.
- <sup>12</sup> Cummins et al.(2004) The Market Value Impact of Operational Risk Events For U.S. Banks and Insurers.
- <sup>13</sup> Financial Services Authority (2007) Operational Risk Appetite.
- <sup>14</sup> Residual risk is the risk remaining after putting controls in place to mitigate inherent risks. Inherent risk is the risk related to the nature of the activities.
- <sup>15</sup> COSO (September 2004) Enterprise Risk Management - Integrated Framework, Executive Summary.
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- <sup>20</sup> Akkizidis, Ioannis S.(2006) Guide to Optimal Operational Risk & Basel II. p.8 Based on the BBA survey in 1999. This is quoted as the definition as per 15% of 55 organisations surveyed.
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- <sup>22</sup> Vinella, Peter & Jin, Jeanette(2004) A Foundation for KPI and KRI. This definition is stated as consistent with Basel II definition.
- <sup>23</sup> Quoted from Kamia, Shinichi (2007) Risk Management Terms.
- <sup>24</sup> Ibid
- <sup>25</sup> Ibid
- <sup>26</sup> Barclays Bank PLC (2007) Annual Report- Risk Management.
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- <sup>29</sup> Crouchy, Michel, et al. (2006) The essential of risk management. p.343
- <sup>30</sup> Financial Services Authority Operational Risk Management Practices – Feedback from a thematic review.
- <sup>31</sup> Ibid
- <sup>32</sup> Please refer to “The quantitative review in section 3.7” in Financial Services Authority (2007) Our Pillar 2 assessment framework.
- <sup>33</sup> Barclays Bank(2007) Barclays Bank PLC Annual Report 2007- Risk Management.
- <sup>34</sup> Royal Bank of Scotland (2006) Annual Report and Accounts 2006 – Risk Appetite.
- <sup>35</sup> Image from Barclays Bank (2007) Barclays Bank PLC Annual Report 2007- Risk Management.
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## Appendix I – Abbreviations

AMA	Advanced Measurement Approach
BCBS	Basel Committee on Banking Supervision
BIA	Basic Indicator Approach
CAPM	Capital Asset Pricing Model
CIGLS	Control Issues of Group Level Significance
COSO	Committee of Sponsoring Organizations of the Treadway Commission
CRD	Capital Requirement Directive
CRR	Capital Resource Requirement
ERM	Enterprise Risk Management
ICAAP	Internal Capital Adequacy Assessment Process
ICG	Individual capital Guidance
KPI	Key Performance Indicator
KRI	Key Risk Indicator
KRS	Key Risk Scenarios
LDA	Loss Data Analysis
OR	Operational Risk
ORA	Operational Risk Appetite
ORM	Operational Risk Management
ORX	Operational Risk Exchange
SBA	Scenario Based Approach
SCA	Score Card Approach

SOX	Sarbanes Oxley
SREP	Supervisory Review and Evaluation Process
SYSC	Senior Management Arrangements, Systems and Controls
TSA	Standardised Approach

## Appendix II – Job titles of survey respondents

Total Number of respondents: 48

Assistant Vice President of Operations  
Capital Model Manager  
Compliance  
Consultant  
COO  
Corporate and Operational Risk  
CRO  
Director (2)  
Director of Commercial Risk Management  
Editor  
Head of Operational Risk(3)  
Head of Operational Risk UAE & Gulf  
Head of Operational Risk Consultancy  
Head of Ops Risk & MSA, GRCB-Centre  
HEAD OF OR - WESTERN EUROPE  
Insurance Compliance  
IT Auditor  
IT Consultant  
London Head of OpRisk  
Manager - Financial Risk Management  
Operational Risk  
Operational risk & control manager  
Operational Risk Analyst  
Operational Risk Manager (4)  
Operational Risk Manager - Emerging Markets  
Operational Risk Manager (2)  
Operational Risk Officer  
Operational Risk Programme Manager  
Operational Risk Reporting  
Operational Risk Manager  
OR Director  
OR Head  
President  
Process Manager  
Project lead  
Regulatory Programme manager  
Risk Analyst  
Risk Manager  
Senior Credit Risk Manager

## Operational Risk Appetite: Why, What & How

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Senior Governance Manager  
Senior Operational risk manager

## Appendix III – Web based survey questions

### About this survey - Operational Risk Appetite

The concept of risk appetite is attracting a growing attention among risk professionals, especially in the current market situations. However, there seems to be a lack of clear insight in this area and it is less clearer when applied to the operational risk profession. The purpose of this survey is to identify the factors behind Operational Risk Appetite. In order to assist in this research please answer the following questions. The results of this survey will be provided to you in due course.

### Data for demographics

The data you provide in this section is used to understand the demographics of the respondents.

1. Name of your company
2. Your job title or function
3. Please provide your email address if you would like to receive the result of this survey

### Operational Risk Appetite Survey

1. Why should an organisation define its Operational Risk Appetite limit?
  - To satisfy a regulatory need
  - To influence the decisions related to the controls
  - To influence an employee to take the right amount of operational risk
  - Other Answer
2. Businesses take financial risks as part of their business strategy to achieve a gain. Similarly, can we say that businesses as part of their strategy take on operational risks to realise a gain?
  - Yes, I totally agree
  - Maybe

- No
- Don't know
- Other Answer

3. The main use of having an Operational Risk Appetite limit is to influence control investments. Do you agree?

- Yes
- No
- Other Answer

4. Operational Risk Appetite – Are you happy with the terminology?

- Yes - totally
- No, call it Operational Risk Tolerance
- No, call it Operational Risk Capacity
- Don't know
- Can't be bothered to change the term
- Other Answer

5. Is there an established Operational Risk Appetite limit/framework in your organisation?

- Yes, but only at the business unit level
- Yes, but only a policy at the board level
- Yes, both at business unit and board level
- No
- Other Answer

6. Operational Risk Appetite for a business unit is the residual risk as perceived by the business. Do you agree?

- Yes
- Not sure
- No
- Other Answer

7. The factor, which influences the decision for one control over another, is the availability of easy to use data. Do you agree?

- Yes
- Not sure
- No
- Other Answer

8. A successful Operational Risk Appetite framework needs a combination of top-down and bottom-up approaches to reduce the gap between board level and business level views on appetite. Do you agree with this statement?

(Top-down - risk appetite as expected by the business strategy of the company articulated as a specific limit for the business unit) (Bottom-up - Operational Risk Appetite as determined by the business unit as part of their risk management framework)

- Yes
- No, top-down is enough
- No, bottom-up is enough
- Not sure
- Other Answer

9. The controls for FSA/SEC/regulator compliance is the minimum level of controls needed. Operational Risk Appetite should consider controls above such



minimum levels for achieving business performance. Do you agree with this statement?

- Yes
- No
- Not sure
- Other Answer

10. How is Operational Risk Appetite used in your company's risk management system? How will you suggest a framework for managing it in your organisation? Please provide any additional comments in relation to this survey within this section.