

PART I: AN INTRODUCTION TO OPERATIONAL RISK

In 1995 Barings Bank suffered losses of \$1.3 billion resulting from unauthorized speculative trading from one of its brokers Nick Leeson. The losses numbered twice the capital of the bank and resulted in the collapse of one of the world's oldest merchant banks (Leeson, 2011).

The 2010 volcanic eruptions of Eyjafjallajökull in Iceland, although they were relatively small for volcanic eruptions, caused tremendous disturbances for the air travel across northern and western Europe. For an initial period of six days in April 2010, ash covered a large area of Europe, forcing a number of countries to close their airspace. It is estimated that about 10 million travelers were affected by the event (Lilja Bye, 2011).

INTRODUCTION

The volcanic events in Iceland in 2010 and the collapse of Barings Bank in 1995 are both cases of operational risk, and a failure to apply such. A traditional risk management implies reducing, if not eliminating, the likelihood of uncertainty and disaster. We can, however, never be certain that we have fully eliminated a risk. There is always the possibility of failure, whether it be due to external events, missing information or human neglect. Risk management is about identifying the factors presumed to influence the negative outcome of an event and managing them, but how can we predict the actions of people like Nick Leeson and foresee volcanic eruptions? How do we approach and model human behavior in an intelligent way? This is where operational risk comes in.

The discipline of operational risk allegedly emerged after the event of Barings Bank in 1995 (Blunden & Thirlwell, 2013). Even though the concept was well known, there had been no structured way of identifying and managing the risks at this point. While Basel I only dealt with capital requirements for credit risk, Basel II, when introduced in June 2004, was concerned with dealing with the three major components of risk that a bank faces: credit risk, market risk, and operational risk. Perhaps we should take a moment to establish what we mean by operational risk. Basel II defines it as (Basel Committee on Banking Supervision, 2001):

The risk of loss arising from inadequate or failed internal processes, people or systems, or from external events.

Basel II aims at ensuring that these three risks are quantified and based on data and formal techniques. Even so, facing the reality of the 2008 financial crisis, where precisely human failure had been the root cause, there is now an even bigger focus on quantifying and structuring the operational risk. With the scheduled implementation of Basel III in 2019 for banks, and Solvency II in 2016 for insurers, the Basel Committee on Banking Supervision aims at introducing stricter regulatory requirements.

BASEL II

Now that you have been introduced to the subject, you might have an idea of the meaning of operational risk, but what is it really all about? It is not like there is going to be a rogue trader or a volcanic eruption that will affect my company in the coming time, you might think. While these events are highly unlikely to occur, they are still probable and it is something we have to take into account. What exactly is operational risk? It includes all the risks of running a business, such as if I sell my funds instead of buying or if I add another zero when purchasing stocks. When Facebook in March 2014 announced its planned acquisition of Oculus VR for \$2 billion, trading of the penny stock Oculus VisionTech went up almost 90% in half an hour (Solomon, 2014). Oculus VisionTech has no connection with Facebook's acquisition target, and therefore serves as an example of loss arising from the mistakes of people.

BASEL II EVENT TYPES

Basel II defines seven different event types of operational risk (Basel Committee on Banking Supervision, 2001):

1. Internal Fraud
2. External Fraud
3. Employment Practices and Workplace Safety
4. Clients, Products and Business Practice
5. Damage to Physical Assets
6. Business Disruption and Systems Failures
7. Execution, Delivery, and Process Management

Examples of the event types are tax evasion, theft of information, discrimination, market manipulation, natural disasters, terrorism, software failures, accounting errors... The number of events included under the definition of operational risk are endless, and with the categorization Basel II tries to put up a method for identifying and labeling the different risk types. In "Part II: Establishing a Framework for Operational Risk" a way of structuring your business and categorizing the risks will be introduced, where some straightforward ways of preventing the risks will be defined.

MEASUREMENT APPROACHES

The capital assessment of operational risk is a necessity, and Basel II has given three methods of capital requirement calculation for operational risk (Basel Committee on Banking Supervision, 2001, 2011):

- ◇ Basic Indicator Approach (BIA)
- ◇ Standard Approach (SA)
- ◇ Advanced Measurement Approach (AMA)

BASIC INDICATOR APPROACH

The Basic Indicator Approach is the most basic approach and allocates operational risk capital using a fixed coefficient α . The coefficient, α , is calculated from the average gross income for the preceding three years. Years in which the gross income is negative are excluded from the calculations. As of today, the coefficient α is about 15% of annual gross income.

STANDARD APPROACH

The Standard Approach differs from the Basic Indicator Approach in that it divides the activities of a firm into business units and business lines. Each business unit is given its own coefficient, which is calculated in the same way as for the BIA. For banks the business units can be seen in Table 1, with the given coefficients β (Basel Committee on Banking Supervision, 2001):

Business Line	Beta Coefficient, β
Corporate Finance	18%
Trading and Sales	18%
Retail Banking	12%
Commercial Banking	15%
Payment and Settlement	18%
Agency Services	15%
Asset Management	12%
Retail Brokerage	12%

Table 1: Example of the division of a company and its beta coefficients.

ADVANCED MEASUREMENT APPROACH

The measurement approaches increase in sophistication, with AMA being the most advanced of the three described in this article. Under the AMA financial institutions are provided with the option to develop their own theoretical model for calculating the capital requirements. Financial institutions can only use the AMA subject to approval from local regulators, and in implementing the approach, have to be able to convince a supervisor that the method is conceptually sound and that it captures severe tail losses. The verification and validation of the AMA is there to ensure the institution's operational risk framework is functioning, the quality of data, and that it remains appropriate for the financial institution's risk profile. While no particular modeling technique is specified when constructing an AMA, one common approach for financial institutions is the Loss Distribution Approach (Basel Committee on Banking Supervision, 2011).

DISCUSSION

What model a company decides to go with is up to them. The BIA and SA are easy to implement and are universally applicable across banks and insurers. However, due to their simplicity, they might not be able to fully capture the risk profile of a company and can yield excessive capital requirements. The SA is able to reflect the different risk profiles across a company in a better way than the BIA because it divides the company into standardized units - but is this enough?

You might wonder, why are some companies still using the BIA and SA? It can be because they lack credible data, or that they have yet not implemented Solvency II or Basel II fully. Having to continuously comply with the soundness standard and meeting supervisory requirements can prove to be a persistent and excessive problem. On the other hand, adapting an AMA can lead to capital savings and gives the chance to achieve a sophisticated risk management using cutting edge technology and techniques.

SUMMARY

In this article we have given a brief introduction to the meaning of the term operational risk and what it means for the financial institutions of today. We have explained the subject as it is defined by Basel II, and shown the three different ways of calculating capital requirement for operational risk. In the next article, "Part II: Establishing a Framework for Operational Risk", we will look at a first step in implementing a functioning framework in a company based on M. Koller's book "Life Insurance and Risk Management Essentials" (Koller, 2011).

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