# INSURANCE AS A MITIGANT FOR OPERATIONAL RISK:

## A Report Submitted to the Basel Committee on Banking Supervision

## by the


## Insurance Working Group of the Operational Risk Research Forum



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## EXECUTIVE OVERVIEW

The Basel Committee for Banking Supervision and the European Commission have recognised the role that insurance can play in mitigating the financial impact of a bank's operational losses. However, the regulators have also raised a number of concerns about the use of insurance by banks. The purpose of this report is to address these concerns along with highlighting a number of other issues that may influence the value of operational risk insurance.

Banking is a highly competitive, dynamic industry in which there is presently over-capacity. Disintermediation, product commoditisation and technological advances are resulting in globalisation and rationalisation of the industry. In addition, institutional shareholders are becoming increasingly powerful and demanding growth in shareholder value. Consequently, for an individual bank, survival and growth have become primary concerns, requiring careful strategic positioning, based upon a bank's particular franchise and chosen risk-reward profile[1].

As part of this changing market place, one of the most significant occurrences has been a greater emphasis on transparency and control through market forces. In the UK, companies are required to disclose risks, in accordance with the Turnbull guidelines (Turnbull et al 1999)[2]. The current Basel Consultative Paper (CP2) on the New Basel Capital Accord (Basel Committee on Banking Supervision 2001) also indicates the regulators' desire to promote more effective operational risk management through market forces and transparency rather than adopting a wholly prescriptive approach. As such, there would appear to be an emerging modus operandi for bank risk management (which can be likened to eight faces of the Basel 'pillars') where:

1. *The Regulators* ensure a level playing field and set the coral bounds
2. *Senior Bank Management* select the strategic risk-reward positioning of the organisation
3. *Group Risk Management* determine the most appropriate systems and procedures, tools and techniques, in order to maintain the desired risk-reward profile within set limits
4. *Auditors* police their use
5. *Insurers* continuously monitor and reinforce the management of risk
6. *Risk Rating Agencies* provide an independent, external and transparent assessment of a bank's risk profile
7. *Analysts* inform the investors
8. *Institutional Investors* determine the survivors

This report considers the fifth face of the continuum – the role of insurance in operational risk management. Insurance is a valuable risk transfer tool that can be used to mitigate the financial impact of risks. In a highly competitive environment, outsourcing risk to insurers can increase a bank's performance by smoothing its cash

[1] See Theodore (2001).

[2] The Turnbull Guidelines apply to UK companies quoted on the London Stock Exchange. Currently, they do not apply to other companies.

flows and preventing financial catastrophes. Additionally, insurance can provide a variety of valuable risk management services that can enable a bank to more precisely tailor its risk-reward profile. Although there remain some issues that may attenuate the potential of insurance, as discussed in the body of this report, these should not be considered insurmountable.

The research undertaken for this report would seem to indicate that with regard to the supply and demand of insurance, the (insurance) supply-side is potentially strong, but not utilised to its fullest extent. In contrast, the (bank) demand-side has been slow to realise the potential of insurance as a mitigant for operational risk. Many banks contacted as part of this research have indicated that a capital allowance for insurance would act as a strong stimulus. Whilst, in theory, Pillar 1 is a minimum capital charge designed to maintain the capital within the system (at not less than 8%), in practice the regulators may need to find a way of incentivising banks to spread risk more widely. Whilst allowances could readily be accommodated in the other Pillars, in certain cases it may also be possible in Pillar 1 given that a significant proportion of banks already hold well in excess of the minimum capital requirement[3].

Another important step towards the development of a larger and more effective insurance market is to achieve greater co-operation between insurers, banks and the regulators. Greater co-operation might be in the form of sharing operational loss data (which is vital for the accurate pricing of insurance), mutual agreement over the wording of insurance policies and joint discussions about the desirable features of insurance products. In April 2001, fourteen leading organisations in the insurance industry agreed to work towards a co-operation document. It is hoped that such co-operation between insurance companies will continue, however, all relevant interest groups need to join together if the potential of operational risk insurance is to be realised.

The Insurance Working Group of ORRF appreciates the complexity involved in arriving at a regulatory capital requirement for operational risk, whilst taking into account the benefits that accrue from using insurance and related risk mitigation products. As such, an active dialog with the regulators is sought to address the concerns over the integration of insurance, and other risk mitigation products, in the calculations that will determine the operational risk capital requirements of banks, credit institutions, investment firms and others.

[3] The average ratio of capital to risk-weighted assets of major banks in the G-10 rose from 9.3% in 1988 to 11.2% in 1996 (Basel Committee on Banking Supervision 1999 p 2).

## 1. AIMS & OBJECTIVES

This research report seeks to determine the extent to which banks could consider insurance as a viable mitigant for the financial consequences of operational risk. In so doing, it offers both theoretical insights and summarises the views of a number of leading professionals in the financial services industry, together with considering responses from a number of banks.

In particular, this report seeks to address the following fundamental questions:

- Historically, where have we come from and what has changed?
- What is required now, evolution or revolution?
- What is currently available and where are the gaps?
- How many users are there and what is the required critical mass?
- What are the issues?
- What are the possible solutions?
- What actions need to be taken and by whom, either acting individually or in concert?

## 2. METHOD OF WORKING

A team of experts from both the insurance and banking industries (identified in Appendix A) was assembled, under the auspices of the Operational Risk Research Forum (ORRF). This team formed the Insurance Working Group.

The programme was directed by Brendon Young, Chairman of the Operational Risk Research Forum, with academic research being undertaken by Dr Simon Ashby of Nottingham University Business School, Centre for Risk and Insurance Studies.

A questionnaire was sent to members of the Insurance Working Group (see Appendix B). Individual responses to the questionnaire are given in Appendix C, where permission has been granted.

A number of face-to-face interviews were also conducted. Following this, a meeting of the Insurance Working Group, was held in London, on 12th April 2001, to consider the preliminary findings and to discuss the conclusions and recommendations, and to agree the way forward. In addition, these findings were considered by a wider membership of the Operational Risk Research Forum at a meeting (ORRF 10) held at the Securities Institute on 2nd May 2001

In order to obtain the views of the banking sector, a questionnaire has been prepared (given in Appendix D) and piloted with selected members of ORRF, the International Swaps & Derivatives Association (ISDA) and the British Bankers Association (BBA). It is intended that this questionnaire will be sent in the near future to a large sample of banking executives in order to obtain their views on the role of insurance in both the management and regulation of operational risk.

A draft of this report was sent to members of the Insurance Working Group, for comment and approval, prior to its finalisation and submission to Basel.

# 3. INTRODUCTION & BACKGROUND

This section provides background information to the development of operational risk insurance and its associated problems. It also explains the role and benefits of insurance as a device for managing operational risk. Reference is made to relevant academic research together with some accepted principles of insurance in order to establish a solid foundation for analysis in subsequent sections.

## 3.1 The Basel Statement on Insurance

The potential of insurance as an operational risk management tool was recognised in the recent Basel Consultative Document on Operational Risk (Basel Committee on Banking Supervision 2001). This document stated, with regard to insurance, that "in principle, such mitigation should be reflected in the capital requirement for operational risk". However, the paper went on to say, "it is clear that the market for insurance of operational risk is still developing" and that banks "should recognise that they might, in fact, be replacing operational risk with a counterparty risk". The Committee pointed out a number of potential problems with operational risk insurance and other forms of outsourcing. These can be summarised as follows:

- The insurance industry is not sufficiently well capitalised. A bank that is transferring risk may be better capitalised than the accepting insurance company
- Blanket cover is not available. There are many different contracts for different elements, which do not fit together sufficiently well. This leads to uninsured gaps or inefficient over-laps
- Limiting conditions and exclusion clauses lead to doubt regarding payment in the event of failure
- Delays in payment could result in serious damage to the claimant
- It is difficult to determine the true economic value of insurance purchased in the absence of sufficient and appropriate data
- Insurance may lead to moral hazard
- Systemic risk may be increased in the event of claim payment default

Thus, it would appear that although Basel is prepared to consider insurance as a mitigant for operational risk, there are a number of issues that need to be addressed by the financial services industry before it is accepted fully. Basel has stated that outsourcing "does not relieve the bank of the ultimate responsibility for controlling risks that affect its operation". As such it has recommend that the banks "should adopt policies to limit risks arising from reliance on an outside provider".

## 3.2 The Role of Insurance: Risk Transfer or Risk Mitigation?

One important issue that needs to be clarified is the extent to which insurance can be viewed as a risk mitigation technique. In particular it is important to understand that risk transfer devices such as insurance are not designed to control risk and as such may not always provide a reliable means to mitigate risk (see Williams, Smith and Young 1998 p259-260).

### *3.2.1 Risk transfer:*

The primary role of insurance is to allow the financial impact of a particular risk or combination of risks to be transferred from one party to another. More formally, insurance can be defined as a contractual agreement between two parties, the insured and the insurer. The basis of this agreement is that the insurer agrees to finance certain pre-specified but random losses in return for the payment of a regular premium by the insured. Thus insurance effectively converts uncertainty into certainty.

The act of risk transfer does not in itself provide a means for controlling risk (i.e. avoiding, preventing or reducing the actual event - see Williams, Smith and Young 1998 Ch 11). It simply transfers the financial impact of certain pre-specified losses to another party[4]. The firm that transfers the risk is then reliant upon the insurer to provide compensation and advice in the event of loss. In short, risk transfer is effectively a financing decision.

### *3.2.2 Risk mitigation:*

Fundamentally, risk mitigation is about alleviating the impact of risk. As such, risk mitigation tools help a firm to avoid or actively manage the probability of loss and lessen the amount of damage (financial or otherwise) experienced when a loss event does occur. To the extent that insurance reduces the financial consequences of loss it can be viewed as a means to mitigate risk (see Oldfield and Santomero 1997). The value of insurance as a risk mitigation tool will depend upon the ability of an insurer to:

- Improve the quality and cost effectiveness of a bank's risk management programme, by providing tangible benefits and controlling insurability problems
- Reduce the gaps within a bank's risk management programme

4 For example the purchase of fire insurance does nothing to stop a fire from occurring, nor does it help to reduce the amount of damage that a fire might cause.

### 3.3 Historically, where have we come from and what has changed?[5]

Insurance is a well-established risk management tool that has been used by the banking sector for many decades to provide protection within three main areas: legal liability, crime, and property damage. Peril-specific policies offered by insurance companies include:

- Fidelity/Bankers Blanket Bond - which is designed to protect an employer against dishonesty or default on the part of an employee as well as fraud and forgery. In addition, it may cover on-premises losses such as office damage, in-transit losses, counterfeit currency and some forms of trading losses
- Electronic Computer Crime – this provides cover against computer failure, viruses, data transmission problems, forged electronic funds transactions etc.
- Professional Indemnity – this typically covers liabilities to third parties for claims arising out of employee negligence while providing professional services (e.g. investment advice) to clients
- Directors and Officers Liability – this covers the personal assets of directors and officers against the expenses that might be incurred due to legal actions arising from the performance of their duties
- Employment Practices Liability – this covers liabilities that might arise due to breaches in employment law, such as harassment, discrimination, breach of contract etc.
- Non-Financial Property – this covers the usual range of property risks (fire, weather damage etc.)
- Unauthorised Trading – this is a relatively new product that offers financial protection against unauthorised trading that was either concealed or falsely recorded
- General & Other Liability - public liability, employer's liability, motor fleet etc.

Increasingly, a number of multi-peril basket insurance products are also being offered to the banking sector such as all-risks operational risk insurance and organisational liability insurance, which is a limited multi-peril product that covers losses arising from internal and external fraud, rogue trading and many other forms of general liability[6]. One possible advantage of multi-peril insurance products is that they may provide a bank with more comprehensive cover, thereby helping to eliminate any gaps or overlaps that might exist between peril-specific products. Moreover, by allowing insurers to take into account correlations across losses, the price of a basket product may be lower than the sum of the equivalent peril-specific products (see Culp 2001 p562). However, basket products present a number of underwriting challenges, which may explain why demand for them is currently low. Although, these problems are far from insurmountable (as discussed in section 4.6).

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5 See Appendix C, Response No. 7, comments on "History of new product development in the insurance industry"

6 Although it should be noted that some 'traditional' insurance products (such as the banker's blanket bond) also offer quite broad levels of cover in their own right.

Finally, it should be noted that many Western countries including the UK and USA seek to protect policyholders from risks faced by banks (both operational and non-operational) by requiring banks to purchase depositor protection insurance. Such schemes are usually government run. In the UK the Deposit Protection Scheme provides partial cover against losses that arise out of bank insolvency. Currently, this amounts to 90% of the first £20,000 of deposits (i.e. £18,000 or 20,000 Euros, whichever is greater) held in any UK bank authorised under the Banking Act 1987 as well as certain banks incorporated in other EEA (European Economic Area) states who have joined the UK scheme[7]. Banks that are incorporated outside the EEA may also be covered in respect of the deposits taken by their UK offices. The scheme is financed on a compulsory basis by the banking industry (each bank paying a flat fee), but is effectively controlled by the state (Hadjiemmanuil 1996).

The primary advantage of a deposit insurance scheme is that when all else has failed (bank management, regulators, auditors, etc.) it acts as a failsafe for depositors against the adverse effects of bank insolvency. In addition, the use of depositor protection schemes provide regulators with the option to refuse to bail out ailing deposit taking institutions, in particular, if they are small or new (Hadjiemmanuil 1996). Thus, deposit insurance is not linked to specific causes, instead all that is required is the total failure of the bank to trigger the payment of compensation. This means that, for small depositors at least, the banks are already in effect purchasing fully comprehensive (although not full cover) all risks insurance. Indeed, as far as most consumers are concerned all that matters is the safety of their deposits. Thus, deposit insurance provides much of the financial security they need. Obviously, this leaves other stakeholders ‘unprotected’.

Unfortunately, the provision of full-cover deposit protection insurance does have problems. The high rate of Savings and Loan failures in the USA in the 1980’s has been attributed to the use of non-experience rated, full-cover deposit protection schemes (see Karels and McClatchey 1999). The primary reason for this is moral hazard. In the case of deposit protection insurance, moral hazard is manifested as the incentive for insured depositors to place their funds in banks that take large risks in an attempt to offer high returns (Hadjiemmanuil 1996). Depositors are drawn towards high-risk organisations because the repayment of their deposit is guaranteed by the State.

However, Kane and Hendershott (1996) have suggested an interesting solution to the moral hazard problem in depositor protection insurance. They argue that the private provision of depositor protection insurance (through either an independent insurance company or a mutual) is superior to a government scheme. This is due to the monitoring and enforcement skills together with financial penalties employed by private insurers.

7 The UK deposit protection scheme will be revised at the end of 2001. Under the new rules, depositors will get 100% of the first £2,000 of their deposits and 90% of the next £33,000.

## 3.4 Academic Foundations

The purpose of this sub-section is to review the academic foundations of the corporate insurance decision.

### *3.4.1 The value maximising insurance decision*

As with any risk management tool managers should only purchase insurance if it adds value to their organisation. Whilst value is a hard concept to define, it is usually taken to mean the long-term value of the firm to its owners (i.e. the value of equity). As such, a common proxy for a firm's value is its share price (see Doherty 1985, 2000).

In theory, the purchase of insurance should achieve the same basic outcome as holding capital i.e. the provision of funds to finance losses. The question then is, why should the value maximising bank purchase operational risk insurance when it could simply use its own funds to finance losses? This question becomes particularly meaningful for the quoted banks since their shareholders should be able (at least in theory) to diversify away, at low cost, the effects of most insurable risks by holding a large portfolio of shares from many different companies. As such, the purchase of insurance should at best add nothing to the returns of these shareholders (see Mayers and Smith 1982, Main 1982). Moreover, if the presence of insurability problems, coupled with the need for an insurer to cover its costs and make a profit, are considered the purchase of an insurance contract might actually seem to lower the value of a firm. In fact, it is quite usual for a policyholder to pay a premium that exceeds the expected level of loss in any given year.

The answer to the question, of why a value maximising bank should purchase operational risk insurance, lies in an insurer's ability to offer benefits that are too costly for a bank to replicate in-house. A bank needs to understand these benefits and assess whether they are sufficient to outweigh any of the associated costs of insurance. Effectively, this comes down to understanding the comparative advantages in risk bearing and risk management that are possessed by an insurer and the bank that is considering purchasing insurance (for a general discussion of this issue see Stultz 1996). For example, most banks will probably find that they possess a comparative advantage in managing the day-to-day (i.e. high frequency, low impact) risks that are present in their business. Indeed, such risks are often termed business risks, since they are a normal part of any firm's operations. In contrast, a bank will probably prefer to transfer some of its less common, larger impact risks to an insurer[8]. This is because insurers are not only skilled in managing and underwriting many such risks, but also have a large pool of resources to finance losses (see 3.4.2).

Unfortunately, it is difficult to make general predictions about the value of operational risk insurance. This is because the precise benefits of insurance and many of the potential insurability problems associated with operational risks will depend upon the particular circumstances of the bank. In what follows, the benefits of operational risk insurance and the problems of insurability are simply outlined in broad terms. Some

8 For more on insurance and the loss distribution curve see section 4.6.13.

of the factors that may influence the individual bank's insurance decision are then outlined in section 3.4.4.2.

### *3.4.2 The main theoretical benefits of insurance*

The benefits of insurance can be grouped into two main categories: pooling benefits and risk management benefits. These benefits reflect the comparative advantages that an insurer may possess in risk bearing. A bank that purchases insurance should then be able to exploit these comparative advantages to increase the quality and cost effectiveness of its own risk management programme.

#### *3.4.2.1 Pooling benefits*

An insurer's ability to pool both the resources and risks of many similar policyholders allows it to exploit a statistical theory known as the law of large numbers (a version of the central limit theorem). The law of large numbers helps an insurer to not only predict and therefore price the risks of its policyholders more accurately, but also to ensure that it has sufficient funds to pay claims (Williams, Smith and Young 1998 p274 -276).

In terms of pooling resources, the law of large numbers states that an insurer's resources for paying claims will tend to grow at a faster rate than the deviation of pooled losses from the expected value, as the number of identical and independent insured risks becomes large. For a very large pool of insured risks the probability that an insurer can pay all claims will approach (but never quite get to) 100%. Put simply, the pooling of resources means that an insurance company is able to use the premiums that it receives from the many policyholders that it insures but which do not experience losses in order to pay the claims of those few that do. In short, the losses of the few are borne by the premiums of the many. Consequently, an insurer requires less capital and can therefore provide a form of finance at advantageous rates.

In terms of pooling risks, the law of large numbers implies that the average loss per insured risk will tend to fall close to the true expected loss, as the number of homogeneous (or at least similar) and independent insured risks becomes large (e.g. compare tossing a coin once to tossing it 100 times). Thus the more similar risks an insurance company insures in a given pool, the more confident it can become about the level of losses that should arise. By pooling similar risks, insurance companies are, therefore, able to better predict the expected level of claims over a given time period, effectively replacing risk for virtual certainty.

A further issue related to the concept of pooling is that most insurance companies will offer more than one product and as such will operate multiple risk pools. This allows insurance companies to effectively create a pool of pools in which it can exploit the benefits of diversification. For example, an insurance company might use the profits earned from one particular pool of risks to subsidise the losses of another. As such, even where the losses on a particular line exceed the value of its allocated pool of funds, a diversified insurance company will be able to cross-subsidise, using funds from elsewhere.

The net benefits for a bank, resulting from an insurer's ability to pool resources/risks and also diversify risk, are:

#### 3.4.2.1.1 Cash flow smoothing

Large unexpected operational losses can have a negative impact on cash flow where they exhaust internal capital (assuming any has been allocated). The purchase of operational risk insurance, however, may allow a bank to mitigate this risk.

Through pooling, an insurer is able to offer policyholders the chance to pay a known premium in return for a guarantee that they will be compensated in the event that certain pre-specified losses occur. For many banks this means that the purchase of operational risk insurance could provide a way for them to substitute the possibility of random fluctuations in their cash flows (due to large or unexpected operational losses) for a certain premium. This reduction in cash flow fluctuations may then yield numerous benefits for a bank in the form of improved quality of earnings that in turn help raise its market value.

The benefits of cash flow smoothing have been well researched, both theoretically and empirically, although nothing has been done to relate this to operational risk in banking. Of particular relevance is the work of authors like Mayers and Smith (1982) and Main (1982), Doherty (1985, 2000) and Froot et al (1996). These researchers have identified a number of costs that can be associated with cash flow fluctuations, including:

- Demands from risk-averse stakeholders such as employees, managers without stock options and consumers. Risk-averse stakeholders dislike their income being related to a firm's random cash flows. As such, they may demand additional compensation from the firm (possibly in the form of higher wages or interest payments)
- The potential for agency conflicts between shareholders and creditors, resulting in creditors refusing to advance further credit and raising the interest rate
- The forfeiting of valuable investment opportunities

#### 3.4.2.1.2 Avoidance of catastrophes

Theoretically, insurance can be used to finance very large operational losses that threaten the solvency of a bank. Such losses would be very difficult (if not impossible) to finance using internal capital.

Large operational losses can lead to both financial distress and even bankruptcy. Obviously, both of these states are highly undesirable and can have a significant effect on the value of a firm to its stakeholders. Where an organisation experiences financial distress it can expect to find that there is a reduced demand for its products. This problem may be particularly acute in the banking sector since consumers will be very reluctant to invest in a bank that is showing signs of potential bankruptcy. A firm in

financial distress is also likely to experience difficulty in obtaining credit and may lose key personal (Shapiro and Titman 1985). In the event of bankruptcy, there will be a further diminution in value due to the loss of tax credits and investment opportunities, together with additional expenses, including professional fees (Main 1982, Mayers and Smith 1982).

*3.4.2.2 Risk management benefits*

Although most banks will have a degree of in-house expertise in operational risk management, an insurer may well have a far greater wealth of resources and expertise in this area, gained from access to a wide range of clients in various sectors. A bank that transfers its operational risks to an insurer can utilise these resources and expertise, appropriating the following benefits:

3.4.2.2.1 Real service efficiencies

The core business of every insurer is assessing, controlling and financing risk. Thus large insurance companies may have a comparative advantage over all but the largest banks in terms of access to data, experience and economies of scale. As such, a bank may find it more cost effective to outsource certain elements of its risk management programme to an insurance company. In particular, insurers may offer loss adjustment and assessment services together with legal advice, as well as administrative services such as the payment of claims (see Mayers and Smith 1982, Main 1982, Doherty and Smith 1993).

3.4.2.2.2 Monitoring

It is possible that particular stakeholder groups, including consumers, governments and shareholders, will require a bank's managers to invest more in operational risk management than they might otherwise wish to do. These stakeholders, though, may find it both difficult and expensive to monitor the behaviour of management and ensure compliance. One possible solution to this problem is for stakeholders to demand the purchase of insurance and then effectively use the insurer to perform the monitoring role (Holderness 1990, Skogh 1989, 1991, Grillet 1992). A good example of a company that has exploited the monitoring role of insurance is British Petroleum (Doherty and Smith 1993).

Insurance companies are skilled in monitoring and constraining the opportunistic behaviour of managers. Firstly, since insurers are specialist information gatherers they may be able to collect and accurately process information at a relatively low cost. Secondly, by agreeing to indemnify a firm in the event of certain specified losses, insurers possess a strong vested interest in ensuring that such losses are mitigated. Thirdly, insurance companies have remedies to ensure compliance, including raising premiums, limiting or cancelling cover, raising retention levels or taking legal action against either the firm or its directors and employees.

It is important to note that the monitoring activities of insurers effectively support the functioning of market forces. Risk is a commodity like any other that can be traded. Problems can arise when certain stakeholder groups, like managers, attempt to exploit their position and expose other stakeholders to risks for which they are not being properly compensated.

It has been argued that the correction of market forces is a key regulatory role and therefore, the presence of an efficient insurance market could be regarded both as a support and a substitute for regulation (Katzman 1985, Freeman and Kunreuther 1996).[9]

### *3.4.3 The insurability of risk[10]*

Although most risks can be insured for a price, some risks prove easier to insure than others. Thus, in order to assist in understanding why certain operational risks may prove difficult to insure, the main factors that are said to influence insurability are outlined below (see Schmit 1986, Williams, Smith and Young 1998).

It should be borne in mind though that these factors merely represent the desirable characteristics of an insured risk. Indeed, most of the risks that are actually insured, whether operational in nature or not, do not possess all of these characteristics. In fact, insurance companies are very adept at dealing with the insurability challenges that some risks present. For example, a few years ago it would have been difficult for a bank to obtain $50 million in broad form, professional indemnity insurance, yet now $750 million of cover is readily available. Furthermore, as computer technology and underwriting techniques develop, the ability of insurers and brokers to overcome limiting factors and meet the insurance requirements of the banking industry should continue to advance.

#### *3.4.3.1 Large numbers of similar policyholders*

Within any one line of insurance an insurer requires a sufficiently large number of similar policyholders in order to both fund and accurately predict losses (see the above section on pooling).

Where an insurer is unable to acquire a large number of similar policyholders, it runs the risk that the premiums charged will not reflect the losses incurred, leading to undesirable fluctuations in profits and cash flows, and in extreme cases, insolvency of the insurer.

#### *3.4.3.2 Correlated risks*

Another obstacle to efficient pooling is where risks are correlated with each other, this gives rise to the possibility that a significant number of policyholders could all make

[9] See Appendix C, Response No. 1.

[10] See Appendix C, Response No. 7, comments on “Recent thoughts on capital in insurance”

claims at the same time. Such a run on claims could potentially prove catastrophic for an insurer. Failure of the insurer could result in a sudden increase in client exposure and, where there are multiple outstanding claims, increase the level of systemic risk. Obviously, though, an insurer that has diversified across multiple geographic markets and-or product lines would be much less exposed to this problem.

#### 3.4.3.3 Past loss data used to predict the future

The insurance industry uses loss data from the past in order to predict the future. In the absence of such data the insurer runs the risk that the premiums charged will be either too high, thus deterring purchasers, or too low, leading to losses. Moreover, even if available, historical data is of limited use in a dynamic environment where risks are constantly changing (Young 2000a).

One way in which insurers respond to lack of loss data is to specify artificial cover limits. The aim is to limit the losses that an insurer can sustain to a known amount. However, the net result is that cover may be restricted to inadequate levels.

It should be noted, however, that insurers are very experienced in the collection of data. Moreover, insurers already have a lot of data on operational risk, which reduces the possibility of small policy limits. For example, policy limits on some liability policies are already in the region of $1 billion.

#### *3.4.3.4 Losses of a definite amount - attributable by time, place and cause*

Insurance is a form of contingent financing. As such, the obligations of an insurer to finance the losses of a policyholder are only triggered if certain pre-specified events occur. This approach works well where both the policyholder and the insurer are fully aware of the nature of the losses (known perils) that are to be included in a contract. In contrast, where the consequences, time, place and causes of a loss are not fully known the effectiveness of insurance can be significantly reduced.

The main issue is that insurers naturally do not want to be held liable for losses that have not been factored into their premium calculations (although when this does occur, an insurer may well pay such a claim if it turns out to be valid). As a result, insurers will generally word policies very carefully in order to exclude risks that are not definite in amount, time, place or cause. Necessarily, this will limit the scope of any available cover. In addition, since some insurance policies may rely on potentially imprecise wordings to describe which losses are insured disputes over claims are possible. This could lead to delays in the payment of claims.

It is important to note, however, that disputes are not necessarily the fault of the insurer. Disputes may well be initiated or intensified by the insured, especially when they have unrealistic expectations over either the type of losses that are covered in their policy or the amount of the claim. Indeed, the best policies are usually those that have been drawn up with the mutual involvement of both the insured and the insurer. In addition, disputes over most standard insurance contracts are relatively short-lived

since the wordings of such contracts will already have been heavily tested in the courts.

#### *3.4.3.5 Accidental*

An insured loss is considered wholly fortuitous when the actions of a policyholder have not been a causal factor in its occurrence. As such, fortuitous losses are unintentional.

Where an insured loss is not fortuitous there is the potential for moral hazard. Moral hazard occurs because the purchase of insurance insulates policyholders from the financial consequences of their losses and reduces the incentive of policyholders to invest in loss control activities. This produces a problem for both insurance companies and society, as the level of losses will then be higher than predicted.

Although moral hazard is a very real problem insurers are experienced in preventing it. In fact, very few insured losses are wholly fortuitous and, as such, the potential for moral hazard is a common factor in most insurance contracts. One popular solution is for an insurance company to monitor the loss control activities of its policyholders (either ex-ante or ex-post). Another is to demand that the policyholder pay a certain amount of any loss (perhaps by using an excess). For the Insurance Working Group's comments on moral hazard see section 4.6.8.

#### *3.4.3.6 Not catastrophic for the insurer*

Unexpectedly large losses or unexpected runs of smaller losses may threaten the solvency of an insurer. Of course such losses are extremely unlikely where each of the previous conditions of insurability have been met (see Schmit 1986). Moreover, losses that are potentially catastrophic for an individual insurer can usually be either reinsured with a larger insurer or co-insured with a number of similarly sized insurers. Reinsurance and co-insurance provide insurers with an effective means to manage their exposure to catastrophic losses. In fact, the use of reinsurance and co-insurance has helped to protect insurers from some very large and unexpected losses in the past, such as Hurricane Andrew, which cost the insurance industry an estimated $18.3 billion, compared to a maximum expected loss of $8 billion (Butler 2000). There are, however, some problems with reinsurance, which are discussed in section 4.6.3.

### *3.4.4 The bank's operational risk insurance decision*

In order to assess whether it is worth transferring operational risks to an insurer a bank needs to identify exactly what the relative benefits of insurance are, and assess whether they outweigh the associated costs. The optimum amount of operational risk insurance can then be determined by comparing the marginal benefit of an increase in insurance cover against its marginal cost.

#### *3.4.4.1 Insurance and the cost of capital*

One way to represent a bank's insurance decision is to compare the cost of insurance against the cost of capital. In short, a bank will only buy insurance to finance its operational losses if the cost of doing so is cheaper than using its own internal capital or cheaper than the rate at which the bank can raise capital in the market place.

#### *3.4.4.2 The differences between banks*

Whether a bank decides to purchase operational risk insurance will depend on its own particular circumstances. These circumstances will determine both the scale of any potential benefits and the extent of particular insurability problems. Key issues include:

##### 3.4.4.2.1 Bank size

Whether a bank is large or small can have a major impact on its insurance decision. Differences arise because bank size affects the scale of many of the insurance benefits and insurability problems that were outlined above.

It is difficult to say whether large or small banks have the most to gain from insurance. Small banks will generally have much less capital and free cash flow and may as a result be much more vulnerable to operational losses than a large bank. In addition, a small bank will often not have the spread of risks or the level of resources needed to replicate the pooling and risk management benefits of insurance (see Williams, Smith and Young 1998). In contrast, the largest banks should be able to replicate many of the pooling and risk management benefits of insurance.

Despite being able to replicate many of the functions of insurance a large bank might still want to use insurance to protect its earnings from less common, larger impact operational risks, especially where such events could damage investor confidence or lead to a takeover. For larger, less common risks an insurer (pooling the risks of multiple banks) is almost always likely to be able to achieve greater pooling benefits than an individual bank. In addition, a large bank may also find it cost effective to outsource the day-to-day administration of some of its more common smaller risks to an insurer, especially when the insurance market for such risks is competitive. Interestingly, this strategy of outsourcing the management of small-impact risks has already been adopted by British Petroleum (see Doherty and Smith 1993).

##### 3.4.4.2.2 Types of risk that a bank is exposed to

Basel has already suggested that the level and types of risk found in different product lines may vary (Basel Committee on Banking Supervision 2001). These differences are also likely to impact on the insurability of the risks associated with particular product lines (due to the availability of data or the scale of losses for example). Thus, in addition to affecting its capital charge, the risk profile of a bank is also likely to

influence the availability of good quality, cost effective, operational risk insurance cover.

#### 3.4.4.2.3 Time horizons of managers/shareholders

The benefits of insurance often take time to materialise. In fact, a bank that cancels an insurance policy is likely to be better off in the short run, since it will save money on its premium payments. This saving, though, may be somewhat temporary, especially if the bank experiences a loss in the near future.

Whether a bank is prepared to go through the immediate expense of paying a premium for insurance cover, which is only likely to provide benefit in the long run, depends on the time horizons of its managers and shareholders (see Mayers and Smith 1982). Where managers and shareholders have a short time horizon they are less likely to purchase insurance. However, those managers and shareholders with longer-term horizons will be much more inclined to purchase insurance.

#### 3.4.4.2.4 Attitudes of stakeholders towards risk

In general, the more risk averse a bank's stakeholders are, the more they should want the bank to purchase insurance. There is already some empirical evidence to suggest that the presence of risk averse stakeholders may influence a bank's risk management strategy (see Schrand and Unal 1998).

#### 3.4.4.2.5 Credit rating

The higher a bank's credit rating the lower will be the cost of debt finance. As such, a bank with a good credit rating may decide to finance its losses through the use of debt, rather than insurance. This does though presuppose that credit will be made available to a bank that has just experienced a large loss that it could have insured. See Doherty (2000) for a good discussion of the use of debt as a risk-financing tool.

## 3.5 The Alternatives to Insurance[11]

In addition to internal capital and insurance there are other potential risk financing alternatives. Three of the main alternatives are briefly considered below. The views of the Insurance Working Group concerning these alternatives are provided in section 4.7.

### *3.5.1 Mutual self-insurance pools*

Self-insurance pools are arrangements in which participating firms mutually agree to insure one another. For example, a number of banks might agree to finance the cost of their operational-risk losses by simply pooling their resources and paying claims as they occur. Typically each bank would provide some initial capital along with a yearly premium to fund claims and ongoing administration costs.

If run properly, a mutual self-insurance pool could enable firms to exploit many of the pooling and risk management benefits of insurance, whilst minimising any associated insurability problems. Indeed, the main theoretical advantage of a mutual self-insurance pool is that it is run for the benefit of its members. As such, there is not the conflict that may exist in some insurance companies between policyholders and shareholders. This means that a mutual pool might allow firms to finance, in a cost-effective manner, those risks that the insurance industry declines or for which insurance premiums are considered to be excessive. Furthermore, there is no reason why the underwriting capacity of a mutual could not be strengthened through the purchase of reinsurance.

Discussions have taken place between a number of banks, with involvement from the British Bankers Association, regarding the establishment of a mutual insurance company for the industry. Unfortunately, there are two main problems with such self-insurance pools, these being the possibility of adverse selection and the danger of moral hazard (see sections 4.6.7 and 4.6.8). An additional negative factor is that in a competitive environment it is possible that a bank might decide not to risk its capital to save a rival. This is particularly likely when the ensuing operational loss could be attributable to poor judgement by the management of the distressed competitor or inadequate investment in risk management.

### *3.5.2 Securitisation*

Cruz (1999) has already discussed the possibility that securitisation could act as a substitute for operational risk insurance. The advantages of securitisation are linked to the fact that it provides banks with the potential to transfer operational risk to investors in the global capital markets. Therefore, compared to insurance, the scope for risk spreading and the availability of financial resources are much greater, thereby reducing counterparty risk and increasing cover limits.

[11] See Appendix C, Response No. 7, comments on “Alternative Risk Transfer Mechanisms”

One possible means of securitising operational risk is via issuing a bond similar to the new style of catastrophe bonds. For example, a bank could issue a bond whose value is related to certain pre-specified operational losses. The purchaser of the bond would expect to receive a high yield. However, if one of the operational events described in the bond occurred the purchaser would lose some or all of the principle and interest.

### *3.5.3 Finite risk plans*

Finite risk plans are a form of insurance-banking hybrid. These plans are self-financing programmes that involve the formal participation of some external agent. In effect, a firm sets up a bank account that is managed by the external agent. The contract between the firm and the external agent is usually for a period of three to five years.

Finite risk plans usually work in the following way:

- The policyholder capitalises its account through the payment of premiums
- The external agent deals with the administration of the account (e.g. premium calculations, claims management etc.)
- The external agent may provide some excess insurance to cap the policyholder's losses. A common arrangement is for the policyholder and agent to share any losses that exceed the value of the account, with the policyholder bearing the greater percentage of these losses (say 80/20)
- The external agent may also guarantee a line of credit to the policyholder in the event that losses cause the account to become empty
- At the end of the contract any remaining capital is returned to the policyholder, less the external agent's fees

Finite risk plans allow a firm to spread losses over time. This is in contrast to insurance where losses are spread over policyholders. Spreading the cost of losses over time could allow a bank to achieve the cash flow smoothing benefits of insurance. In addition, by utilising the risk management skills of an external agent, the real service efficiencies provided by an insurer may also be achieved. Finite risk plans are, however, controversial with some critics suggesting that their benefits are illusory (see Williams, Smith and Young 1998, p305-307). Finite risk plans merely provide a way of structuring the financing of retained risks and do not involve risk mitigation or transfer. As such, they are not a perfect substitute for insurance. For example, it is hard to see how it would be possible to amortise a large 1 in 50 or 1 in 100 year loss in an efficient way using the payments made into a finite risk plan that only runs for 5-10 years.

# 4. FINDINGS

The main purpose of this section is to present the views elicited from members of the Insurance Working Group regarding the role of insurance as a mitigant for the financial effects of operational risk. To provide some structure to the analysis, each Working Group member was sent a brief agenda setting questionnaire (see Appendix B), however, the design of this questionnaire was such that it left each member free to comment on those issues that they felt were important.

The views of the Working Group members did differ at times, thus where major disagreements occurred over particular findings, this is indicated below.

## 4.1 Why are there different views and what are they?

All of the members of the Working Group felt that traditional loss-specific insurance products had a role to play in transferring and mitigating the financial impact of a bank's operational risks. Their views did, however, differ on the viability of the new multi-peril basket products. These views can be broadly categorised into three groups:

- *Scepticism*: where it is questioned whether basket insurance products will ever be a viable solution for operational risk
- *Indifference*: in which basket operational risk insurance is considered as merely an additional product along with other existing forms of insurance. For this group, blended operational risk insurance will only be accepted when it has been proven to add value
- *Enthusiasm*: where action has already been taken. This group is comparatively small but very active. It consists of those insurers and brokers who are already underwriting and selling basket operational risk insurance together with those banks that are using it

This distribution is typical of the S-shaped diffusion curve for the adoption of new products. This curve consists of three broad groupings: laggards, followers and early-adopters. Given that all participants have access to the same information, their views are primarily dependent upon their pre-disposition to risk.

## 4.2 Where are the gaps and overlaps in what is currently available?

As stated in section 3.3, most traditional insurance products are offered against a limited set of known perils, with each policy setting forth the conditions that apply and the types of losses that are excluded. This has lead some to the conclusion that there are too many gaps and overlaps between insurance policies. However, many working in the insurance industry believe that this perception is somewhat unfair.

One key issue is that insurance markets are far from static. As 'new' risks are discovered insurance companies will often respond by either including them in a product that already exists or by formulating a new product (e.g. unauthorised or 'rogue' trader insurance). In addition, insurers are increasingly offering multi-peril basket insurance policies that group together a bouquet of various standard policies.

This concept of basket insurance is now being refined even further by a number of insurers and brokers. As, such there are now products that eliminate many of the perceived gaps and overlaps in operational risk insurance. The current approach being adopted by these players is to group operational risks into different silos. For example, some of the leading players have adopted the following framework:

- Relationship Risk
- People Risks
- Physical Assets All Risks
- External Fraud
- Technology Risk

### 4.3 How many users are there?

Demand for many traditional, peril specific insurance lines remains healthy, indicating the value that banks place on insurance as part of their operational risk management strategy. In contrast, demand for some of the more comprehensive basket insurance products is small at the current time. Members of the Insurance Working Group were unsure as to why this might be. One possible explanation is that these products offer too little cover (due to insurability problems such as moral hazard and a lack of data, most basket products are characterised by high deductibles and low claims limits). Another possible reason is that the banks are simply not ready for these new products. A more likely explanation, though, is that in the current soft insurance market, basket products are simply not necessary since most banks can achieve an adequate level of low cost operational risk insurance cover with existing peril-specific products.

### 4.4 What is the required critical mass?

It is important to note that a critical mass of insurers and banks already exists in the traditional peril-specific sector. However, the same cannot be said of the new multi-peril basket operational risk insurance market. One issue is that a large number of insurers are necessary to achieve a viable re-insurance market for the spreading of risk. Similarly, a critical mass of banks is necessary to provide pools of risks that are large enough to allow the law of large numbers to be exploited (see section 3.4.2.1).

Given that, currently, there are insufficient banks and insurers participating in the basket operational risk insurance market to achieve critical mass, there will be an initial period of high risk for those insurers offering multi-peril operational risk products. Members of the Insurance Working Group consider that:

- On the demand-side there is a need for between ten to twenty major banks to purchase basket operational risk insurance policies.
- On the supply-side there is a requirement for at least ten ‘A’ or better rated insurers to act in concert. This would give insurers the ability to provide basket cover of around $1 billion per bank. However, more insurers than this would be better, in order to ensure a competitive market. In addition, the more insurers there are, the easier it will become for a bank to find basket cover

(since no one insurer or small group of insurers will ever be able to underwrite every bank).

## 4.5 What is required now, evolution or revolution?

Most of the members of the Insurance Working Group felt that, in order to meet the changing requirements of the banks and the regulators, the operational risk insurance market should follow an evolutionary process. A minority, though, did feel that the market required revolutionary changes.

### *4.5.1 Evolution*

One of the reasons why peril-specific insurance policies have been so successful is that they restrict cover to clearly defined risks about which there is substantial data. Most peril specific products have been developed over a period of time and as additional knowledge is gained new risks or sometimes exclusion clauses are added. This has resulted in creation of standardised products that are well understood by all concerned and which rely upon a system of proof of loss and claims settlement negotiation. There is a strong body of opinion that favours this approach on the grounds that anything else is simply gambling.

### *4.5.2 Revolution*

In addition to having concerns about the level of risk that might be associated with a revolutionary change in the approach of the insurance industry, many members of the Insurance Working Group questioned what the term revolution actually meant. For example, the development of multi-peril basket products might appear revolutionary however, the development of basket products could also be interpreted as merely the next stage in the development of traditional insurance products. This is especially true where all an insurer has done is bundle together a number of its existing peril specific products. In addition, although the introduction of features such as the rapid payment of claims, with any disputes being resolved after payment (see section 4.6.6), might appear revolutionary, some believe that they are simply part of the ongoing desire of insurers to offer more customer focused products.

Some members of the Insurance Working Group did, however, make one or two suggestions that might be considered revolutionary. In particular, it was suggested that the insurance industry and the banks should share all their operational risk data (i.e. have full disclosure). The reason given for this was that the sharing of such information would greatly facilitate the development of basket operational risk insurance products that not only offer high levels of potentially dispute free and competitively priced cover but also minimise any gaps in cover. Such a free exchange of information, though, would be a truly revolutionary step for the insurance and banking industries.

## 4.6 What are the issues?

Members of the Insurance Working Group identified a number of issues that could adversely affect the extent to which insurance could be used as a mitigant for operational risk. Many of these issues are the direct result of violations in the theoretical principles of insurability considered in section 3.4.3. Each of the problems identified, are discussed below:

### *4.6.1 Capitalisation*

The capacity of the insurance and reinsurance markets is thought to be in the order of $0.5 trillion in capital. Moreover, the capacity of the top 50 'A' rated or better, global property/casualty insurers is said to be around $600 billion in capital. Indeed, the capitalisation of some of the largest insurers, such as Allianz, Munich Re and Swiss Re rivals that of the largest banks (see Appendix E). However, the problem is not the absolute level of capital available but the ability of an individual insurer to access that potential. Operating independently, even a large insurance company might struggle to provide comprehensive cover for all of a bank's operational risks at a level that met the requirements of the banking sector or regulators. Obviously though, an insurer that has good access to the re-insurance and co-insurance markets would be able to offer much higher levels of cover. Currently, the estimated maximum for comprehensive operational risk cover is around $2 billion per bank. Several members of the Insurance Working Group believed that this was more than enough cover and also stated that this amount exceeds the total level of insurance purchased by most banks.

### *4.6.2 Withdrawal*

Related to capitalisation is the possibility that an insurer may stop supplying operational risk insurance to the banking sector if it was to suffer very high losses. This problem is likely to be particularly acute during the current developmental phase of the new basket operational risk insurance products. This is because, in the event of a large loss, there would be pressure within the insurance company to close its operational risk business unit, particularly where losses sustained greatly exceed premiums, possibly for many years to come.

Whilst some members of the Insurance Working Group recognised this as a potential problem for the provision of the new basket products, it was generally considered to be a transient issue on the basis that any gap left in the market would be filled by other participants. Indeed, the rapid withdrawal and entry of firms is a common characteristic of many developing markets and is often taken as evidence of healthy competition (where inefficient firms are replaced by more efficient ones).

### *4.6.3 Reinsurance*

It is standard practice within the insurance industry for an insurer to lay-off part of the risks it has underwritten to a reinsurer (or coinsurer), who may in turn lay-off a part of that risk to another reinsurer (and so on). This is a long established and highly

effective practice that enables non-specialist reinsurers to increase the capacity of specialist insurers in a variety of insurance market sectors. This practice also helps to spread risk and mitigate the problem of catastrophic losses.

Recently, critics of this practice have, however, suggested that reinsurance creates a lack of transparency within the insurance market and can result in circularity[12]. A bank making an operational risk insurance claim is therefore dependent upon the weakest link. This can result in:

- The slowing down of a claim payment, since an insurer or re-insurer may only be willing or able to meet its obligation after it has secured funds from the immediate re-insurer in the chain. In some circumstances, though, a reinsurer may have recourse to a precedent which states that it need only pay out once the insurer has paid the claim. This can lead to liquidity problems for the insurer.
- The addition of further terms and conditions to the original insurance contract. As such, it is possible that a reinsurance company might refuse to pay a claim that is technically covered under the original contract.
- The creation of potential counterparty risks with re-insurers that may not be known to the bank itself. Should a reinsurer fail though, the bank would still have legal recourse against its original insurer. However, if this insurer were to fail, the bank would have no recourse against the reinsurer.
- A concentration of risk with an unknown counterparty, which might be unacceptable on a known basis

It is, though, true to say that reinsurers provide some of the highest rated security in the insurance industry. Insurers would argue that reinsurance plays a major role in reducing volatility and adds stability to the insurance process. For example, the chance that an ‘A’ rated reinsurer would fail is considered to be almost insignificant.

### *4.6.4 Limiting conditions and exclusion clauses*

Even with the broadest multi-peril basket products, the need to specify the basis of an insurance risk transfer is inevitably going to involve a number of limiting conditions and exclusion clauses. As such, it is unlikely that insurance will ever provide a complete solution to the mitigation of operational risks (if it did then insurance could effectively replace capital). Limiting conditions and exclusions clauses are, however, much less of a problem when they are well understood and accepted by both the insurer and the insured.

### *4.6.5 Policy language*

Many banks argue that insurance policy language is complicated and frequently archaic. However, several members of the Insurance Working Group pointed out that this accusation is not totally fair, as the wordings of many modern policies are manuscripted in negotiation with banks and their brokers. It was certainly accepted

[12] Not everyone in the industry would agree with this view – see Appendix C, Response No. 2.

though that, at the present time, many banks and insurance companies use different terminology and definitions to classify risks. However, a number of insurers have recently expressed a willingness to further simplify policy language, and to match their terminology and definitions to those being adopted in banking practice. In order to meet the need for transparency certain members expressed the view that policy language must be simplified to a level similar to that required for ISDA swaps documentation.

### *4.6.6 Delays in payment*

Delays in claim payment could represent a serious problem in the case of very large losses that threaten the financial stability of the claimant. Delays are most likely to arise where the insured and insurer fail to agree on the amount, time, place and cause of loss or where a peril is covered by more than one insurance policy (placed with multiple insurers) as this can lead to disputes over responsibility. As such, both the insurer and the insured may cause delays.

There are, though, ways round the problem of delays in payment. One simple solution is to use clearer policy language (see 4.6.5). Another solution is to offer claimants the option of receiving an up front payment for a loss before the validity of any claim has been investigated fully. However, as certain members of the Insurance Working Group pointed out, this approach does have its problems and associated costs. One problem is the possibility that the policyholder may either refuse or simply be unable to pay back the up-front payment. Another is that by providing immediate finance an insurer could lose several months (or even years) of investment income. As such, this feature is only likely to be a practical proposition for select firms (i.e. those that can not only pay for it, but also demonstrate their ability to repay up-front payments as required).

### *4.6.7 Adverse selection*

Adverse selection occurs where it is difficult for an insurer to properly assess the risks related to a particular client. One possible consequence of this is that the insurer will charge identical premiums to all policyholders. As such, insurance will have the greatest appeal to those banks that have a higher than average chance of incurring a loss. Consequently, the client that poses the greatest risk will buy a disproportionate amount of insurance (at too low a price) and thus threaten the viability of the insurer's portfolio. High-risk banks will exhibit a preference for insurance, as they will be able to avoid compromising their internal capital resources.

Adverse selection can be a costly problem for insurers and may even threaten the future provision of certain products. Adverse selection can be avoided, though, if risks are properly distinguished and a commensurate premium charged. Members of the Insurance Working Group thought that the proposed Basel regulatory framework, with its emphasis on data collection and good management, should go a long way towards correcting any adverse selection tendencies. In addition, it should be noted that insurers are already very experienced in assessing the risks of clients and correcting adverse selection problems.

### *4.6.8 Moral hazard*

With regard to moral hazard, opinions were divided within the Insurance Working Group. One view was that insurance would result in the insured bank reducing its level of diligence and not adopting a continuous improvement policy towards the management of operational risks, since part of the derived benefit would pass to the insurer. The alternative view was that insurance would lead to improvements in operational risk management. This is because insurers are only likely to consider providing insurance to banks that adopt high standards of operational risk management and will then undertake on-going due diligence investigations. Moreover, in the event of failure due to non-compliance, the insurer would be expected to pursue legal remedies against the directors and employees as considered appropriate.

The potential for moral hazard will obviously vary between different banking organisations. For example, it was suggested by some members of the Insurance Working Group that moral hazard may be more of a problem with smaller banks (who have less money to invest in risk management) and those with fundamental cultural issues (such as BCCI or Barings). In addition, the type of insurance product may influence the scope for moral hazard. For example, the scope for opportunism may be greater for multi-peril basket products, especially when they offer cover against currently unknown or non-quantifiable risks. This is because it is hard to monitor the performance of a bank in managing an operational risk when this risk is not properly understood in the first place.

A common way to reduce the likelihood of moral hazard is to specify a comparatively high minimum attachment point (i.e. a deductible). This leaves a substantial burden with the insured and thus provides them with a strong incentive to management risk. In addition, insurers have considerable experience in monitoring the behaviour of an insured, so are often able to prevent moral hazard from occurring in the first place (see section 3.4.2.2.2).

### *4.6.9 Systemic risk*

Although the management of systemic risk is a primary concern for regulators, it does not concern the banks nearly as much. This is because the regulatory authorities are expected to take appropriate action in cases where there is the potential for systemic risk (as with the Long Term Capital Management and US Savings & Loans events). As such, an individual bank is unlikely to perceive any benefit from insuring against systemic risk.

Insurers are also not particularly concerned about the problem of systemic risk. However, it was accepted that problems for insurers could arise where banks adopt similar operational systems that could all fail concurrently (leading to a string of operational risk insurance claims)[13]. In addition, the trend amongst banks towards

13 For example the banking industry's widespread reliance on computing technology created an industry-wide operational risk with the year 2000 problem.

outsourcing certain functions such as payment systems to a very small number of external firms creates the possibility of an industry-wide failure. However, certain Insurance Working Group members felt that this particular risk was strategic rather than operational.

One final issue raised by some Insurance Working Group members was that the purchase of insurance could actually increase the possibility of systemic risk if the insurer (or its re-insurance chain) was under-capitalised. In this case a substantial claim from one or a number of banks may cause the insurer to fail and leave other banks in the same portfolio exposed. Clearly, it is a matter for bank management (and perhaps the regulators), to be fully satisfied with the ability of an insurer to accept the risk they have transferred. Moreover, the fact that the insurance industry is highly regulated, coupled with the work of the rating agencies, means that this scenario is very unlikely.

### *4.6.10 Granularity & linearity*

Operational risk is a collective name for a mixed bag of risks. In an effort to achieve better understanding and control, efforts are being made to prescribe these risks in a more precise way by identifying common characteristics and causes (granularity). Taken to an extreme, this can lead to one risk event being completely and uniquely described. However, this is clearly of little use for statistical predictive purposes. Given that most operation losses are caused by the complex interaction of various preconditions, it is highly unlikely that a particular type of risk event will exhibit the characteristic of linearity (i.e. $Y = f[X]$ ). Some Insurance Working Group members believed that this could hinder the operation of insurance, since insurance relies on a loss event being attributable to a specific cause. In addition, it is much harder to assign probabilities to events that are the result of a combination of several causal factors[14].

### *4.6.11 Data & risk classification*

Data is vital to the efficient functioning of insurance - data facilitates the quantification of risk and consequently allows the proper pricing of insurance products (see sections 3.4.3.3, 3.4.3.4 and 4.6.12). Currently, data on operational risk is limited, although efforts are being made to correct this problem. Data collection is ongoing in a variety of quarters (e.g. the banks, insurers, rating agencies, industry associations and the regulatory authorities). Moreover, the pronouncements of Basel will undoubtedly cause banks to increase their efforts in collecting internal operational loss data[15].

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[14] Linearity implies that $Y=mx+c$ (the equation of a straight line). Currently, given the dearth of information available, linearity is the assumption being made by the regulators. However, there should be a move away from linearity (basic indicator approach) to non-linearity (Internal Measurement & Loss Distribution Approaches) in time, as more information comes to hand and the relationships begin to crystallise.

[15] The Basel Committee on Banking Supervision's Quantitative Impact Study (QIS) Group is currently collecting data in order to determine the capital charge. It has requested that operational risk

Of particular interest are the external loss databases that have been established by the British Bankers Association (BBA) and the MorExchange. The benefits of initiatives like these are that they should increase the availability of operational risk information and should help in the creation of a standardised approach towards the classification and demarcation of operational risks. However, external data needs to be used with caution as it is not always readily transportable in time and place (Young 2000a), especially when it is aggregated or where it is used to provide information on low frequency events. This is because many operational risks, especially low frequency ones, may be a direct consequence of the individual attributes of particular banks (as in the case of Barings, see for example Waring and Glendon 1998). Moreover, given the dynamic nature of the banking industry, even when data is recorded accurately and comprehensively its 'shelf life' can be short.

It is also important to recognise that some operational risks are difficult to classify. For example some elements of operational risk could also be classified as market risk or credit risk. Where such distinctions are not made ex-ante this could lead to disputes with insurers. Such disputes are particularly likely with the new basket products, where the risks included in a policy may not be completely specified.

Certain members of the Insurance Working Group felt that doubts over the classification of operational risks combined with data collection problems would be a major influencing factor on the provision of basket insurance products. In particular, it was felt that Basel would be reluctant to accept basket operational risk insurance as a substitute for capital while there were significant data collection and classification problems. Many did, though, feel that the case for recognising established peril specific insurance products, as a substitute for capital was rather more concrete.

### *4.6.12 Quantification & risk assessment*[16]

A further issue related to the availability and accuracy of data is quantification. Plentiful amounts of data are needed if an insurer is going to quantify a risk accurately and hence calculate insurance premiums. Moreover, even where data is available an insurer will need to process it correctly in order to ensure accuracy in depicting the operational risk exposures of individual banks (which is an important part of minimising adverse selection problems, see 4.6.7).

Given these issues, interest exists in how insurance companies will measure and model some of the more complex operational risks. Clearly, the measurement of risk is an essential part of insurance. However, where risk depends on the unique characteristics of a firm or the actions of management, pure statistical assessment becomes unreliable (Young 1999 and 2000b). One way round this is to adopt those

loss data be classified into 8 standard business lines and 7 loss event categories. These 7 categories are then divided into 21 sub-categories. A second matrix is then used to further sub-divide the loss data into 6 loss effects. It has yet to be determined whether this information will be made available to the insurance industry and whether it would meet the insurance industry's requirements.

16 See Appendix C, Response No. 7, comments on "Risk Modelling"

techniques used by risk-rating agencies, which typically consist of three separate activities, these being:

- A business risk assessment in which all operating divisions are reviewed, with factors such as the quality of management, strategy and competitive position being considered;
- A financial risk assessment which includes a review of the financial history of the organisation together with an assessment of the future projections, in addition to comparison of sixty to eighty industry average ratios;
- An overall assessment by the risk committee, which also considers the potential impact of external factors before awarding the final rating index.

A similar system is adopted by the venture capital industry, with quantification signified by the internal rate of return on investment, which is then enhanced by the applied terms and conditions.

### *4.6.13 Loss distribution curve*[17]

One question that was addressed by several members of the Insurance Working Group was which operational losses could and should be insured. This issue, though, is far from straight forward. What action a bank decides to pursue and what cover an insurer can sensibly underwrite will depend upon their particular circumstances.

Operational losses can be classified according to their probability of occurrence and the severity of their outcomes. However, it should be noted that the severity of loss is a relative concept that is influenced by the size of a bank.

#### *4.6.13.1 High-frequency low-severity losses*[18]

The Insurance Working Group felt that, in general, a bank would manage higher-frequency, lower-severity operational losses in-house since such losses are predictable and more efficiently managed internally. Where such losses are a function of the system, quality control requires continuous management (Deming 1988). In fact, high-frequency low-severity losses are often termed expected losses and are built into the cost of a product, and charged to the Profit & Loss account. However, some banks may decide to transfer some of their high-frequency low-severity losses to an insurer. This may be due to the outsourcing benefits of insurance, tax deductibility of premiums, or simply because insurance cover for such risks is comparatively cheap. Further discussion of this issue can be found in Doherty and Smith (1993).

#### *4.6.13.2 Low to medium frequency and medium to high severity*

The most active market sectors for operational risk insurance are expected to be those encompassing the low to medium frequency and medium to high severity losses. It

17 See Appendix C, Response No. 3.

18 See Appendix C, Response No. 4.

was thought that many banks could appropriate significant cash flow smoothing and risk management benefits from purchasing insurance for such risks (see section 3.4.2). In addition, provided that insurance companies have access to the necessary loss data and have appropriate levels of capitalisation such risks should not prove difficult to insure.

#### *4.6.13.3 Catastrophic – very low frequency and very high severity*

The potential pooling benefits of insuring catastrophic risks are likely to be considerable, especially if the purchase of insurance can protect a bank from the costs of financial distress or bankruptcy (see section 3.4.2.1.2). However, despite these benefits catastrophic losses may at times present an underwriting challenge, since they are potentially unique and could even be solvency threatening for an insurer. This is not to say, though, that catastrophic losses are uninsurable. In particular, a catastrophic loss for a small or medium sized bank should not prove catastrophic to a large, well-capitalised insurance company. Moreover, with proper reinsurance arrangements, it is unlikely that the failure of even a large bank would lead to the collapse of the insurance sector.

It should be remembered, though, that catastrophic insurance cover could be expensive. In addition, a certain amount of catastrophic risk can be passed onto both shareholders (whose expected returns will generally reflect such risks) and the tax authorities (since the loss of profits caused by a catastrophic loss means that less corporation tax will be paid)[19]. Indeed the general view of those banks questioned was that only a limited level of cover against low frequency high severity risk was desirable.

### *4.6.14 Latent losses*

Basel raised the issue of latent operational losses in its recent consultative document on operational risk (Basel Committee on Banking Supervision 2001). Latent losses develop gradually over time. In fact, it is possible for a latent loss to remain hidden for years before being discovered. A simple example of a latent loss would be gradual, unseen pollution that manifests after many years of development. Problems then arise for an insurer because it may have long since stopped holding reserves against claims from ‘expired’ policies. Moreover, additional difficulties arise where a bank has switched insurers since there may now be a problem in identifying which of its previous insurers should be responsible for paying a claim against a latent loss.

Traditional peril-specific insurance policies purchased by the banks deal with latency by providing coverage on a ‘losses discovered’ or ‘claims made’ basis. This means that the policy incurring the claim is the one that is in force when the bank discovers a particular latent loss. The advantage of ‘claims made’ policies is that they have allowed insurers to deal with the problem of specifying the time of occurrence for a latent loss. However, the nature of ‘claims made’ policies means that a bank must

[19] For more on all these issues see Doherty and Smith (1993).

continue to purchase cover if it is to remain protected from latent losses that could manifest in the future.

## 4.7 The alternatives to insurance

Several members of the Insurance Working Group commented on the alternative risk financing methods that were outlined in section 3.5, however, opinions were divided with regard to their viability:

### *4.7.1 Mutual self-insurance pools*

Mutual self-insurance pools usually require a large number of contributors to be cost effective. Insurance Working Group members estimated that to be viable a banking pool for operational losses would need at least 30 members.

Discussions have taken place between a number of banks, with involvement from the British Bankers Association, regarding the establishment of a mutual insurance company for the industry. As several Insurance Working Group members pointed out, most bank executives believe their bank to be better run than the competitors, therefore, it is unlikely that a bank would risk its capital on the operational failures of a rival.

### *4.7.2 Securitisation*

In general, the Insurance Working Group members considered that, currently, securitisation had limited potential. One key reason for this is that many investors (except perhaps insurance companies) are simply not ready for such unconventional investment products. Some of the members also mentioned that there was insufficient data on operational losses at the current time to properly price bonds. The net result of this was that investors would be expected to demand too high a rate of return on these instruments to make them cost effective. The working group speculated that at the current time securitisation costs could be up to five times higher than insurance costs for low frequency, high severity risks.

### *4.7.3 Finite risk plans*

It is important to remember that finite risk plans merely provide a way of helping a bank to structure the financing of its retained risks and do not involve the transfer of risk. As such they are by no means a perfect substitute for insurance. Finite risk plans, as stated previously, are controversial with some critics suggesting that their benefits are illusory (see Williams, Smith and Young 1998).

# 5. CONCLUSIONS AND RECOMMENDATIONS

The Conclusions and Recommendations section seeks to determine possible solutions and identify those areas requiring further investigation. It also seeks to determine what actions need to be taken and by whom, acting individually or in concert.

## 5.1 Basel

For Basel the main conclusions and recommendations are:

### *5.1.1 The Three Pillars and the role of insurance*[20]

There is a school of thought that suggests any efforts to improve the risk environment should be seen as an addition to the '**minimum**' capital charge outlined by Basel. As such, it would be inappropriate to allow insurance as a set-off against the Pillar 1 capital charge. On the other hand, there is the alternative view, which considers that there is a need to provide incentives for banks in Pillar 1 and therefore argues that insurance should be accepted as a capital charge set-off in this pillar. In fact, many in the insurance and banking industries believe that insurance should be used as an offsetting device for the Pillar 1 charge. For them the only question is the degree to which insurance could be traded for capital.

Given the increased complexity of Pillar 1, resulting from the qualifying criteria (Basic Indicator, Standardised, and Internal Measurement approaches) Basel will need to define exactly what is meant by the term 'minimum' (currently, for operational risk, it would appear to mean 20% of 8% of capital). Basel will also need to decide whether or not this is a simple capital charge, or whether other risk tools such as insurance can be used in its make up. The current situation is far from clear.

Pillar 2 allows the regulators to increase the capital charge at their discretion. Here there is a strong case for insurance to be allowed as an enhancement under Pillar 2. The extent to which this is possible, though, would obviously depend on the ability of insurers to meet the criticisms that Basel has levelled against insurance. Arguably, the more pro-active leading insurance companies are already beginning to address these issues.

Pillar 3 is concerned with transparency and control through market forces. Given its monitoring and control functionality benefits, insurance could have a significant role to play (see section 3.4.2.2.2). The better-managed banks could be expected to make more sophisticated use of insurance and possibly have a higher level of insurance protection, the disclosure of which should lead to an improved external rating and therefore a lower cost of capital for the individual organisation.

20 See Appendix C, Response No. 5.

### *5.1.2 Peril-specific insurance products*

The market for peril-specific products is stable, well developed and is generally understood by its participants. Peril-specific insurance has proved a very effective mitigant against the financial effects of certain operational risks. Therefore, it is recommended that the regulators should consider giving some form of credit for the use of proven peril-specific insurance products.

However, given that peril-specific products can leave gaps in cover for operational risks it is fair to say that such products would not provide a complete substitute for the holding of non-contingent capital.

### *5.1.3 The further development of operational risk insurance*

The operational risk insurance market is developing continuously in ways that help to solve the perceived problems with insurance and maximise its benefits. For example, the development of multi-peril basket products may provide a partial solution to the problem of gaps in cover for operational risk, although, at the current time the market for these products is in its infancy.

In view of this, Basel should ensure that the regulatory framework does not hinder the future development of insurance products. One way to do this might be to issue a clear policy statement that affirms Basel's belief that insurance has a valid role to play in operational risk management, including supporting capital adequacy. It is, therefore, recommended that Basel enter into a dialogue with the insurance and banking industries with a view to establishing guidelines for the development and use of operational risk insurance products.

### *5.1.4 Compulsory insurance*

There is a requirement to determine whether or not Basel should make operational risk insurance compulsory - and if so for what purposes. Currently, fidelity insurance is compulsory in the United States of America and a number of countries, including the United Kingdom, have limited depositor protection schemes (which cover all risks – both operational and non-operational). The adequacy and general applicability of such forms of insurance should be evaluated (for example moral hazard is a major problem, see section 3.3), taking into account the requirements of different stakeholder groups and the extent to which the free-market fails to provide adequate protection.

### *5.1.5 The relationship between insurers, risk-rating agencies and the regulators*

The existence of a regulatory authority is indicative that a perfect market does not exist. However, statutory regulation can only be justified when market failures cannot be corrected in a cost-effective manner by other less invasive means. It, therefore, follows that where possible, the assessment of banks and their operational risk

activities should be transferred to other market participants. This should create an environment in which market forces can function efficiently and effectively.

One possible model is for the regulators to simply set the coral bounds and leave the monitoring and to some extent the day to day 'enforcement' of these bounds to insurance companies and risk rating agencies. Insurance companies have a vested interest in encouraging banks to adhere to and improve their risk mitigation activities. In addition, they have the skills to undertake detailed on-going assessment and monitoring of operational risks within banks. Similarly, external independent assessments of banks are already provided by risk-rating agencies[21]. By adopting this model the regulators should be able to concentrate their limited resources on dealing with only those banks that cause particular concerns for insurers and risk rating agencies.

### *5.1.6 Transparency and disclosure[22]*

Basel's desired move towards greater transparency could be enhanced if it was to promote the disclosure of risk **ratings** for specific operational risk insurance policies and securities. This would though require a degree of co-operation between the regulators and the risk-rating agencies since, in contrast to the risk-rating agencies, the regulators do not make public any of their ratings. In addition, whilst the public rating of an operational risk insurance policy by the regulators may be considered an ultra vires act, this would not be the case for risk rating agencies.

It is also recommended that Basel adopt similar risk management **guidelines** to those in the UK Turnbull report on internal control (Turnbull et al 1999). This would require banks to disclose in their published accounts the risks they face and the mitigating actions being taken. Furthermore, these guidelines could include the requirement for a **risk statement** identifying the main operational risks faced by an individual bank together with details of the capital charge plus the estimated value of mitigating insurance policies and other alternative risk management instruments.

### *5.1.7 Systemic risk*

Systemic events, which violate the principles of insurance, are seen to be the responsibility of the regulatory authorities and, as such, outside the scope of individual banks or insurers. However, this view is not entirely satisfactory, since it is beholden upon an individual bank to ensure that the decisions it makes (e.g. outsourcing decisions – see section 4.6.9) do not cause it to become overly exposed to systemic risk. Given the continuing move towards globalisation, consideration needs to be given to a collective international approach towards systemic risk.

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21 See Appendix C, Response No. 7, comments on "Financial Enhancement Ratings"

22 See Appendix C, Response No. 7, comments on "FSA Reports on Risk"

### *5.1.8 Data*[23]

The regulators (Risk Management Group, via the Quantitative Impact Study Group) are collecting data on operational risk, in order to determine the level of capital charge. It is recommended that consideration be given to making as much of this data as possible available for insurance and benchmarking purposes. This would ensure that appropriate data is captured and properly classified on an on-going basis, which should then lead to more accurate calculations of insurance premiums, fewer exclusions and higher policy limits.

### *5.1.9 Insurance and outsourcing*

The Basel Committee has highlighted the risks associated with outsourcing activities, such as communications or settlement systems (Basel Committee on Banking Supervision 2001). Insurance could, however, be used to deal with some of Basel's criticisms by helping to address the risk of an outsourcing company failing. As such, it is recommended that Basel consider the role that insurance could play in strengthening the position and standing of an 'outsource' service provider.

23 See Appendix C, Response No. 6.

## 5.2 Insurance

For the insurance industry the main conclusions and recommendations are:

### *5.2.1 The traditional, peril-specific approach*

The traditional bottom-up approach to insurance, which is based on provision of cover for known perils, is tried and tested, and has much to commend it. This approach is in line with the theoretical concept of pattern theory[24], akin to democracy, where overall direction tends to result from the outcome of myriad separate projects.

However, the traditional bottom-up approach to new product development can be rather reactive. It is, therefore, necessary for the insurance industry to consider the limitations of this approach in a dynamic industry such as banking. In particular, a reactive approach may allow unforeseen gaps in cover to appear over time due to changes in technology, knowledge, and the economic environment.

### *5.2.2 New product development in operational risk insurance*

In addition to the proven peril-specific approach to operational risk insurance there are a number of other routes that could be considered for development.

One alternative is simply to substitute current peril specific products with a single multi-peril basket product. Such a product would have the advantage of eliminating overlaps between product lines. In addition, it may be possible to offer broader levels of cover than before, thereby filling in some of the gaps (whether perceived or actual) that may exist with established products. However, the basket approach is also potentially less flexible (since it removes a bank's ability to select which risks it wants to insure) and can present additional underwriting problems (such as moral hazard and the unavailability of data).

Another possible route might be to develop an umbrella insurance policy designed to compliment existing peril specific products. A policy of this type could be used to provide broad cover at a higher attachment point than current peril specific policies. This would help to protect banks from any major unforeseen problems, which will naturally occur in a dynamic environment subject to constant change. It might also make it easier for an insurer to underwrite any unknown risks since the high attachment point should help to minimise moral hazard.

Finally, although the alternative risk transfer market (e.g. securitisation etc.) is still in a very early stage of development it should not be overlooked by the insurance industry. As the level of operational risk data increases, the viability of alternative risk transfer tools is likely to increase.

24 See Johnson (2000)

### *5.2.3 The demand for operational risk insurance*

Although pro-active product development is being undertaken by a small number of leading insurers, the level of demand for these new products is, as yet, unclear. Previously, insurance companies have responded to perceived market needs only to find that there was virtually no demand for these new products (e.g. Rogue Trader Insurance).

It is recommended that an active dialogue between insurers, the banks and the regulatory authorities is established, in order to determine more accurately what the market requires and what it is actually prepared to pay for.

### *5.2.4 A shared vision and action plan*

Recently, fourteen leading organisations in the insurance industry agreed to work towards a co-operation document. This agreement helps to address the criticism that the insurance industry lacks a shared vision and direction. The next step is to produce a detailed action plan for overcoming the present limitations (perceived or actual) that are considered to be constraining the development of operational risk insurance and preventing Basel from accepting insurance as a mitigant. Such a plan would need to be endorsed by the main insurance organisations if it is to be successful.

### *5.2.5 Standard documentation*

There is a recognised need within the industry to move towards standardised documentation. Such standardisation should help to reduce the possibility of disputes and provide reassurance to the regulators that insurers will pay out for proven operational losses. It would also assist in the development of alternative risk products (since standardised products could be commoditised and offered to a wider market via securitisation – see section 3.5.2). However, care does needs to be taken, as too much standardisation could stifle new product development and impact upon the efficient functioning of the market. In addition, the ever changing and evolving nature of insurance, which is necessary to meet clients needs, means that it is difficult to draw up fully standardised policy documents for insurance products.

## 5.3 Banks

For the banking industry the main conclusions and recommendations are:

### *5.3.1 Insurance and shareholder value*

It is recommended that when purchasing insurance a bank should focus on how it can contribute towards shareholder value, rather than simply basing its decision on cost. Insurance can enhance shareholder value by:

- Smoothing a bank's cash flows
- Preventing financial catastrophes
- Assisting with monitoring and control (see 5.3.2)
- Providing cost effective risk management advice

It is important to note that simply trading insurance for a reduced capital charge will not necessarily lead to an increase in shareholder value (especially when the opportunity cost of holding capital is low). The purchase of insurance must be justified on the grounds that it offers services that the firm cannot replicate in-house, at least in a cost-effective way.

### *5.3.2 Insurance as a device for monitoring and control*

It is recommended that a bank emphasises to its stakeholders the role that insurance can play as a monitoring and control tool. As stated in section 3.4.2.2.2 the purchase of insurance by a bank can often be taken as a credible signal that a bank is committed to risk management. This is because the active use of insurance requires the bank to:

- Be aware of the risks it is facing
- Think carefully about which risks it wants to retain and which its wants to transfer
- Discuss with an insurer the risk control tools it will maintain
- Accept external monitoring and investigation by the insurance company

### *5.3.3 Insurance and competitive positioning*

From a strategic perspective insurance allows a firm to focus on those areas of its business in which it has a core competency. This is because insurance provides a mechanism for a bank to outsource those aspects of its risk management function in which an insurer has a comparative advantage (see section 3.4.2.2.1).

In a competitive industry like banking the need to consider the strategic and tactical implications of insurance is paramount (see Culp 2001).

### *5.3.4 The location of the insurance manager*

In a number of banks the insurance manager is positioned outside the group risk function. This situation can result in a lack of co-ordination between the risk management and insurance decisions of a bank. In particular, it may lead to an over emphasis on the cost of insurance and inadequate consideration of insurance as a shareholder value enhancing activity.

It is recommended that banks consider the location of the insurance manager within the organisation structure. Where possible the insurance manager should either work within or at least work closely with the group risk function. This should lead to insurance decisions being made that are more in line with the risk/general management objectives of a bank.

### *5.3.5 Data collection and the loss distribution curve*

As part of its insurance decision a bank should take into account the frequency and severity of its losses (see section 4.6.13). In so doing it is helpful to subdivide losses into the following three categories:

- High severity, low frequency
- Low to medium frequency, medium to high severity
- Catastrophic

Which of these three categories a bank chooses to insure will depend on its own particular circumstances and the prevailing conditions of the insurance market.

### *5.3.6 Conducting an insurance survey of banks*

This report reflects the views of the members of ORRF's Insurance Working Group. In order to obtain a broader perspective of the attitudes within the banking industry further research is required. As part of this an ORRF sponsored questionnaire has been developed (see appendix D) and piloted with a view to determining:

- The insurance requirements of the banks
- The primary factors that influence a bank's demand for insurance
- The levels of knowledge and awareness that the banking industry has about a number of recent trends and developments in operational risk insurance

To complete this research further support will be sought from banks, insurers and the regulatory authorities.

# Appendices

## Appendix A Insurance Working Group (IWG) Members

| NAME | ORGANISATION |
|---|---|
| Daniel Butler | AON |
| Roland Avery | AON |
| Philip Martin | HSBC |
| Stephen Burnhope | SVB Holdings Plc |
| Dean White | Swiss Re |
| Shirley Beglinger | Swiss Re |
| John Thirlwell | British Bankers Association |
| Tony Blunden | Ernst & Young |
| Jeff Grange | Chubb |
| Gisele Ivanoff | Chubb Paris |
| Andre Ford | Chubb London |
| Bijan Daftari | Chubb Frankfurt |
| Patrick Roozeman | Chubb London |
| Kathleen Tierney | Chubb Home Office |
| Hansruedi Schuetter | Credit Suisse Group |
| Timothy McAlindin | Credit Suisse Group |
| James Elder | Credit Suisse Group |
| Rene Manser | Zurich IC Squared |
| Samuel Theodore | Moody's |
| Andrew Mitchell | Fitch IBCA |
| Richard Metcalfe | ISDA |
| Charles Pople | Barclays |
| John Ryan | Institute of Actuaries (Towers) |
| David Calvert | Halifax |
| Simon Ashby | University of Nottingham |
| Brendon Young | ORRF |

## Appendix B Questionnaire Sent to IWG Members

### Preliminary Questions

The questions are designed to give a structured analysis, however, they are deliberately broad in order to allow you to express your views.

Historically, where have we come from – and what has changed?
What is required now? – (Consider evolution and/or revolution)
What is currently available – and where are the gaps?
How many users are there – and what is the required critical mass?
What are the problems?
What are the possible solutions?
What actions need to be taken – and by whom (acting individually or in concert)?

### Basel Statements

The recent Basel Consultative Paper (CP2) states that with regard to insurance, 'in principle, such mitigation should be reflected in the capital requirement for operational risk'. However, the paper goes on to say that 'it is clear that the market for insurance of operational risk is still developing' and that banks 'should recognise that they might, in fact, be replacing operational risk with a counterparty risk'. 'The Committee pointed out that outsourcing may offer benefits but it does not relieve the bank of the ultimate responsibility for controlling risks that affect its operation. Consequently, banks should adopt policies to limit risks arising from reliance on an outside provider'.

### Main Criticisms

Currently the main criticisms regarding the use of insurance as a mitigant for operational risk are:

1. The insurance industry is not sufficiently well capitalised. A bank transferring the risk may be better capitalised than the accepting insurance company
2. Blanket cover is not available – there are many different contracts for different elements, which do not fit together sufficiently well. This leads to uninsured gaps or inefficient over-laps
3. Limiting conditions and exclusion clauses lead to doubt regarding payment in the event of failure
4. Delays in payment could result in serious damage to the claimant
5. It is difficult to determine the true economic value of insurance purchased in the absence of sufficient and appropriate data
6. Insurance may lead to moral hazard
7. Systemic risk may be increased in the event of claim payment default

## Assumptions

The views regarding the use of insurance as a mitigant for operational risk are very wide ranging. These views could be based on underlying tacit assumptions, which may or may not be correct. Such assumptions need to be identified and challenged as they can lead to castles built on sand. Therefore, please consider what assumptions you may be making and state them clearly.

## Appendix C Individual Responses from IWG Members

**Response No.1** (*see section 4.2.2.2*)

The report implies that regulators use market forces to do their job for them. Market forces may weed out the weak and so fulfil a quasi regulatory role. Incidentally, I don't believe either banks or insurers are compensated for their risks. That's where the market has a key (and probably perverse) role in that it tends to drive price down, even below apparent economic levels.

**Response No. 2** (*see section 4.6.3*)

With regard to the risks of reinsurance (unknown counterparty failure), the bullet points greatly exaggerate the issue. There is no instance of any direct claim due from a 'regular' insurer - maybe a captive may have had an issue - failing to be met because of reinsurer problems. After all, the insurer is well aware - it is a standard hazard - that if there is a problem with the reinsurance he is on for the original gross claim.

**Response No. 3** (*see section 4.6.13*)

With regard to distribution curves, your split of high/low is fine, but against a distribution curve we are going to have to work out things like time horizons and confidence intervals to establish where high, low etc fit on the curve. Incidentally, is it really worth somebody insuring for catastrophic loss? The answer depends on where on the curve you drop a line called catastrophic. I think this point ought to be made.

**Response No. 4** (*see section 4.6.13.1*)

High-frequency low-severity losses are often termed expected losses and are built into the cost of a product, and charged to the Profit & Loss account. It has been argued that under such circumstances, there is no need to subject these high-frequency low-severity losses to a regulatory capital charge (i.e. absorbing losses into the P&L instead of putting up capital reflects capability to absorb hits).

**Response No. 5** (*see section 5.1.1*)

Insurance should be considered universally to all Pillar levels and all option levels. Also I feel that further credit consideration should be given to those banks who have a more sophisticated insurance portfolio program implemented to address operational risks.

**Response No. 6** (*see section 5.1.8*)

There is a material difference between the kind of data that insurers need and use and the kind of data which banks use to help them manage risk. I think insurers tend to go for the effect loss-type, whereas banks are trying to get back to underlying cause, via the event. When I have talked to insurers, it has been obvious that our database would not match their needs - or more properly that their requirements would not fulfil our needs. Obviously the data is useful, but we do have different requirements.

## Response No. 7 Contribution of John P Ryan

It is important to recognize that insurance is unlikely ever to be a total solution as most policies will inevitably have some restriction or exclusions, even if it is only a policy limit. Indeed if it were, it would only transfer the whole problem to the insurance markets. Conversely insurance should be part of the solution as any risk transfer, however small or restricted, must facilitate a bank's capability to withstand operational risk. The issue is how to quantify the impact. There are a number of developments that will facilitate this quantification and hence the role that insurance can play.

**Risk Modeling** (see section 4.6.12)

The development of operational risk-modeling capabilities will enhance both the banks and the regulatory bodies capabilities to quantify capital requirements. Development of databases, as covered in the main body of the report, are very helpful. Development of insurance products will also supplement this process of data collection as insurance companies build up their databases. However, there are considerable dangers in just relying on databases for these types of risk. In particular, the real problem is the low frequency/high severity nature of the risk, which means that some of the potential losses may not yet have occurred e.g. a computer virus destroying several bank computer systems simultaneously. Furthermore the fact that these types of loss tend to be embarrassing for the banks concerned means that operational risk losses that have occurred may not to be reported or understated. Consequently there is a tendency for such databases not to be complete and therefore understate the tail of the distribution.

Consequently firms, such as my own, prefer to rely on several methods in order to correct for these problems. Methods such as Delphi techniques and causal modeling are required to remedy defects of database techniques as well as providing greater insights into the quantification and control of operational risk. Where databases are used, it is necessary to adjust the resulting distributions for the under-recording of large losses. Fortunately these techniques have been developed by actuaries to deal with a number if similar insurance problems. As these are beginning to be applied to banking operational risk, significant progress can be anticipated in the near future. Apart from facilitating the pricing of insurance, these techniques can be used to evaluate the impact of insurance packages whether these are all risk contracts or single or multi-peril. Modeling a bank's exposure before and after insurance is an effective way of evaluating the contribution of insurance to meeting the capital requirements.

**FSA Reports on Risk** (*see section 5.1.6)*

The FSA are in the process of introducing a requirement for UK based financial institutions to prepare a report on the risks that the financial institution is facing and to demonstrate the institution has sufficient resources to meet those risks. These reports must be made available to the FSA on request but will not be in the public domain. However the mere requirement to produce such reports and their possible regulatory scrutiny should act as a stimulus to development in this area as well as enhancing the FSA's knowledge. This requirement is not confined to operational risk but obviously

includes it. This is written up in more detail in a paper to the Institute of Actuaries on 26th March this year by JP Ryan et al.

**Financial Enhancement Ratings** (*see section 5.1.5)*

Financial enhancement ratings (FER) have been developed by Standard & Poors as a supplement to their security ratings. The FER are designed to test the commitment on an insurance entity to pay first & only dispute a claim payment if there has been a clear breach of the contract. These ratings have only recently been introduced but should help the possible non-payment problem in two ways. Firstly it will act as an encouragement to prompt payment. Secondly it will provide banks & regulators with a basis for assessing the chance of non-payment. It does not, of course, eliminate the problem, but it is a significant step forward.

Although not a direct function of FER, techniques such as credit enhancement and look through clauses to reinsurers can mitigate the credit risks.

**History of new product development in the insurance industry**
*(see section 3.3)*

Although not a new development, the insurance industry has historically reacted to new development in advance of the loss experience becoming available. This means that new insurance products can be developed in advance of data becoming available in the operational risk field. A good example of that is in the aviation field where new technological advances totally change the risks and so past data becomes obsolete. Actuaries and underwriters and other experts work together to estimate rates, which are then adjusted in the light of experience. The introduction of jet aircraft in the 50s& 60s were covered even though loss experience was poor. Consequently there was considerable apprehension when wide-bodied jets were introduced in the early 1970's. Here experience was good. Satellites had mixed results and a much more sophisticated approach has now been adopted to ensure continuity of coverage.

**Recent thoughts on capital in insurance** (*see section 3.4.3)*

New thinking on risk and capital in insurance will be helpful in developing banking operational products. Insurers are increasingly looking at risk across the whole portfolio. This means that operational risk needs to be evaluated in relation to the portfolio as a whole and not on a stand-alone basis. Since bank operational risk is probably not correlated with other insurance risks, the capital requirements for risks transferred to insurers are likely to be significantly less than if left in concentrated form in banks provided that the amounts are not too large. This is likely to mean that insurance is part but not the whole solution. It is not necessary for insurers to write large amounts of business in order to balance their books.

Insurers divide pricing risk into two aspects: statistical risk or law of large numbers and parameter risk or uncertainty as to the true cost of the risk. Parameter risk is likely to be the biggest source of risk initially for insurers and they are likely not to want to underwrite very large sums in relation to their capital until they have a clearer understanding of the parameters. On the other hand, the uncorrelated nature of the risk will encourage many insurers to write small amounts. These two factors would

suggest that there should be an active market though it may take some time to develop fully.

Increasingly insurers are differentiating between shareholder capital and regulatory capital. Shareholders and stakeholders (with whom regulators are concerned) have very different risk profiles. Stakeholders cannot diversify. This means that spreading the risk widely will reduce the cost of capital from a shareholder perspective. This is also likely to encourage the use of insurance as a partial solution to funding the capital requirements of banking operational risk.

**Alternative Risk Transfer Mechanisms** (*see section 3.5)*

The alternative risk transfer market, including finite risk insurance, is developing new techniques to handle hard to quantify risks. These include the introduction of contingent capital on the occurrence of the insured event as well as allowing repayment out of future profits. The insurer takes the risk that there may not be sufficient profits in future. Undoubtedly these techniques will be used in some instances to finance capital requirements for bank operational risk. This is written up in much more detail in a paper written for the EU Commission by JP Ryan of Towers Perrin and is available on the EU Commission web site.

## Response No. 8 Comments from Daniel Butler and Roland Avery

We believe this paper broadly represents our views. It is important for all readers to recognise the fundamental role of the insurance devise in society; namely to exchange the unknown financial impact of specified events ("insured perils") for a known financial cost ("the premium and excess").

This basic devise continues to serve society well and has proved an extraordinarily efficient mechanism for mitigating the financial consequences of certain risks.

The proposed capital charge for operational risk should be sensitive and reflective of the benefits to society as a whole of the insurance mechanism.

## Appendix D Proposed Bank Questionnaire on Insurance[25]


# BANK QUESTIONNAIRE

## Insurance as a Mitigant for Operational Risk

**Please note that all replies will be kept confidential**

*Your company's current insurance strategy*

1. Please indicate which of the following insurance products your company purchases. If possible please also indicate the level of cover your company buys (i.e. the sum insured) and the level of any deductible.

| PRODUCT | PURCHASED? | SUM INSURED | DEDUCTIBLE |
|---|---|---|---|
| Bankers Blanket Bond | | | |
| Professional Indemnity | | | |
| Directors and Officers Liability | | | |
| Employment Practices Liability | | | |
| Non-Financial Property All Risks | | | |
| General & Other Liability | | | |
| Unauthorised Trading | | | |
| Organisational Liability | | | |
| Other (please specify) | | | |
| Other (please specify) | | | |
| Other (please specify) | | | |

2. Please indicate approximately how much your company spends on insurance annually.

[25] At the time of preparing and issuing this questionnaire the Regulatory Risk Management Group (QIS2) survey concerning loss data was under construction. This has subsequently recommended an additional business line for Agency Services (see question 16). In addition, the RMG-QIS2 survey requires that event/effect types are provided in QIS2 part 2.

3. Please list any important operational risks that your company cannot purchase insurance for at this time.

4. How important does your company consider insurance to be for protecting the following? (*Circle as appropriate*)

   (a) Shareholder value

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

   (b) Depositors

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

   (c) Assets

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

   (d) Earnings

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

   (e) The availability of funds for future investment projects

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

   (f) Company Survival

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

   (g) Other (please specify)

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

5. Please indicate how important the following other factors are in influencing your company's insurance purchases. (*Circle as appropriate*)

   (a) Insurance company provides valuable services (e.g. risk management advice, legal representation, risk assessment/underwriting services, etc.)

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

   (b) Insurance company helps to monitor the behaviour of your company's managers and prevents them from taking undesirable risks

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

(c) The conditions of the insurance market (e.g. hard or soft market)

[*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

(d) Cost of internal capital

[*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

(e) Cost of external capital (e.g. debt)

[*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

6. Please indicate which type of losses your company insures. (*Delete as appropriate*)

(a) High frequency, low impact [Yes/No]

(b) Medium frequency, medium impact [Yes/No]

(c) Low frequency, high impact [Yes/No]

(d) Catastrophic end of tail losses [Yes/No]

7. Please indicate how important the following factors are in influencing your company's deductible decisions. (*Circle as appropriate*)

(a) Cost

[*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

(b) Your company formally determines how much risk it wants to retain and purchases insurance thereafter.

[*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

(c) Captive provides primary cover and sets its own deductibles

[*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

(d) Your company sets deductibles in relation to its financial criteria (e.g. earnings, capital etc.). Please specify which criteria are used.

[*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

## Your Company's Future Operational Insurance Strategy

Fully comprehensive operational risk insurance products are just beginning to enter the market. These policies are designed to offer cover against a far wider range of operational risks than has been available in the past.

8. Would your company consider buying fully comprehensive operational risk insurance cover and if so how important would this product be to your company's insurance strategy?

   [Yes/No] (*Delete as appropriate*)

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]
   (*Circle as appropriate*)

9. How important might the following factors be, in influencing your company's decision to purchase fully comprehensive operational risk insurance cover? (*Circle as appropriate*)

   (a) Regulators offered a reduction in the tier one capital charge for operational risk for companies that purchased fully comprehensive operational risk insurance cover.

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

   (b) High policy limits (around $2 billion).

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

   (c) Cost (i.e. premium).

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

   (d) A viable reinsurance market is formed to support the provision of fully comprehensive operational risk insurance products.

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

   (e) Insurers demonstrate their ability to pay large claims.

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

   (f) Insurers demonstrate their willingness to pay claims quickly rather than dispute or delay the payment of claims.

   [*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

(g) Other banks successfully make claims on their fully comprehensive operational risk insurance policies.

[*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

(h) Policies use broad banking definitions of operational risk to determine which risks are insured.

[*not important* (**0 1 2 3 4 5 6 7 8 9**) *very important*]

10. Would your company consider using the following tools as part of its risk financing strategy? Please also indicate if your company uses these tools already. (*Circle as appropriate*)

(a) A specific depositor protection insurance product

Purchase already? [Yes/No] (*Delete as appropriate*)

[*definitely not consider* (**0 1 2 3 4 5 6 7 8 9**) *definitely would consider*]

(b) Alternative Risk Financing/Transfer solutions

Purchase already? [Yes/No] (*Delete as appropriate*)

[*definitely not consider* (**0 1 2 3 4 5 6 7 8 9**) *definitely would consider*]

(c) Catastrophe Bonds

Purchase already? [Yes/No] *(Delete as appropriate*)

[*definitely not consider* (**0 1 2 3 4 5 6 7 8 9**) *definitely would consider*]

(d) Other (please specify)

Purchase already? [Yes/No] (*Delete as appropriate*)

[*definitely not consider* (**0 1 2 3 4 5 6 7 8 9**) *definitely would consider*]

## About regulation and insurance

11. Do you think that insurance should be compulsory for certain risks (eg Fidelity insurance in the USA)? *Circle as appropriate*

(a) Fidelity insurance

[strongly disagree (0 1 2 3 4 5 6 7 8 9) strongly agree]

(b) Depositor protection insurance

[strongly disagree (0 1 2 3 4 5 6 7 8 9) strongly agree]

(c) Professional indemnity

[strongly disagree (0 1 2 3 4 5 6 7 8 9) strongly agree]

(d) Directors and Officers liability

[strongly disagree (0 1 2 3 4 5 6 7 8 9) strongly agree]

(e) Employment Practices liability

[strongly disagree (0 1 2 3 4 5 6 7 8 9) strongly agree]

(f) Unauthorised trading

[strongly disagree (0 1 2 3 4 5 6 7 8 9) strongly agree]

(g) Organisational liability

[strongly disagree (0 1 2 3 4 5 6 7 8 9) strongly agree]

(h) Others (please specify and rate)

[strongly disagree (0 1 2 3 4 5 6 7 8 9) strongly agree]

12. Given that Basel is moving towards transparency and greater control through market forces, do you think that a bank's insurance details should be publicly disclosed? (*Circle as appropriate*)

[*strongly disagree* (**0 1 2 3 4 5 6 7 8 9**) *strongly agree*]

13. Do you think that Basel should act as lender of last resort? (*Circle as appropriate*)

[*strongly disagree* (**0 1 2 3 4 5 6 7 8 9**) *strongly agree*]

14. If you agreed to the above question, please state under which circumstances Basel should act as a lender of last resort.

## About your company

What is the size of your company? [small/medium/large]

15. If possible please provide the following statistics for your company:

    (a) Gross income

    (b) Annual average value of assets

    (c) Annual Settlement Throughput

    (d) Total Funds under management

    (e) Number of employees

16. Please indicate which of the following product lines your company participates in. (*Delete as appropriate*)

    (a) Corporate Finance [Yes/No]

    (b) Trading and Sales [Yes/No]

    (c) Retail Banking [Yes/No]

    (d) Commercial Banking [Yes/No]

    (e) Payment and Settlement [Yes/No]

    (f) Retail Brokerage [Yes/No]

    (g) Asset Management [Yes/No]

    (h) Other (please specify)

17. In general what is your company's cost of capital?

## About You

18. Please state your job title:

19. Please state the job title of your direct superior:

20. Do you make any/all (*delete as appropriate*) of the insurance purchasing decisions for your company?

21. If you do not make all the insurance purchasing decisions for your company please indicate where insurance purchasing (aka insurance risk management) fits in your corporate structure and what is the reporting line to the board of directors

Thank you for taking the time to complete this questionnaire. We confirm that all individual responses will remain strictly confidential. The consolidated results will form part of the submission (by the Insurance Working Group of the Operational Risk Research Forum) to Basel on the use of insurance as a mitigant for operational risk.

## Appendix E The Financial Standing & External Rating of Insurance Companies

There are only two AAA rated banks
There are over twenty AAA rated insurers
Overall there are over 50 AA and better insurance companies in the world

| | Gross Premiums Written* | Net Premiums Written* | S&Ps rating | Moody's rating | Market Capitilization |
|---|---|---|---|---|---|
| **Munich Re** | **27'413** | **25'066** | **AAA** | **Aaa** | **62.9bn EUR** |
| **Swiss Re** | **22'433** | **20'542** | **AAA** | **Aaa** | **53.9bn EUR** |
| **Allianz** | **53'807** | **46'759** | **AAA** | **Aaa** | **89.9bn EUR** |
| **Generali** | **37'813** | **35'770** | **AA** | **Aa2** | **49.2bn EUR** |
| **Zurich** | **29'200** | **25'000** | **AA** | **Aa1** | **46.3bn EUR** |

* Figures are for 31/12/99 and in same currency as market capitilization

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