

FROM: Director, Finance & Risk Management EXTN: 6711
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SUBJECT: **2006 ICA Guidance and Instructions**
SUBJECT AREA(S):
ATTACHMENTS: 2006 ICA Guidance and Instructions

ACTION POINTS: **Completion of 2006 ICA Submission**
DEADLINE(S): **Noon on 23 June 2006**

2006 Capital Setting Process

Lloyd's has been brought into the FSA's Individual Capital Adequacy Standards regime ("the ICAS regime"), a key objective of which is to ensure that senior management at managing agents focus on risk management and that there is a direct link between risk and capital setting. Similar responsibilities have been placed on Lloyd's in respect of member capital.

In view of these changes, Lloyd's is committed to overhauling the capital setting process to ensure that information on all significant risk categories is captured, anomalies in the current process are addressed and good practice is rewarded. In order to achieve this, Lloyd's expects ICAs to be used as the basis from which Lloyd's capital is derived for the 2006 year of account.

Lloyd's is developing a capital setting framework with the market, using ICAs as a basis and taking into account the benefits provided by the New Central Fund. This framework will address the level of economic capital required to protect the franchise against unexpected losses, such that the market's underwriting liabilities can be met and Lloyd's credit rating maintained. This level of economic capital is obviously in excess of the ICA figure, which represents the minimum regulatory capital required by the FSA. The new capital setting regime will be fully implemented for the 2007 year of account capital setting exercise. Under the new approach for 2006, the overall capital requirement for members is not expected to decrease. However, syndicate capital requirements, which drive member capital, will increase in some cases and decrease in others, compared with the existing levels.

2006 ICA Guidance

The enclosed 'Guidance and Instructions' document for the 2006 ICA exercise has been produced following the detailed review of and feedback from the 2005 ICA 'soft test' submission. Managing agents should note that the guidance does not apply to syndicates where the main capital provider is in run-off.

Lloyd's recognises that practices regarding risk governance, risk management, risk measurement and capital management vary widely within the market and will continue to evolve. As such, the guidance and practices referred to in this document will be updated periodically to reflect current 'good' practice and also feedback from the 2006 ICA process.

Lloyd's has worked closely with the LMA capital committee in developing this guidance. The assistance of the individuals involved and the support of their respective organisations has been invaluable and their contribution is greatly appreciated.

It is recognised that elements of the guidance may be aspirational for most, if not all managing agents, and minimum required standards are identified throughout the document. It should be noted, however, that managing agents will be benchmarked against good practice, not minimum practice.

The more detailed and robust the ICA submission, the greater the level of confidence that Lloyd's will be able to place on the ICA when assessing the syndicate's capital requirement at Lloyd's.

The deadline for submitting 2006 ICAs is noon on Thursday 23 June 2005. ICAs should be based on the syndicate business plan forecasts submitted to Lloyd's.

Market feedback on the 2005 ICA process

In addition to the attached guidance, which will enable managing agents to compare their 2005 ICA against good practice, specific high level feedback on the 2005 'soft test' ICA submission will be provided to managing agents in April by means of a letter. Also, in the period April to June, Lloyd's will visit all managing agents to discuss the ICA process and to gain assurance as to the effectiveness of the key controls relied upon when calculating the syndicate ICAs in preparation for the 2006 ICA submission.

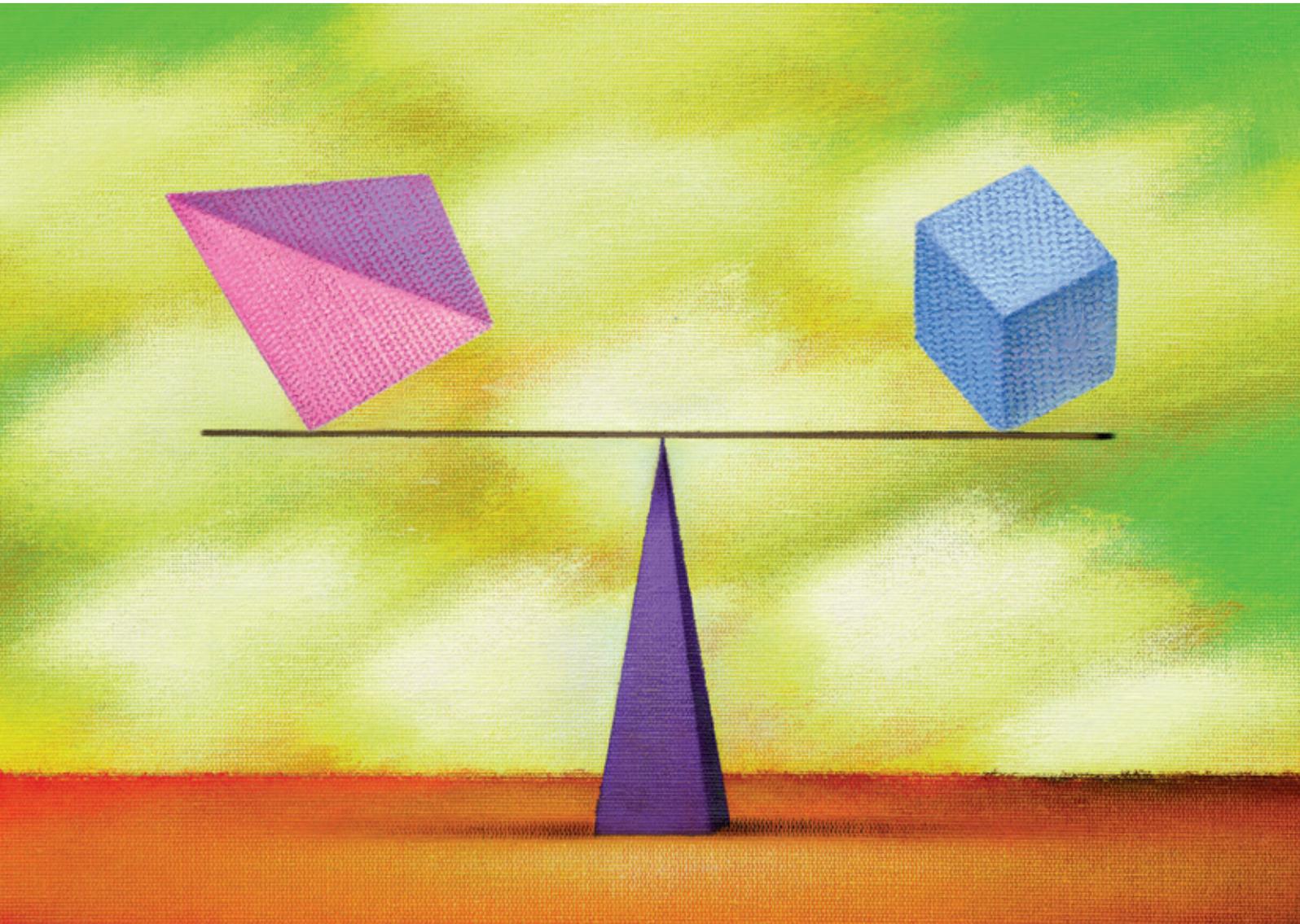
Market forum

A market forum has been arranged for 20 April 2005 in the Adam Room to provide an overview of the guidance and offer franchisees an opportunity to raise any issues relating to the 2006 ICA process. Hard copies of the guidance will be available for agents at this forum.

This bulletin is being sent to all managing agents. If you have any questions on this bulletin please contact me, or any of the key contacts identified in the guidance.

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INDIVIDUAL CAPITAL ASSESSMENT



2006 Guidance and Instructions

LLOYD'S

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A INTRODUCTION

BACKGROUND

The FSA's Lloyd's sourcebook (LLD) brings Lloyd's into the Individual Capital Adequacy Standards (ICAS) regime as stipulated for all general and life insurers in the FSA's integrated prudential sourcebook (PRU).

PRU broadly follows the three pillar Basel architecture approach adopted for banks: minimum capital requirement, supervisory review process and market discipline.

A key objective of the ICAS regime is to ensure that senior management at managing agents ('agents') focus on risk management and that there is a link between risk and capital-setting through clear documentation of all prudential risks, processes and controls.

The FSA's policy statement for Lloyd's PS04 / 28 outlines the responsibilities of both agents and Lloyd's under the ICAS regime. These are summarised in tables 1 and 2 below:

Table 1

Responsibility	ECR	ICA
Lloyd's	<p>Member ECR</p> <ul style="list-style-type: none"> ● calculate members' ECR ● explain differences between syndicate ICA and ECR 	<p>Member ICA</p> <ul style="list-style-type: none"> ● assess capital needed to support business of each member ● carry out stress and scenario testing for members' risks and controls
	<p>Member FAL</p> <ul style="list-style-type: none"> ● allow for member FAL 	<p>Member FAL</p> <ul style="list-style-type: none"> ● allow for FAL risks ● allow for diversification benefits
	<p>Members' share of syndicate ECR</p> <ul style="list-style-type: none"> ● calculate members' share of syndicate ECR 	<p>Members' syndicate ICA</p> <ul style="list-style-type: none"> ● review syndicate ICA ● calculate members' syndicate ICA
Managing Agents	<p>Syndicate ECR</p> <ul style="list-style-type: none"> ● calculate syndicate ECR for each syndicate ● explain differences between syndicate ICA and ECR 	<p>Syndicate ICA</p> <ul style="list-style-type: none"> ● assess capital needed to support risks in each syndicate ● inform Lloyd's of syndicate ICA and balancing amount

Table 2

Risk	Lloyd's	Managing Agents
High-level prudential risks	<ul style="list-style-type: none"> ● Prudential risks affecting the market as a whole 	<ul style="list-style-type: none"> ● Prudential risks affecting insurance business carried on through syndicates
Credit, market and operational risk	<ul style="list-style-type: none"> ● Risks affecting funds at Lloyd's and central assets 	<ul style="list-style-type: none"> ● Risks affecting syndicate-level assets and liabilities
Insurance risk	<ul style="list-style-type: none"> ● Not primarily responsible for managing insurance risk, all of which is assumed at syndicate level 	<ul style="list-style-type: none"> ● Insurance risk affecting syndicates
Liquidity risk	<ul style="list-style-type: none"> ● Risk affecting funds at Lloyd's and central assets, including the risk that the Society cannot make liquid assets available to support syndicates on a timely basis 	<ul style="list-style-type: none"> ● Risk affecting syndicates – the risk that claims cannot be paid on time
Capital risk	<ul style="list-style-type: none"> ● The risk that centrally-held capital is insufficient 	<ul style="list-style-type: none"> ● The risk that a syndicate's ICA does not adequately reflect the risks

The FSA has made it clear to Lloyd's that the output of the ICAS regime only represents a level of capital that is prudent in regulatory terms and that the Society has the discretion to take into account other factors when setting member capital levels, such as Lloyd's financial strength ratings. The FSA considers the setting of overall capital to be an important aspect of the Society's management of the market.

In preparation for the introduction of the ICAS regime, all syndicates undertook and submitted to Lloyd's a syndicate Individual Capital Assessment (ICA) in the last quarter of 2004. A review of all syndicate ICAs was undertaken by Lloyd's in order to fulfil the regulatory obligations placed upon it by the FSA and to provide feedback to the FSA on its findings. The key objectives of this review were to:

Guidance has been designed to support the market and to raise standards

- i) identify any areas within syndicate ICAs where further development work may be necessary in 2005 and to provide assistance to franchisees;
- ii) provide practical guidance to franchisees, including ICA good practice, based on its review of syndicate ICAs;
- iii) ensure a minimum standard within the market in respect of ICAs going forward; and
- iv) determine how Lloyd's can use syndicates' ICAs to set its economic capital requirements.

ICA GUIDANCE AND INSTRUCTIONS

This 'Guidance and Instructions' document for the 2006 ICA exercise has been produced as a result of detailed review of and feedback from the 2005 ICA 'soft test' submission, described above.

This document addresses item ii) above and seeks to articulate practical guidance to support the market in its development and completion of ICAs going forward. It has been designed to serve as an enabling reference to those involved in the ICA process or who wish to understand more of its requirements.

Lloyd's recognises that practices regarding risk governance, risk management, risk measurement and capital management vary widely within the market and will continue to evolve. As such, the guidance and practices referred to in this document will be updated periodically to reflect current 'good' practice.

Lloyd's has worked closely with the LMA capital committee in developing this guidance. The assistance of the individuals involved and the support of their respective organisations has been invaluable and their contribution is greatly appreciated.

Elements of the guidance are aspirational

A number of agents are well-advanced in the area of capital assessment. The guidance has sought to capture the 'good practice' principles and methodologies used by these agents and seeks to help raise the standards of risk and capital management. It is recognised that elements of the guidance may be aspirational for most, if not all agents, and minimum required standards are identified throughout the document. It should be noted, however, that agents will be benchmarked against good practice, not minimum practice.

The ICA review has also highlighted the importance of working with consistent terminology. A set of definitions has therefore been included in section F of this document. These definitions build upon Lloyd's common risk language. The guidance also highlights the need for agents to obtain high quality data and to pay particular regard to sources of uncertainty when modelling the risks that they face.

2006 Capital Setting Approach

Lloyd's is committed to overhauling the capital setting process to ensure that information on all significant risk categories is captured, anomalies in the current process are addressed and good practice is rewarded. In order to achieve this, we expect ICAs to be used as the basis from which Lloyd's capital is derived.

A New Capital regime at Lloyd's will be in place for 2007 YOA

Lloyd's is developing a capital setting framework with the market, using ICAs as a basis and taking into account the benefits provided by the New Central Fund. This framework will address the level of economic capital required to protect the franchise against unexpected losses, such that the market's underwriting liabilities can be met and Lloyd's credit rating maintained. This level of economic capital is obviously in excess of the ICA figure, which represents the minimum regulatory capital required by the FSA. The new capital regime will be fully implemented for the 2007 year of account capital setting exercise.

The key drivers behind the new capital setting regime are:

- to strengthen Lloyd's position as the marketplace of choice for capital providers;
- to compare favourably with capitalisation regimes offered by Lloyd's competitors;
- to support Lloyd's objectives to develop central assets by 2008 to achieve an 'A+' Standard & Poor's (S&P) mutual rating and the maintenance of an 'A' A.M. Best mutual rating;

- to provide a clear linkage with the FSA ICAS regime for regulatory capital whilst also addressing Lloyd's economic capital requirements;
- to be implemented in a manner that is acceptable to the FSA and to all overseas regulatory authorities and that minimises overlap between Lloyd's and the FSA's oversight of agents;
- to be readily understood by insurance professionals and to incentivise good underwriting performance and risk management behaviour; and
- to operate in a coherent and complementary manner with the Franchisor performance management process, business plan review process and the risk management framework.

ROLE OF THE FSA

The FSA has placed clear responsibilities upon Lloyd's within the ICAS regime. Under its rules, the FSA may carry out individual capital guidance (ICG) assessments of syndicates' ICAs in line with its own risk-based approach. Lloyd's is working closely with the FSA in order to ensure that the FSA can rely on Lloyd's work wherever possible and thus avoid any unnecessary duplication of effort in respect of any ICAS review work that it may conduct.

B ICA STRUCTURE AND METHODOLOGY

ICA SUBMISSION CONTENTS

Agents are asked to submit their ICAs in the format set out at section G, in order to assist Lloyd's review of syndicate ICAs. Agents should complete the pro-forma summary at the end of section G for each syndicate ICA.

In their ICA submission, agents are asked to explain the following:

- the approach to deriving the ICA and how it links together the business plan, key risks inherent in the business, related risk management processes and practices and the capital required by the risks;
- why the methodology chosen is appropriate to the syndicate's business, taking account of its risk profile, risk appetite, track record with respect to risk experience and exposure and the key principles upon which the ICA is based;
- the approach adopted towards the quantification of risk and the rationale for this approach;
- the modelling approach adopted in calculating the ICA;
- the stress and scenario tests used and why they are appropriate for the business; and
- the overall ICA figure split by major risk category.

The more detailed and robust the ICA submission, the greater the level of confidence that Lloyd's will be able to place on the ICA when assessing the syndicate's capital requirement at Lloyd's.

OVERALL CALCULATION APPROACH

In making an assessment of capital adequacy, agents should first identify the significant risks facing their business and, where capital is appropriate to help mitigate those risks, quantify how much capital is required. Central to this process should be the agent's risk management framework.

In calculating a syndicate's ICA, agents should:

- clearly demonstrate the link between their risk framework and the ICA calculation. Only 33% of ICAs received for the 2005 ICA 'soft test' clearly demonstrated this link;
- use risk categories that are commonly understood and aligned to their business. Where agents have not used the FSA's six risk categories, the ICA should clearly explain how the FSA's categories have been covered;
- outline clearly the approach adopted in respect of operational risk. The 2005 ICA 'soft test' submissions showed that agents have found it difficult to assess and measure operational risk. When looking at operational risk, agents have typically adopted one of the following approaches:
 - i) operational risk is considered in its entirety as a completely distinct risk category that includes all operational failures (i.e. due to people, processes, systems or external events) that can cause losses, including those resulting in a loss that may previously have been recognised as insurance, credit etc losses; or
 - ii) given that people, processes and systems are important elements of every risk category, operational risk is included as an element of each risk category, with the remaining operational risk category consisting only of the balance of operational risks not dealt with elsewhere (e.g. BCP, loss of staff etc).

These two approaches are illustrated below.

A fully distinct Operational Risk Category



Operational Risk is recognised through operational control across all risk categories



- ensure that the material risks under each risk group are identified clearly along with an explanation as to how they contribute to the ICA value;
- document the way in which any risks have been incorporated in the modelled element of ICA calculations (e.g. by using particular assumptions or changing certain parameters); and
- list significant risks where no capital has been included due to the level of controls over the inherent risks being such that the level of residual risks have become low enough to warrant their exclusion from capital calculations. The extent of this control reliance should be outlined and the effectiveness of these controls clearly demonstrated.

There are two approaches available to agents when calculating syndicates' ICAs, namely:

- stress and scenario tests; and
- economic capital models (normally stochastic).

70% of ICAs received for the 2005 ICA 'soft test' have included some degree of stochastic modelling. Lloyd's recognises that stress test-only ICAs may be sufficient at present for many syndicates, and that for small syndicates, stochastic models may represent a significant complexity and overhead requirement.

The degree of sophistication of the syndicate ICA should be commensurate with the materiality of the underlying risks and the amount of time agents have spent on developing a stochastic model. It takes time to develop a stochastic model that is sufficiently sophisticated to be robust. It is also important that management understands / 'buys in' to the model. Typically agents that have developed a sophisticated modelling approach had spent between 18 and 24 months developing their models. In time, most if not all syndicates will be expected to use some degree of stochastic modelling.

Even where a stochastic model has been used, stress tests are needed to validate the model for reasonableness and to help with calibrating assumptions.

SPECIFIC REQUIREMENTS RELATING TO A SYNDICATE'S ICA

MERGING SYNDICATES AND CLOSING YEARS OF ACCOUNT

A syndicate ICA is required for all open syndicates. Where the last open year of a syndicate is expected to close into another at the forthcoming year-end (the 'as at' date of the ICA calculation) then agents may choose not to produce an ICA for the closing syndicate year provided that:

- the closing syndicate closes fully into the receiving syndicate, leaving no years open;
- the ICA of the receiving syndicate includes the risk exposure of the closing syndicate; and
- the agent intends that the closure / merger will take effect at the year-end. If there is material doubt as to the closure taking effect then the agent should produce a separate ICA.

QUOTA-SHARE SYNDICATES AND PARALLEL SYNDICATES

No ICA will be required for quota-share syndicates or parallel syndicates where a quota-share syndicate is created purely for the purposes of allowing a new member to join a syndicate mid year, provided that the exposure is included in the main syndicate. Agents should seek clarification from Lloyd's if they are unsure as to whether an ICA should be produced for a quota-share syndicate.

ADDITIONAL INFORMATION FOR NON-ALIGNED SYNDICATES

To enable Lloyd's to set capital at member level, the following information is necessary for all non-aligned syndicates:

- syndicate reserves on GAAP basis (actual as at previous year end and forecast to the 'as at' date of the ICA) split by all open years of account; and
- details of changes that materially alter the risk profile of the syndicate across different years of account. For example, a significant change in classes of business across years of account or material changes in the outwards reinsurance in place for a specific year of account.

BASIS OF CALCULATION

In order for ICAs to be used in setting member capital requirements, they need to be consistent. Whilst existing controls are aimed at ensuring that both reserves and business plans are at least best estimates, there is scope for different levels of additional margins for prudence to be applied by different syndicates. It is highly desirable that ICA assumptions can be linked explicitly to syndicates' stated reserves and business plan figures.

For these reasons, ICAs should be compiled using actual reserve and business plan data including:

- business plan ULRs for current year and future underwriting;
- premium volumes as shown in the Business Plan for current and future years; and
- reserves for past underwriting 'rolled forward' to the end of the current calendar year.

To the extent that these ULRs and reserves have been stated on a prudent (better than best estimate) basis, the probabilities of losses will be reduced. When the ICA

is reviewed, there will be an onus on the agent to provide evidence to support the assumptions regarding (adverse) volatility. Typically, evidence will include:

- robust reserving and pricing processes and controls;
- a track record of benign reserve run-off; and
- a sound underwriting history.

VOLATILITY OF RESULTS

If a syndicate is operated on a 'best estimate' basis, the ICA is likely to be both higher and more volatile than it would be for an otherwise identical syndicate with margins in its reserves or plans.

EARNED PROFITS

Where an open year contains PTF surpluses ('earned profits'), these represent assets that can, subject to admissibility rules, be used to meet capital requirements. The rules for admissibility of earned profit are in a state of transition, and lie outside the scope of the ICA. Agents should not include earned profits in their ICA calculations, but should use the syndicate's annually accounted reserves.

UNEARNED PREMIUM

Under Annual Accounting, the Unearned Premium Reserve (UPR) must not be less than the pro-rata unearned premium. Where agents believe that the ULR on unearned premium is less than 100%, they should reflect this in the mean and volatility assumptions for this part of the exposure and produce evidence to support this.

TIME HORIZON OF CALCULATION

The need for a consistent basis of calculation is particularly important for ICAs that are based on stochastic models, and in particular regarding the degree and manner to which models look beyond the immediate future year.

The FSA has recently made it clear that focusing on capital adequacy over the next 12 months is too narrow a timeline unless companies and Lloyd's syndicates also show that they have considered how they will remain adequately capitalised over a longer time horizon. The FSA has recently written to insurance companies when requesting ICAS submissions as follows:

"Please note that we expect most firms to submit an ICA over a three to five year period. We consider confidence levels of 97.5% over five years or 98.5% over three years would be appropriate. We would expect an ICA based on a shorter time period to include a rationale for not considering a longer-time horizon..."

Since many agents have not developed multi year models, one year models will be acceptable for the 2006 ICA submission. Note that whatever time horizon is used, business must be run off to ultimate (see page 13).

Lloyd's will continue to discuss the issue of time horizons, and the consistency between Lloyd's and company ICAs, with the FSA.

The key risks that need to be addressed are:

- that the market cycle softens, increasing the level of capital that is needed for a given volume of business; and
- that the syndicate suffers a moderate loss and needs to replenish its capital support or constrain its future plans.

In both cases, the issue of raising fresh capital may be important.

Accordingly, the ICA should be constructed to include recognition of the position in the insurance cycle, e.g. for 2006, it should assume that the market is likely to soften over the next few years. This may be achieved either by sensitivity tests or by appropriate assumptions regarding the insurance cycle in the model itself.

These two approaches are described briefly below:

- Sensitivity testing approach – the agent should consider the immediate future year and apply sensitivity tests to this result; this is described as the ‘one year time horizon.’
- Modelled approach – the agent should model what the ICA is likely to be in future years and demonstrate that it would either be able to raise capital or adapt its business plan to reduce risk if the ICA is likely to increase. This approach is referred to as having a ‘multi year time horizon’.

ONE YEAR TIME HORIZON

If a one year approach is taken, Agents should calculate the capital required to meet risks emerging (at the 99.5% confidence level) over the next year. In these cases, they should use a best estimate basis but should then apply stress tests to their assumptions to allow for the risk of softening rates.

The ICA should calculate the capital required to ensure that at the 99.5% confidence level, all liabilities could be paid as they fall due. Future liabilities should include claims payments, future expenses and future reinsurance costs, on an ultimate basis.

Allowance may be made for asset returns over the payment period, and these should be assessed allowing for asset and timing risks (to the extent that these are not included in the non-insurance headings of the ICA).

MULTI YEAR TIME HORIZON

Lloyd’s regards it as good practice for agents to model experience over three years and to allow for both random losses and the insurance cycle during this ‘control period’. Multi year models are likely to be more complex and agents should use them only if they believe that the results are more robust than could be achieved with a one year time horizon.

The benefit of a three year approach is that the effect of the insurance cycle can be seen more clearly.

Agents that adopt this approach should not assume that following a major market loss rates would harden, but rather should show how their capital requirements will develop over the expected cycle. The cycle assumptions should be set out clearly within the ICA.

In multi year time horizon ICAs, agents may take account of asset returns on capital and reserves held during the control period. At the end of the control period, models should make provisions sufficient to ensure that all liabilities could be paid allowing for income and outgo to ultimate, as in a one year model.

Additional business written during the control period should be assumed to be consistent with development on the existing portfolio, and, if agents make allowance for reductions in the portfolio, they should be able to demonstrate their planning for future cycle management. A track record of cycle management should underpin such an assumption. The section on insurance risk (section D1) describes

some of the risks that should be recognised where syndicates reduce or exit from business currently written.

All models should be constructed to assume that members are in line at the beginning of each year. This means that agents should, for ICA purposes, assume that declared profits are distributed immediately. In practice other distribution policies exist, and profits that have not been distributed or have been retained in a group of which the agent is a part could represent sources of new capital (see Capital Raising section below).

In a multi year model the capital amount should be sufficient to meet the 99.5% confidence level in the first year. In view of the FSA's statement that a 98.5% VaR is appropriate over three years, agents should also confirm that their ICA is consistent with this standard.

CAPITAL RAISING

Whichever approach is taken, agents should also demonstrate that they have robust plans to raise fresh capital should experience be adverse. It is not necessary to prove that extra capital is already available. As already noted, profits that have been earned but retained in a group of which the agent is a part could represent potential sources of new capital.

STOCHASTIC MODELLING: MODEL DESIGN CONSIDERATIONS

The following comments relate to stochastic models where these form part of the ICA.

DETAIL OF LOSS MODELLING

The level of detail adopted in the loss modelling should be appropriate to the characteristics of the underlying business. All major classes of business should be explicitly modelled. Territories or currencies should also be modelled separately if the size of the group warrants this. Within each class, it is common for models to split loss modelling between attritional losses, large claims and catastrophe claims, although for smaller syndicates or where the risk in the class is incidental, then consolidation of these groups may be appropriate. Typically, attritional losses will follow an aggregate claims distribution, whilst large claims and catastrophe losses should be split between a frequency and claim amount distribution.

The chosen statistical distribution should have an appropriate heavy 'tail'. A Normal (Gaussian) distribution is rarely likely to be appropriate for aggregate losses or claim amounts. Similarly, a Poisson distribution for frequencies may also be too thin-tailed.

Direct use of external catastrophe models, with an array of scenarios, is good practice. However, the ICA must allow for the possibility of model error and for events not included within the catastrophe model library. In particular, external catastrophe models tend to focus on certain types or elements of natural catastrophes only. Syndicate ICAs should not understate the potential exposure from other natural catastrophe events, liability or man-made catastrophes.

Regardless of the approach taken to model catastrophe events, the implied distribution should be consistent with the syndicate's realistic disaster scenario (RDS) submission and with the syndicate business forecast (SBF) submission. See section E for guidance on the use of Lloyd's RDS within the ICA.

UNDERWRITING CYCLE

The section of this document that describes a multi year ICA approach is concerned with the risk of the market cycle softening. If agents carry out an explicit multi year calculation, then their models need to be more sophisticated to support this. As noted on page 13 of this document, the market cycle should be modelled by (deterministic) stress tests.

However, there is another risk relating to underwriting in models: this is the risk that a syndicate underestimates the reserves that are needed and, as a consequence, finds that it has underpriced the business it has written. This risk needs to be recognised in models by allowing for an appropriate positive dependency between underwriting and reserving risk.

DEPENDENCIES AND CORRELATION

Assumptions concerning correlation and dependencies are critical drivers of the ICA calculation. Syndicates should ensure that they do not overstate the extent of diversification credit within their ICA assessments (across either classes or years of account). A syndicate's own claims history may not be sufficiently credible to determine correlations. Lloyd's recognises that correlations are particularly difficult to estimate and therefore expects agents to consider carefully the assumptions they make in this regard. Lloyd's believes that the observed correlation between classes of business at syndicate level is expected to be substantially higher than correlation observed at market / industry level. This largely reflects operational and other risk management issues that are common across the syndicate. Where agents assume a low degree of correlation between classes then consideration should be given to the need for a larger capital provision for operational risk.

A number of 'soft test' ICA submissions have relied solely on correlation 'drivers' (e.g. catastrophe models, inflation and the underwriting cycle) as the mechanism for associating losses, as opposed to an explicit correlation assumption across classes. Such an approach may have a tendency to understate correlation. Agents should examine the output of such models carefully with regard to the implied correlation as this is an area that Lloyd's will examine closely within an ICA.

Stochastic models should be constructed to allow for a realistic dependency between events. One example of this is how large losses are correlated. Agents should consider whether the model has captured adequately the risk that large losses are correlated; few modelling platforms permit explicit assumptions in this regard, and where there is no explicit assumption, agents should satisfy themselves that the model is sufficiently realistic. At the same time, models must be capable of being understood by non-specialists. It may be sufficient for agents to model dependency in a relatively straightforward manner and to test the results using stress tests of combinations of large losses.

RESERVING RISK

Agents should carefully consider the risk of deterioration of prior year reserves within the ICA. Recent history within the market demonstrates that the deterioration of reserves has been significant for certain classes of business and is highly correlated with poor results. Whilst significant time and resources have been spent by agents on the underwriting components of models, less attention has been spent on reserving risk. As a result, the reserving risk component has been a weaker aspect of many ICA models.

Syndicates have used one or more of the following approaches to modelling reserving risk within their ICAs:

- 'bootstrapping';
- aggregate reserve variability, often based on the 'Mack' method; and
- stochastic link ratios.

When applying stochastic reserving methods agents should consider carefully the output of the models. For example, do the methods adequately reflect the possibility of future claims inflation or lengthening development patterns? Agents will be expected to analyse the output of stochastic reserving methods and to make any appropriate adjustments to the model.

As noted on page 15 of this document, agents should carefully consider the diversification credit arising across reserving years of account, or between reserving risk and underwriting risk.

See page 23 for additional guidance on assessing reserving risk.

REINSURANCE MODELLING

A significant area in which the ICA can bring more syndicate specific information to bear is in reinsurance modelling. It is important that the ICA considers reinsurance in detail.

In a good practice approach, the main components of a syndicate's proposed, current and prior years of account reinsurance programme should be identified and modelled explicitly. Gross losses should be simulated and mapped through the relevant reinsurance programmes. Where syndicate reinsurance programmes are complex, Lloyd's recognises that this calculation will be difficult to perform explicitly. In such cases, the agent should make allowance for the operational risk inherent in the complexity of the programme.

In determining the capital requirement for reinsurance credit and dispute risk, the ICA should reflect the concentration and financial strength of the underlying reinsurer. The ICA should also take into consideration the increased risk of reinsurance failure in extreme loss scenarios. In modelling terms, this would involve correlating reinsurance failure rates with large loss scenarios.

Many of the 2005 ICAs have used S&P default rates to determine reinsurer credit risk. A weakness in this approach is that a market average rate is not always applicable to an individual syndicate. In addition, the factors are derived from historical corporate bond default rates, which may not accurately reflect future reinsurer default rates. Lloyd's considers it good practice for syndicates to consider reinsurance default carefully and with specific reference to the reinsurers. See pages 23 to 25 and page 28 for additional guidance on assessing reinsurance credit risk.

The ICA should also consider the risk of policy wording that does not translate or is not interpreted as intended, and of other potential causes of reinsurance 'gaps'.

Treatment of reinsurance placed with other Lloyd's syndicates

Lloyd's does not wish to indirectly influence the placement of reinsurance as a result of the ICA process. Therefore, agents should treat policies placed at Lloyd's on a similar basis to another reinsurer with a comparable financial strength.

Lloyd's will make an allowance in the overall capital assessment for the double count of credit risk. Agents should note that reinsurance is vulnerable to both credit and dispute risk.

Treatment of intra-group RI arrangements

Agents that belong to wider insurance groups should not treat reinsurance placed with the parent group more favourably than reinsurance placed with an unrelated insurer with similar financial strength.

SETTING OF PARAMETERS

Section H, appendix 1 provides more detail on parameter setting.

The choice of parameters is critical to the overall ICA figure. Whilst agents should seek to use a syndicate's own data to parameterise the model, in most cases, this data is unlikely to have sufficient statistical credibility in terms of both size and history. Reference to market data will often be required, adjusted to reflect syndicate specific characteristics. In assessing volatilities (standard deviations) at a market level, adjustments should be made to reflect that the observed market volatility for a class of business, representing the pooled experience of many syndicates, will tend to be lower than the volatility of a stand-alone syndicate.

Whether the parameters have been based on a syndicate's own historic data or market data, the ICA submission should contain details of the analysis undertaken and where and how judgement has been used. The ICA should also contain an explanation as to the relative balance between the syndicate's own data, market data and judgement.

The ICA submission should demonstrate that sufficient sensitivity tests of the model have been carried out and that these sensitivities are understood by the agent's management. The submission should also give commentary on the potential parameterisation error and model error, stating what adjustments have been made to cover such errors.

Lloyd's may also request the overall loss distribution of the model as part of its ICA assessment.

FEATURES OF A 'GOOD' STOCHASTIC MODEL

A good stochastic model should:

- have all parameters clearly identified and justified;
- be structured and documented so that it can be understood by members of senior management who do not have actuarial expertise;
- be rigorous and self-consistent;
- be consistent with realistic adverse scenarios;
- reflect actual circumstances of the syndicate;
- be sufficiently detailed to deal adequately with the key risk areas, but not excessively complex;
- be capable of being run with changed parameters for sensitivity tests;
- include at least 10,000 simulations (so at least 50 simulations exceed capital level); and
- have a robust software platform.

STRESS AND SCENARIO TESTS

Stress and scenario tests should be based upon a detailed analysis of potential outcomes within a scenario. One of the weaknesses in adopting a solely stress and scenario testing approach is in the aggregation of risks to arrive at an overall capital figure.

Syndicates have generally adopted two approaches to reflect aggregation of risk, namely:

- specification of a correlation matrix between each scenario; and
- 'ripple effects'.

Under the first approach, a range of stress tests is considered and quantified in isolation. A correlation matrix is then specified between risk categories / stress tests (judgementally: high / medium / low correlation) and then aggregated to derive an overall capital figure.

Under the second approach a range of scenarios is chosen, and for each one the associated 'ripple effects' resulting from that scenario are also quantified (e.g. a large loss event leading to reinsurer failure). An extension of this approach is a 'cause and effect' table, where for each defined scenario, the knock-on effect of losses from other pre-defined events is also derived. Aggregation of scenarios will depend on the complexity of the stress tests: in some cases, using the maximum value of the scenarios may be appropriate, or alternatively aggregation may be achieved through a correlation matrix approach.

ACCOUNTING PRACTICES

With effect from 1 January 2005, all published results for Lloyd's in respect of financial years commencing on or after that date will be based on annual accounting. Consequently from 31 December 2005, reserves will be determined in accordance with annual accounting principles. Reporting will be under UK GAAP which is a principles based set of accounting standards and which is not prescriptive.

All prospective underwriting and reserve figures included within syndicate ICAs should, therefore, be drawn up on an annual accounting basis to be consistent with Lloyd's adoption of annual accounting.

C REPORTING REQUIREMENTS

GOVERNANCE AND OVERSIGHT

The ultimate responsibility for the ICA lies with the Board of the agent. Agents may outsource some or all of the production of the syndicate ICA to a third party, such as an actuarial firm or other consultant. The ICA 'soft test' has shown that 33% of syndicates outsourced some or all of the production of the ICA to a third party. However, a number of these syndicates lacked any detailed knowledge of the modelling assumptions used in arriving at the ICA.

Where outsourcing occurs, the agent must demonstrate that there is oversight by appropriate, knowledgeable people, within the agent, who understand the ICA and who can explain and support:

- the rationale for the approach taken;
- the key inputs, sources of data and key assumptions;
- the results and how they have been derived;
- risk exposures, controls and scoring; and
- sensitivities, correlations and diversification.

Where the production of the ICA has been entirely developed and managed without internal input, the agent should be able to demonstrate that the ICA has been subject to review and challenge, to ensure its appropriateness and consistency with good practice.

REPORTING REQUIREMENTS

The 2006 ICA is to be submitted to Lloyd's Risk Management by noon on Thursday 23 June 2005. It should be based on the syndicate business plan forecast.

BOARD APPROVAL

For each syndicate, the board of directors of the agent, or a sub-committee with delegated authority, is required to sign off on the syndicate's ICA prior to its submission to Lloyd's.

2006 ICA REVIEW PROCESS

All syndicates' ICAs will be reviewed by Lloyd's as part of the capital setting process. Discussions with agents, in respect of their ICAs, will cover such areas as process followed, assumptions used and reliance on key controls.

D RISK CATEGORIES

1 INSURANCE RISK

DEFINITION

Insurance risk can be defined as the risk of loss arising from the inherent uncertainties as to the occurrence, amount and timing of insurance liabilities.

SCOPE

Insurance risk includes a variety of risks arising from current and prospective underwriting, the development of prior years underwriting, together with the risks inherent in gross versus net underwriting. Whilst there are numerous dependencies between these risks and other risk groups, such as credit risk and operational risk, the assessment of insurance risk can be considered under the headings of underwriting, reserving and reinsurance.

APPROACHES TO QUANTIFICATION

The 2005 'soft test' showed that insurance risk represented between 75% and 80% of syndicates' total ICA; however, a significant number of ICAs were not based on syndicates' actual 2005 business plans.

UNDERWRITING

When seeking to quantify insurance risk, agents should consider syndicates' exposure to large losses, as well as the potential for adverse loss experience.

Large individual risk losses

ICAs should contain an analysis of those syndicate classes of business with a potential exposure to large individual risk losses, including such factors as:

- a review of the syndicate and/or market level historical claims frequency and severity data;
- a probabilistic analysis of prospective claims frequency and severity;
- a breakdown of syndicate business plan gross and net ultimate loss ratio (ULR) projections between large individual risk claims, attritional losses and catastrophes, detailing the method of calculation;
- identification of large absolute maximum gross lines by syndicate class of business. (A useful reference point might be where the absolute maximum gross line exceeds the current franchise guideline threshold);
- current and/or prospective line size utilisation / attachment profiles, showing written premium, exposure and policy count in various bands;
- details of line utilisation policy or philosophy, e.g. percentage versus monetary line limits;
- details of all current and/or prospective reinsurance protecting the syndicate against large individual risk losses;
- details of any proposed changes for the prospective underwriting year to the four preceding items that are likely to materially affect the frequency, severity or potential impact of large individual risk losses; and

- consideration of the risks associated with reliance on reinsurance, e.g. lack of matching reinsurance (coverage, period of cover etc.), potential for exhaustion of cover, over-concentration with individual reinsurers, credit risk, post loss impact (availability and/or price of cover etc).

Large catastrophe losses

A syndicate's ICA should contain an analysis of potential exposure to a range of large accumulated, or catastrophe losses. In particular, agents should use scenarios that identify the peak exposures within their portfolios (which may or may not be identified by the existing RDSs) and which represent sufficiently extreme events to be relevant to a solvency test at the 99.5% percentile (which will be beyond the level of some of the existing RDSs). Section E discusses the background, aims and use of the existing RDSs, and how they should be adopted for use in the ICA process.

The analysis should include such factors as:

- a review of the syndicate and/or market level historical claims frequency and severity data;
- a probabilistic analysis of prospective claims frequency and severity. This might include the output from recognised catastrophe models, e.g. exceedence probability curves, with an explanation of the data and assumptions used in the analysis;
- a breakdown of syndicate business plan gross and net ultimate loss ratio (ULR) projections between accumulated or catastrophe losses, attritional losses and large individual risk claims, detailing the method of calculation;
- details of all current and/or prospective reinsurance protecting the syndicate against accumulated or catastrophe losses;
- details of any material changes proposed for the prospective underwriting year to the two previous items, or to the extent or profile of the syndicate's exposure to large accumulated or catastrophe losses likely to affect the frequency, severity or potential impact of such losses (e.g. a cycle management strategy of moving to higher, more volatile programme layers in a softening market);
- consideration of the risks associated with reliance on reinsurance, e.g. lack of matching reinsurance (coverage, period of cover etc.), potential for exhaustion of cover, over-concentration with individual reinsurers, credit risk, post loss impact (availability and/or price of cover etc);
- consideration of the risks associated with data capture (e.g. exposures written under delegated underwriting authorities, or in lines of business where the location of the risk is not fixed); and
- consideration of the risks associated with the modelling and other assumptions made in evaluating total aggregate exposures in order to assess levels of exposure, e.g. model error, parameter error including an analysis of historical performance of models and the implications for potential impact on the syndicate.

Potential for adverse loss experience

In addition to considering exposure to large losses, syndicate ICAs should address separately the risk of experiencing adverse loss ratios as a result of:

- unexpected claims frequency;
- underpricing; and
- a combination of the above.

The term 'adverse loss' in this document includes all claims related costs.

Agents should include such factors as:

- a probabilistic analysis of prospective claims frequency, focusing on the volatility of claims rather than loss ratio volatility (i.e. considering the effect of claims volatility separately from pricing volatility);
- a review of a syndicate and/or market level historical experience, (overall and/or by the syndicate's own classes of business);
- a comparison of historical experience to the syndicate's business plan projections;
- a comparison of the syndicate's historical data to market level and/or peer syndicate data, focusing on poorly performing classes of business;
- a review of the syndicate's performance in previous soft markets, with the emphasis on absolute performance rather than performance in relation to peers. Such a review would include an evaluation of the syndicate's cycle management history and current capabilities, e.g. price monitoring with particular reference to prudential pricing adequacy, capacity management and utilisation;
- a review of the risks associated with the pricing methodologies / tools used, with particular reference to volatile classes of business, new or rapidly growing classes, previously poorly performing classes and lead versus follow status on subscription business;
- the likely impact of material changes in the business mix or in the risk profile of the business written, e.g. new, retired or rapidly growing classes, changes to policy deductibles / programme attachment levels, policy count retention ratios, perils covered;
- an overview of the methodology used to project gross and net ULRs, e.g. in the treatment of attritional versus large / catastrophe claims, claims inflation and of any material changes to that methodology;
- the risks (e.g. pricing, claims notification and settlement) associated with delegated underwriting, or underwriting via consortia, service companies or remote locations;
- systemic risk (e.g. effects of an economic downturn) and/or the potential impact of changes to regulation or legislation (e.g. retroactive legislation creating new heads of liability, increasing the level of awards); and
- identification of exposures written under long term, non-cancellable policies, and a review of the risk associated with the resulting lack of underwriting flexibility, e.g. pricing or coverage changes in response to unexpected claims frequency.

Non-claims related costs and expenses

Syndicate ICAs should also address potential exposure to financial loss from higher than expected costs and expenses not directly related to claims.

Agents should include such factors as:

- details of any adverse syndicate history regarding non-claims related costs and expenses;
- consideration of any over-reliance on individual sources of business (e.g. insured / reinsured, broker, coverholder), and the potential impact on non-claims related costs and expenses from the loss of that business; and
- where there is a risk of individual lines of business, or the syndicate as a whole, going into run-off then any additional costs associated with such a run-off situation should be evaluated (e.g. managing a coverholder in run-off).

RESERVING

In addition to the guidance given on page 15 on reserving risk, syndicate ICAs should also address the risks associated with both direct and indirect exposure to potential reserve deterioration.

Direct exposure to reserve deterioration

Agents should include such factors as:

- a review of the syndicate's gross and net reserving / forecasting history (overall and by syndicate class of business);
- a comparison of the syndicate's gross and net reserving / forecasting history to market level and/or peer syndicate data, focusing on those classes of business evidencing unexpected reserve deterioration and/or where the syndicate's history shows a material variation from market level and/or peer syndicate experience;
- an analysis of incurred loss and reserve development, considering the adequacy of case reserving and utilisation of reserves for claims incurred but not reported (IBNR) where an unexpected deterioration in the ultimate loss position has occurred;
- consideration of the range and level of confidence associated with the syndicate's best estimate reserves and the rationale for any material difference between the best estimate and booked reserves;
- stress testing of major reserving assumptions, e.g. claims inflation, relevance of past trends, claims frequencies, etc;
- a review of the reliance of reserves on the quality and/or quantity of reinsurance recoverables;
- a detailed commentary on known reserving issues, (e.g. financial institutions laddering losses) in particular, the sensitivity of reserves to the assumptions made;
- consideration of exposure to latent claims, e.g. under liability policies written on an occurrence form;
- commentary regarding the impact on reserving of material changes in business mix or in the risk profile of the business written, e.g. new, retired or rapidly growing classes, changes to policy deductibles / programme attachment levels, policy count retention ratios, perils covered; and
- consideration of potential data quality issues, e.g. lack of detailed knowledge of or possible late notification of claims under delegated underwriting authorities, or by virtue of a following versus a lead position on subscription business.

Indirect exposure to reserve deterioration

Agents should also include such factors as:

- consideration of the impact on business planning assumptions (specifically gross and net ULRs) as a result of unexpected reserve deterioration on prior years of account; and
- consideration of the impact on prospective pricing and other terms and conditions as a result of unexpected reserve deterioration on prior years of account.

REINSURANCE

Syndicate ICAs should consider the risks associated with reliance on both current / prospective reinsurance and the performance of past reinsurance, or the reinsurance asset. Syndicate ICAs should include an analysis of the following risks.

Non-matching reinsurance

Risks arising as a result of:

- long term, non-cancellable policies where there is a material reliance on reinsurance of shorter duration, and where there is no certainty over renewal pricing of such reinsurance (particularly in a post loss scenario), or where known renewal terms and conditions would impose a material additional cost;
- reinsurance covering Losses Occurring During (LOD), rather than Risk Attaching During (RAD), the period of cover and where there is no certainty over renewal pricing of such reinsurance (particularly in a post loss scenario), or where known renewal terms and conditions would impose a material additional cost;
- gaps in coverage as a result of a change in the basis of cover, e.g. moving from LOD to RAD cover;
- any material basis risk, for example:
 - as a result of the use of fixed currency rates of exchange for programme deductibles / limits;
 - associated with Industry Loss Warranty (ILW) or Original Loss Warranty (OLW) forms of cover whereby, in the event of a loss normally of a scale expected to be materially reinsured, but which fails to trigger the warranty threshold, the syndicate would retain an unexpectedly larger proportion of a significant loss; or
 - a lack of an appropriate or the expected level of risk transfer under financial engineering products, including finite reinsurance. The ICA should explain the extent to which financial engineering has been used, for what purpose, and the impact on both assets and liabilities;
- failure to complete the placement of reinsurance prior to the occurrence of a material loss; and
- the operation of reinsurance exclusions, or a poorly worded reinsurance contract, whereby the syndicate would retain an unexpectedly larger proportion of a significant loss.

Over-reliance on reinsurance

Risks arising from:

- the potential adverse impact on underwriting (e.g. prudential gross pricing and risk selection) of the availability of reinsurance or of the advanced costs incurred in purchasing reinsurance;
- the ability or willingness of reinsurers to meet their obligations under reinsurance contracts, in a timely manner. In addition to considering the risk of financial default, account should be taken of other factors that might affect a reinsurer's willingness to pay, e.g. existing recoverables or outstanding disputes either with the syndicate or with other group members;
- over-concentration of reinsurance with individual reinsurers, e.g. by virtue of the size and type of loss to which the reinsurance is expected to respond, including market level, systemic risk; and
- failure to recognise the hidden costs of reinsurance, e.g. frictional costs of collection (missed recoveries / settlements, resources required to manage, report and collect), the time value of money, etc.

Potential for exhaustion of reinsurance

Risks arising as a result of:

- the occurrence of multiple losses at a level requiring material reinsurance support, i.e. the purchase of insufficient horizontal coverage;

- the erosion of cover as a result of losses from other classes where reinsurance protects more than one class of business;
- the erosion of cover as a result of losses from other group members where reinsurance is purchased by the syndicate in conjunction with other group members; and
- the risk associated with projecting the appropriate amount of reinsurance cover to purchase, e.g. in long tail lines of business, requiring a longer term assessment of the potential for the erosion of cover over time.

Post loss impact

Risks arising as a result of:

- cash flow or liquidity issues;
- the effect of contractual conditions, e.g. additional premiums, 'payback', coverage restrictions;
- potential unavailability or uneconomic pricing of reinsurance;
- material changes to reinsurance programme structure, e.g. increased programme deductibles, restricted vertical or horizontal cover, changes to terms and conditions, or to the basis of coverage; and
- the purchase of reinsurance by the syndicate in conjunction with other group members, may lead to the potential for additional reinsurance costs / more restrictive cover as a result of losses from other group members.

Aside from potential availability issues following a loss, syndicate ICAs should consider the risks associated with a lack of availability of reinsurance due to other causes, e.g. a withdrawal of unlimited vertical reinsurance cover for Motor Liability.

Past reinsurance / the reinsurance asset

Agents should include an analysis of such factors as:

- a review of the scale of reinsurance recoverables and their quality, e.g. security rating of reinsurers, aged debt analysis, extent of bad debt provisions;
- consideration as to whether an adjustment should be made to reflect the risks associated with underperformance of the reinsurance asset (e.g. additional bad debt provisions or an adjustment to net reserves) or for hidden costs (e.g. frictional costs of collection, such as missed recoveries / settlements, resources required to manage, report and collect, the time value of money, etc.); and
- a review of the possible impact on the availability and/or pricing of prospective reinsurance.

See pages 16 and 28 for additional guidance on assessing reinsurance credit risk.

OPERATIONAL RISK

Operational risk should also be taken into account when assessing insurance risk.

In order to understand the operational risk arising from the controls and processes around insurance risk, agents should first consider the processes in relation to insurance risk. They should then identify the key controls specifically designed to mitigate insurance risk in each area.

For example, an agent may address insurance risk with a number of key processes around such areas as underwriting, claims and reserving. The agent may place reliance on a number of key controls in these areas, for example:

- signed and regularly reviewed underwriting authorities for all underwriting personnel;
- underwriting peer review / regular review of risks written;
- war business policy and procedures;
- signed claims authorities and exception reporting;
- procedures setting out the approach to claims management including service standards, complaints handling and the use of third party experts;
- periodic actuarial reserve estimation and reporting; and
- procedures for the regular review of dormant or non moving claims.

USEFUL SOURCES OF DATA

When submitting their ICAs, agents should ensure that the insurance element of the ICA is consistent with:

- The Syndicate Business Forecast – information regarding current / prospective underwriting should be consistent with the SBF data submitted to, and ultimately agreed with, Lloyd's e.g. syndicate classes of business, projected gross / net written premiums (including reinsurance premiums and non-claims related costs and expenses), projected gross / net ULRs (including reinsurance recoverables), projected RDS exposures, and absolute maximum gross line sizes.
- Gross / net ULRs by syndicate class of business – these should be consistent with the business plan and produced on a best estimate basis. Syndicate ICAs should describe the methodology used to project ULRs (e.g. use of market and/or syndicate historical data, adjustments and assumptions made, breakdown between attritional, large and catastrophe claims). Where ULR projections contain a margin above best estimate, such margins should be identified explicitly, together with the rationale. Lloyd's will consider the reasonableness of the syndicate's ULR projections, taking account of the syndicate's own and the market's historical claims data, and market intelligence regarding prevailing prudential pricing adequacy.
- Syndicate capacity – this should be consistent with the business plan. Lloyd's will expect syndicate ICAs to be scaled to capacity (and not according to the projected gross written premium). Capital should equate to the maximum volume of gross premium to be written by the syndicate for the prospective year of account, as represented by syndicate capacity.
- RDS exposures – these should be consistent with the business plan and based on the projected worst case in force exposures during the prospective year of account on a gross, net of reinsurance and final net loss basis, (i.e. after adjusting for incoming and outgoing reinstatement premiums).
- Syndicate historical data – any historical syndicate data submitted in support of an ICA should be accompanied by an explanation of how legacy and/or predecessor syndicate data has been treated, together with details of any amendments made to reflect the current underwriting environment, including the methodology used, for example, to adjust premiums to current pricing levels, to reflect changes in underwriting policy / philosophy or changes to a reinsurance programme.
- Market level historical data – any historical market level data submitted in support of an ICA should be accompanied by an explanation of how that data relates to the syndicate's own portfolio, e.g. a risk code mapping to the syndicate's own classes of business.

- Current / prospective reinsurance – this should be consistent with the business plan projections for the prospective year of account, i.e. in terms of overall cost (split between type of reinsurance and security grading) and as allocated across syndicate classes of business, together with projected reinsurance recoverables. Where appropriate, syndicate ICAs should provide details of current reinsurance structure, identifying any material concentration with particular reinsurers. Likely material changes to a syndicate's reinsurance programme for the prospective year of account should be noted. Any change in the actual versus planned structure of a syndicate's reinsurance programme that materially affects the syndicate's ICA (i.e. in the critical assumptions made), should be advised to Lloyd's as soon as practical.
- Reinsurer default criteria – the criteria used to evaluate the risk of reinsurer default should equate to the nature and scale of the scenario for which reinsurance is being relied upon.
- Attached at section H, appendix 2, for ease of reference, is a list of factors that agents should consider under PRU 2.3 – Insurance risk.

REQUIRED STANDARDS

When calculating the capital requirements for insurance risk, agents should consider and address, as a minimum, each of the areas listed below and should justify in their ICA submissions, why they believe that any of these areas are not applicable to their business:

- large individual risk losses;
- large catastrophe losses;
- potential for adverse loss experience;
- non-claims related costs and expenses;
- direct exposure to reserve deterioration;
- indirect exposure to reserve deterioration;
- non-matching reinsurance;
- over reliance on reinsurance;
- potential for exhaustion of reinsurance;
- post loss impact on reinsurance; and
- past reinsurance / the reinsurance asset.

Where considerations of particular insurance risk issues have been made an agent should state specifically the issues considered, how the agent considered them and the reasons behind the conclusions and findings. Agents should undertake a series of scenario analyses which are relevant to the business. There should be a clear audit trail from the impact of any financial calculations to the insurance risk capital allocation in the ICA.

Where a modelling approach is adopted agents should compare their modelled output with appropriate stress and scenario tests in order to demonstrate that the capital allocations suggested by the model are reasonable. This should be clearly documented within the ICA.

2 CREDIT RISK

DEFINITION

Credit risk refers to the risk of loss if another party fails to perform its obligations or fails to perform them in a timely fashion. For syndicates, key counterparties include reinsurers, brokers, insureds, reinsureds, coverholders and investment counterparties.

SCOPE

The majority of agents only included reinsurer credit risk in their ICAs; however, any financial transaction with a counterparty may expose a syndicate to credit risk. A key area omitted by some 40% of syndicates was 'inward premium credit risk', which includes credit risk arising from brokers, coverholders and policyholders. Agents should take into consideration all potential areas of credit risk. Examples of other counterparties that agents should also include are third party claims administrators and banks.

Agents should also ensure that syndicate investments adhere to the concentration percentage limits contained within the Lloyd's Eligible Asset Rules and the FSA's LLD. They should also consider any local regulatory rules of the overseas jurisdictions within which the syndicate operates.

Sub-investment grade investments pose a significantly greater credit risk to the syndicate than investment grade investments. Default rates are significantly higher and the rating agencies' default rates should be used. If a syndicate includes sub-investment grade investments within its portfolio, the commensurate amount of capital should be allocated.

When assessing the appropriate level of capital for credit risk, agents should exclude credit risk in respect of central assets, including Additional Securities Ltd, Joint Asset Trust Fund and other regulatory deposits.

APPROACHES TO QUANTIFICATION

Agents adopted a variety of measures in order to quantify credit risk for their ICAs. Approximately 60% of syndicates used a stress and scenario test approach. The remainder of the market incorporated a credit risk element in their insurance model.

STRESS AND SCENARIO TESTS

Where a stress and scenario testing approach was adopted, a number of agents used one measure to assess the level of capital required. For example, for reinsurer credit risk, an average default rate was applied to amounts recoverable against paid claims, outstanding claims and IBNR. Where broker credit risk had been considered, a common approach was to apply an average default rate to the peak outstanding broker balances over a 12 to 36 month time period. In some cases, where there was a clear link between the risk register and the ICA, agents allocated capital based on the residual risk scores in their risk register.

S&P default rates were widely used by agents to determine reinsurer credit risk. A weakness in this approach is that a market average rate is not always applicable to an individual syndicate or to the scenarios for which reinsurance is being relied upon. In addition, the factors are derived from historical corporate bond default rates, which do not have any direct relationship to future reinsurer default rates. Therefore these tables should be used as a benchmark only. Lloyd's considers it

good practice for syndicates to consider reinsurance default prudently and with specific reference to the reinsurers. See also pages 16 and 23 to 24 for additional guidance on assessing reinsurance credit risk.

The majority of agents applied a number of stress and scenario tests to arrive at a capital allowance for credit risk, for example:

- failure of the largest broker(s) with a dividend payable to creditors;
- the largest Lloyd's broker defaults with six weeks of claims funds in the IBA;
- no recoveries are made on broker debts more than 12 months old;
- failure of the largest reinsurer;
- downgrade of reinsurers;
- major coverholder failure;
- credit failure of maximum single debt instrument; and
- failure to receive all reinsurance accruals and recoveries plus IBNR and expected recoveries in line with the business plan.

A number of agents undertook more complex event based scenario analyses to determine their capital allowance for credit risk. However, agents did not always consider the full ripple effects on all prudential risk categories, which Lloyd's considers to be good practice. For example:

- multiple broker and coverholder failure;
- an economic downturn results in multiple broker default, the two largest brokers fail, with some allowance for expected recovery and additional administration costs;
- failure to recover from reinsurance contracts following the two largest RDSs;
- adverse claims frequency / severity; and
- a major RDS and a consequent stock market crash or material increase in interest rates.

MODELLING

Where agents had modelled credit risk, it was sometimes unclear which specific credit risks had been included under the umbrella of 'modelled credit risk'. The area most commonly included was reinsurance credit risk. Lloyd's would expect syndicates to consider reinsurance failure in the context of default risk, policy failure and the unwillingness to meet liabilities. Agents should also consider other potential sources of credit risk exposure, for example, brokers and coverholders.

Where a modelling approach was adopted only a minority of agents clearly documented how the modelled output had been supported by stress and scenario tests.

OPERATIONAL RISK

Operational risk should also be taken into account when assessing credit risk.

In order to understand the operational risk arising from credit risk, agents should first consider the key processes in relation to each counterparty. They should then identify the key controls specifically designed to mitigate credit risk in each area.

For example, an agent may address third party credit risk with a number of processes around key areas such as reinsurance strategy, reinsurance purchase, reinsurance recoveries, coverholder / broker approval and outstanding third party

balances. The agent may place reliance on a number of key controls in these areas, for example:

- an established credit risk committee, with clear terms of reference, which reviews and updates the credit ratings of reinsurers, brokers and coverholders on a regular basis;
- controls to ensure that only approved reinsurers are used;
- controls to ensure that only approved brokers are used;
- policies regarding the maximum exposure to any one reinsurer, either actual or prospective;
- controls to monitor exposures and to check that they are within the pre-agreed limits;
- regular aged debt reporting;
- controls and procedures in respect of dealing with reinsurer queries;
- internal audit reviews of controls over third party credit risk; and
- a plan for managing cash flows / liquidity following a major catastrophe.

In addition to the above specific controls, agents may also place reliance on the ongoing management of their relationships with key counterparties.

In order to recognise the operational risk associated with credit risk, agents should consider factoring a margin into the overall capital allocated to credit risk to allow for the potential exposure that could stem from the failure of key controls.

OTHER RELATED RISK CATEGORIES

The risk of failure to realise reinsurance recoveries may also be considered within the insurance risk section.

USEFUL SOURCES OF DATA

There is a wide range of potential data sources that may assist agents when assessing and measuring credit risk. For example:

- reinsurer, broker, coverholder balances and aged debt reports, e.g. peak month statistics;
- maximum exposure statistics, e.g. maximum premium volume accepted from brokers;
- details of claims funds held by coverholders / third party administrators;
- syndicate bad debt statistics;
- syndicate recovery rate statistics from broker / reinsurer insolvencies;
- rating agency default rates;
- rating agency reports;
- report and accounts;
- credit agency reports, e.g. Dun & Bradstreet, Experian;
- analysts' reports and trading updates in respect of investments; and
- country specific credit rating information.

Attached in section H, appendix 3, for ease of reference, is a list of factors that agents should consider under PRU 2.3 – Credit risk.

REQUIRED STANDARDS

When calculating the capital allowance for credit risk agents should consider, as a minimum, each of the following areas and should justify in their ICA submission why they believe these areas, if any, are not applicable to their business.

- Reinsurers
- Brokers
- Coverholders
- Policyholders
- Third party claims administrators
- Banks
- Investment issuers
- Investments

Where considerations of particular credit risk issues have been made, an agent should state specifically the issues considered, how the agent considered them and the reasons behind the conclusions and findings. Agents should undertake a series of scenario analyses that are relevant to the business. There should be a clear audit trail from the impact of any financial calculations to the credit risk capital allocation in the ICA.

Where a modelling approach is adopted, agents should compare their modelled output with appropriate stress and scenario tests in order to demonstrate that the capital allocations suggested by the model are reasonable. This should be clearly documented within the ICA.

3 MARKET RISK

DEFINITION

Market risk refers to the risk that arises from fluctuations in values of, or income from assets, or in interest or exchange rates.

SCOPE

The majority of agents included market risk in their ICA, with approximately 5% making no allowance for market risk in the 2005 'soft test'. Whilst market risk includes exposures arising from variations in exchange rates, interest rates and investment returns, the majority of agents only focused on one or two of these sources of risk. Many agents did not take due consideration of the fact that market risks tend to be highly correlated. For example, fluctuations in interest rates will usually have an impact on equities, bonds and exchange rates.

If an agent considers its assets and liabilities to be approximately matched – for example, there are no large unhedged currency positions; short tail business is backed by cash / fixed interest assets of suitable term and long tail business has assets of matching duration – the syndicate should be able to demonstrate that this is the case. If mismatching does exist, this should be allowed for when calculating the ICA.

Agents should also consider the volatility of asset prices and the correlation of various investment types. Historical volatility should be considered when making assumptions about future volatility and, therefore, the riskiness of a syndicate's investment portfolio. The correlation of the various investment types within the portfolio should be assessed in order to reflect realistic conditions.

In addition, the correlation between investment and insurance risk should be considered by agents. Agents should assess the impact that a particular insurance disaster will have on investment portfolio returns if it has a detrimental effect on the financial markets.

APPROACHES TO QUANTIFICATION

Agents adopted a variety of measures in order to quantify market risk for their ICAs. Approximately 10% of agents adopted an arbitrary loading based on their overall ICA charge and were challenged in supporting the rationale for this approach. A further 40% of agents applied a stress and scenario test approach, while the remainder modelled the market risk element of their ICA.

STRESS AND SCENARIO TESTS

Where a stress and scenario test approach was adopted, the majority of agents had focused on one aspect of market risk only, such as adverse movements in investment returns or exchange rates.

Examples of stress tests that were used by agents to arrive at a capital allowance for market risk include:

- 8% fall in bond prices;
- 50% fall in equity prices;
- all non-settlement currencies depreciate against sterling by 5%;
- US dollar and Canadian dollar exchange rates move adversely by 10%;

- rise in interest rates leading to reduced asset values on the syndicate's portfolio; and
- fall in syndicate's asset values.

A number of agents undertook more complex event based scenario analysis to determine their capital allowance for market risk. However, a good practice that more agents need to address is consideration of full ripple effects on all prudential risk categories. For example:

- value of equity portfolio falls by 40% due to market crash and value of bond portfolio falls by 5% due to an increase in interest rates from 5% per annum to 10% per annum in the same year;
- increase in interest rates of 2%, combined with a major RDS;
- simulation of 1994 bond crash on current investment portfolio;
- exchange rate impact of Japanese earthquake scenario; and
- impact of a WTC-type event on the investment portfolio.

MODELLING

Where agents had modelled market risk, it was sometimes unclear which specific market risks had been included or how much capital had been allocated to market risk.

Where a modelling approach was adopted, only a minority of agents clearly documented how the modelled output had been supported by stress and scenario tests.

OPERATIONAL RISK

Operational risk should also be taken into account when assessing market risk.

In order to understand the operational risk arising from market risk, agents should consider the processes in place in relation to the components of market risk and the key controls specifically designed to mitigate market risk.

For example, an agent will address market risk with a number of processes around areas such as investment strategy, relationships with investment managers, and investment management reporting and monitoring. The agent will place reliance on a number of key controls in these areas, for example:

- annual review of benchmarks and revision in light of changes to business strategy;
- formal investment management / custodian mandates and agreements, including details of reporting to be provided and performance benchmarks;
- regular reporting on investment portfolio, including value of the portfolio by investment asset class, sales and purchases made in the period and cash movements;
- monitoring of the portfolio against the limits established in the investment mandate;
- regular reconciliations of investment holdings;
- regular monitoring of the credit worthiness of counterparties and issues; and
- periodic reviews of controls operated by counterparties.

In order to recognise the operational risk associated with market risk, syndicates should consider factoring a margin into the overall capital allocated to market risk in order to allow for the potential for failure of key controls.

OTHER RELATED RISK CATEGORIES

Market risk should also be considered in conjunction with liquidity risk – particularly where realisation of assets may incur some opportunity costs, where assets may be realised at unusually high costs, or where the timing is such that unusually low valuations are realised.

USEFUL SOURCES OF DATA

The following examples of data sources may assist agents when assessing and measuring market risk:

- rating agency default rates;
- analysts' reports and trading updates in respect of investments;
- company reports and accounts;
- Bank of England Monetary Policy Committee minutes;
- economic forecast reports;
- market data; and
- investment portfolio manager reports.

Attached at section H, appendix 4, for ease of reference, is a list of factors that agents should consider under PRU 2.3 – Market risk.

REQUIRED STANDARDS

When calculating the capital allowance for market risk, agents should consider, as a minimum, each of the following areas and should justify, in their ICA submission, why they believe these areas, if any, are not applicable to their business:

- exposures arising from variations in exchange rates, interest rates and investment returns;
- the volatility of asset prices and the correlation of investment types; and
- the correlation between investment and insurance risk.

There should be a clear audit trail from the impact of any financial calculations to the market risk capital allocation in the ICA.

Where considerations of particular market risk issues have been made, an agent should state specifically the issues considered, how it considered them and the reasons behind the conclusions and findings. Agents should undertake a series of stress and scenario tests that are relevant to their business.

Where a modelling approach is adopted, agents should compare their modelled output with appropriate stress and scenario tests in order to demonstrate that the capital allocations suggested by the model are reasonable. This should be clearly documented within the ICA.

4 LIQUIDITY RISK

DEFINITION

Liquidity risk refers to the risk that sufficient financial resources are not maintained to meet liabilities as they fall due.

SCOPE

The 2005 'soft test' showed that 55% of syndicates made no allowance for liquidity risk. Where agents did assess liquidity risk, they only considered their ability to meet liabilities following a catastrophe and to collect monies due from cash calls. Agents should take into consideration all potential areas of liquidity risk, including:

- lack of funds due to poor forecasting of cash flow requirements;
- poor credit control, including management of disputes;
- meeting regulatory funding requirements;
- changes in regulatory requirements (e.g. in the US and Canada);
- events or a period of sustained losses giving rise to large claims outflow or trust fund requirements; and
- the short notice given for premium and claim payments where large levels of following market business or delegated underwriting are written.

Consideration should be given to the agent's ability to manage unplanned changes in funding sources as well as changes in market conditions that may affect its ability to liquidate assets promptly with minimal loss.

In addition, agents should consider the minimum level of free funds (i.e. funds not tied up in overseas regulatory deposits) that is required across the underwriting cycle, taking account of the time horizon used.

Agents should also consider their access to money markets and other sources of funding, such as lines of credit.

APPROACHES TO QUANTIFICATION

Agents adopted a variety of measures in order to quantify liquidity risk for their ICAs. Approximately 30% of agents used a stress and scenario test approach, and approximately 15% of agents modelled the liquidity risk element of the ICA.

STRESS AND SCENARIO TESTS

Where a stress and scenario test approach was adopted, the majority of agents only focused on their ability to meet their liabilities following a catastrophe and the subsequent collection of cash calls. A number of agents completed more complex scenario analyses to determine their capital allowance for liquidity risk, for example:

- the effect of a significant movement in exchange rates, where a syndicate writes a large proportion of business in foreign currencies;
- an increase in attritional claims, with 25% of the projected total claims for the year occurring in one month;
- an investment portfolio underperforms resulting in insufficient liquid assets to meet expected claims / trust fund requirements;
- a six month delay in receipt of reinsurance recoveries following a large gross loss;
- the full funding of US trust fund liabilities at a gross level following a large gross loss;

- claims development five years quicker than expected; and
- claims at a level that require cash calls.

MODELLING

Where agents had modelled liquidity risk, they had often also completed stress and scenario tests. However, only a minority of agents had clearly documented how the stress and scenario tests supported the modelled output.

OPERATIONAL RISK

Operational risk should also be taken into account when assessing liquidity risk.

In order to understand the operational risk arising from liquidity risk, agents should consider the processes in place in relation to liquidity risk and the key controls specifically designed to mitigate liquidity risk.

For example, an agent may address liquidity risk with a number of processes around key areas such as cash flow forecasting, credit control and cash calls. The agent may place reliance on a number of key controls in these areas, for example:

- regular formal cash flow forecasting, showing the cash position by month and currency and reflecting the likely effect of a RDS / catastrophe events;
- monitoring actual levels of liquid assets against a benchmark;
- the maintenance of sufficient (liquid) assets to meet expected / reasonable changes in regulators' financial requirements, or contingency plans to raise sufficient funds;
- having formal agreements in place for borrowing facilities / funding arrangements;
- credit control policies and procedures to target outstanding premiums and reinsurance recoveries for collection; and
- personnel with sufficient skills and knowledge of the cash call process.

In order to recognise the operational risks associated with liquidity risk, agents should consider factoring a margin into the overall capital allocated to liquidity risk to allow for the potential failure of key controls.

OTHER RELATED RISK CATEGORIES

Liquidity risk should be considered in conjunction with insurance risk particularly in relation to the impact that various stress and scenario tests may have on the cash positions of a syndicate and its ability to pay claims.

USEFUL SOURCES OF DATA

The following examples of data sources may assist agents when assessing and measuring liquidity risk:

- cash flow forecasts;
- contingency plans for alternative sources of funding in the event of liquidity issues;
- details of exposure to regulated geographic territories along with funding requirements;
- aged debt / bad debt reports;
- details of borrowing facilities / funding arrangements; and
- syndicate realistic disaster scenarios.

Attached at section H, appendix 5, for ease of reference, is a list of factors that agents should consider under PRU 2.3 – Liquidity risk.

REQUIRED STANDARDS

When calculating the capital allowance for liquidity risk, agents should consider stress and scenario tests that are relevant to their business.

Where considerations of particular liquidity risk issues have been made, an agent should state specifically the issues considered, how the agent considered them and the reasons behind the conclusions and findings.

There should be a clear audit trail from the impact of any financial calculations to the credit risk capital allocation in the ICA.

If an agent makes no allowance for liquidity risk within a syndicate's ICA, it should state clearly the reasons for arriving at this conclusion within the ICA submission.

5 GROUP RISK

DEFINITION

Group risk refers to the potential impact of risk events, of any nature, arising in or from membership of a corporate group.

SCOPE

The approach taken by agents to assessing group risk was varied. Only 25% of agents made any capital allowance in respect of group risk even though, by capacity, some 75% of the market is part of a larger group. A small number of agents had considered group risk, but concluded that no capital was required. One agent made the incorrect assumption that since Names' capital is ring-fenced from other group capital, it is inappropriate to hold additional capital in respect of group risk for Lloyd's syndicates.

However, past experience in the Lloyd's market has shown that events that occur elsewhere within a group can have a significant impact upon a syndicate; for example, where a change in group strategy or the failure of the parent company has resulted in withdrawal of capital support. The range of possible events that should be considered when assessing group risk is broader than those that may result in the withdrawal of capital support. Risk events that occur in another part of the group may have a reputational impact; for example, where the parent or another entity in the group is downgraded by a rating agency. Events with a regulatory or legal impact should also be considered.

Listed below are additional examples of potential sources of group risk that should also be considered:

- a change in group strategy;
- drop in support as a result of increased funding requirements;
- reliance on parental guarantees;
- breakdown in relationship with shareholders;
- regulatory action against another group member;
- related party transactions;
- a shared reinsurance programme with a group company;
- third party managed syndicates within the group;
- financial pressure upon syndicate / agent from elsewhere in the group, which adversely impacts the syndicate; and
- support services provided by the group company may become unavailable (e.g. investment management, IT, actuarial etc.).

APPROACHES TO QUANTIFICATION

Where agents had considered group risk in their ICAs, the majority had adopted a stress and scenario testing approach.

STRESS AND SCENARIO TESTING

Where a stress and scenario testing approach was adopted most agents had considered a single scenario, rather than a series of alternatives. Examples of scenarios that were considered by agents include the following:

- the likelihood and financial consequences of both insolvency and credit downgrading of the parent company. The effect of a downgrade was considered in terms of the estimated effect on the business plan (loss volumes and increased marketing costs) and on profit margins;
- the run-off costs if the syndicate ceases as a result of the withdrawal of group support;
- where the syndicate has more than one capital provider, a major capital provider withdraws and there is a fall in syndicate capacity; and
- losses in another group entity, followed by a downgrade of that company's security rating to a level below secure by the major rating agencies. Brokers decide to remove 20% of the syndicate's business and place it with competitors. Additional costs are incurred by the syndicate in legal fees and damage limitation marketing and PR related costs.

MODELLING

Only one agent had modelled group risk for its ICA. The approach adopted was to identify its non-insurance risks, including group risk, and then to consider the capital required, after allowing for the effect of controls, in a number of scenarios, around each risk. The results for each risk were then built into a model.

If a modelling approach is adopted, then agents should clearly document how the modelled output has been supported by stress and scenario tests.

OTHER RELATED RISK CATEGORIES

The risk of reliance on parental guarantees may also be considered within the credit risk section.

The risk of failure to realise reinsurance recoveries from group reinsurances may also be considered within the credit or insurance risk sections.

REQUIRED STANDARDS

Agents should consider group risk where the agent is part of a group. If credit is taken for a parental guarantee within the ICA, agents should state clearly the reasons for this within the ICA submission.

When calculating the capital allowance for group risk, agents should consider a range of scenarios that are relevant to their business.

Where consideration has been given to particular group risk issues an agent should state specifically the issues considered, how the agent considered them and the reasons behind the conclusions and findings.

If an agent that is part of a group concludes that no capital allowance is required in respect of group risk, then the assumptions underlying this decision should be clearly documented within the ICA.

Where a modelling approach is adopted, agents should compare their modelled output with appropriate stress and scenario tests in order to demonstrate that the capital allocations suggested by the model are reasonable. This should be clearly documented within the ICA.

6 OPERATIONAL RISK

DEFINITION

Operational risk refers to the risk of loss resulting from inadequate or failed internal processes, people and systems, or from external events.

SCOPE

The 2005 ICA 'soft test' showed that agents have found it difficult to assess and measure operational risk. When looking at operational risk, agents have adopted one of the following approaches:

- operational risk is considered as a completely distinct risk category that includes all operational failures due to people, processes, systems or external events that can cause losses; or
- given that people, processes and systems are important elements of each risk category, operational risk is modelled as part of each risk category, with the operational risk category only consisting of the balance of operational risk not dealt with elsewhere.

APPROACHES TO IDENTIFYING OPERATIONAL RISK

Past experience in the Lloyd's market has shown that operational risk can have a significant impact on a syndicate, as illustrated by the following recent examples:

- an underwriter believed that reinsurance cover under the syndicate's reinsurance programme was available for a specific risk. The risk was written and subjected to the syndicate's underwriting controls. Following a claim, however, it emerged that the risk was specifically excluded by the reinsurance programme, which resulted in a significant loss to the syndicate; and
- underwriters colluded to write contracts of insurance at a rate below the syndicate underwriting guidelines, in order to achieve volume growth and boost their bonus, which was based on this metric. This has resulted in the syndicate writing a substantial amount of business that is incorrectly priced.

The table below has been designed to assist agents to identify operational risk in their businesses, by providing a (non-exhaustive) breakdown of potential causes and data sources for each of the four types of operational risk.

Cause	Potential causes	Potential data sources
People	<ul style="list-style-type: none"> ● Manual input error ● Error in use of model / system ● Lack of management supervision ● Inadequate staff training ● Inadequate staffing levels ● Process / procedure not followed ● Lack of escalation to management ● Internal theft or fraud ● Recruitment screening failure ● Miscommunication – internal ● Miscommunication – external ● Other unauthorised activity ● Other unintentional error 	<ul style="list-style-type: none"> ● Staff turnover / sickness rates, number of contract staff ● Dependency on key staff / underwriters ● Loss experience on insurance contracts ● Extremes of over / underperformance / known conflicts of interest ● Typical notice periods and contracts terms ● Strength of succession planning ● Level of complaints

Cause	Potential causes	Potential data sources
Processes	<ul style="list-style-type: none"> ● Inadequate segregation of duties ● Inaccurate / incomplete management information ● Lack of adequate processing control ● Inadequate functionality – supporting software ● Inadequate / inappropriate policies ● Inaccurate / incomplete standing data ● Failure in corporate governance ● Other process failure ● Other control failure 	<ul style="list-style-type: none"> ● Rapid expansion of business lines / high moral hazard business areas ● Number and extent of binders written ● Nature and extent of manually intensive processes ● Exception reporting (e.g. business outside plan) and key indicators ● Management monitoring reports (e.g. policy or claims backlogs) ● Level of complaints / reinsurance disputes / adverse press comment ● Outstanding external and internal audit / compliance / regulatory report points / frequency of regulatory intervention
Systems	<ul style="list-style-type: none"> ● Hardware failure ● Software failure ● Network / telecommunications failure ● Third party provider failure – IT ● Inadequate virus protection ● Inadequate system security / information risk management ● Insufficient processing capacity ● Insufficient / untested business continuity processes ● Inadequate change / release management ● Other system error 	<ul style="list-style-type: none"> ● Number and complexity of MIS reports and papers ● Outstanding internal / external audit points on MIS ● Number and complexity of IT systems / planned IT upgrades ● Records of system outage / security breaches / virus attacks ● DRP implementation costs / replacement costs of IT hardware / realistic business interruption costs
External Events	<ul style="list-style-type: none"> ● Natural disaster ● Man made disaster ● Third party provider failure – other ● External theft or fraud ● External breach of system security ● Power outage ● Other external event 	<ul style="list-style-type: none"> ● Number and complexity of third party users ● Terms and conditions of SLAs

Attached at section H, appendix 6, for ease of reference, is a list of factors which agents should consider under PRU 2.3 – Operational risk.

BENEFITS OF IDENTIFYING OPERATIONAL RISK

Where a loss is due to an operational risk, it may well be within the agent's control, rather than being solely attributable to an external market or credit event. In circumstances where the cause of the loss is operational in nature there may be:

- remedial controls that can be introduced to prevent or mitigate the chance of its re-occurrence; and

- key risk indicators that can be identified as a form of early warning mechanism to allow pre-emptive action going forward.

By identifying those risk events that are operational and evaluating whether they have previously occurred, the likelihood of the event recurring; and the extent to which they can be controlled in a cost effective manner, agents can:

- identify and improve their understanding of the key sources and costs of operational risk;
- reduce key sources of risk thereby mitigating against future incidents; and
- demonstrate to external stakeholders that operational risk losses are being identified and managed appropriately.

Operational risk failings may result in another type of loss that would not have occurred were it not for an operational failure in the first place (e.g. a market risk loss as a result of a system failure) or may drive the nature and scale of another type of loss (e.g. enhanced credit risk).

Identification of such risks and loss events will enable an agent to amend its system of controls and reduce the likelihood of an operational risk failure.

APPROACHES TO OPERATIONAL RISK MANAGEMENT

The approach to operational risk varies widely across the market and will continue to evolve. It is clear from the 2005 'soft test' that many agents have only just started to consider operational risk within their businesses.

Operational risk management can be considered in terms of the identification, assessment, monitoring and control of operational risk. This section provides an overview of the approaches to operational risk management that an agent might consider adopting in order to assess and measure operational risk within its business.

There are a variety of approaches that can be used:

- risk and control self-assessment (RCSA);
- collection and tracking of internal loss events;
- monitoring key risk indicators (KRIs);
- reference to available external operational loss data; and
- scenario analysis / stress testing.

RISK AND CONTROL SELF-ASSESSMENT APPROACHES

This involves a forward looking self-assessment of potential exposure to operational risk. For the approach to be effective, consideration should be given to performing the assessment at least annually and it should include;

- consideration of all significant operational risks stemming from the syndicate's objectives, processes, systems and activities, as well as the nature of its customers, products and the external business environment;
- identification of the significant operational risks for each area of the business and the associated controls;
- evaluation of the significant operational risks and the effectiveness of controls using agreed guidelines;
- assignment of 'owners' for each of the significant operational risks identified;
- development and implementation of action plans for unacceptable levels of risk and/or the remediation of control weaknesses;

- ensuring that the outcome of the self-assessment approach is signed off by the board or relevant sub-committee of the board; and
- recording and reporting the outcome of the self-assessment.

A number of agents have started to adopt the above approaches by extending the scope of their risk management frameworks.

TRACKING INTERNAL LOSS DATA

This involves systematic tracking of operational risk losses and near misses. For the approach to be effective, agents should report to either their board or risk committee as follows:

- at least monthly, actual operational risk losses greater than a monetary value specified by the agent's risk appetite;
- at least monthly, potential operational risk losses and near misses greater than a monetary value specified by the agent's risk appetite; and
- immediately report all operational risk losses greater than a monetary value specified by the agent's risk appetite.

MONITORING KEY RISK INDICATORS

The main purpose of monitoring KRIs is to identify potential operational risk hotspots that could result in operational risk losses.

KRIs are intended to:

- identify the syndicate's key operational risk exposures;
- enable the agent to monitor and proactively manage the underlying causes of the syndicate's key operational risk exposures;
- use thresholds aligned to the agent's appetite for operational risk and enable risk based decision making;
- be commensurate with the nature of the operational risk exposure; and
- complement other sources of operational risk self-assessment and loss data.

EXTERNAL OPERATIONAL RISK DATA

For this approach to be effective, agents would need to explore the availability, value and potential application of external operational risk loss data in relation to their overall approach to the management of operational risk.

The principal value of such data would be in a syndicate testing the responsiveness of its control environment against the loss events in order to ascertain their potential effectiveness in helping to avoid, or mitigate against such events.

At present, Lloyd's recognises that little directly relevant external loss data is immediately available and this, therefore, is an approach for longer term consideration.

QUANTIFICATION

The 2005 ICA 'soft test' showed that many agents had difficulty in assessing operational risk and therefore were challenged in determining the amount of capital for this risk. Approximately 45% of agents applied an arbitrary loading, based on either the overall ICA charge (between 5% and 10%), non modelled risks (e.g. 12.5%) or on six months of their operating costs. Often agents were unable to explain the supporting rationale for their approaches and had no clear strategy for

the assessment of significant operational risks. Only 50% of syndicates applied stress and scenario testing based on their risk register.

STRESS AND SCENARIO TESTS

The following are some examples of operational risk scenarios that may assist agents in arriving at a capital allowance for operational risk:

- loss of the largest underwriting team to a competitor, resulting in additional recruitment and training costs and loss of business;
- a major loss is notified late, controls do not catch it promptly and many additional policies are written with cumulating losses;
- a coverholder breaches US licences with the subsequent loss of the licence in the largest US state;
- loss of the syndicate's largest broker through regulatory action;
- error or omission leads to voiding / mismatch of a significant part of the syndicate's reinsurance programme;
- a major claim is conceded due to lack of agreed policy wording; and
- terrorist attack in the City of London, with the total loss of the office, documents, IT and central processing at Lloyd's, requiring relocation and full Disaster Recovery Programme (DRP) and Business Continuity Plan (BCP).

This list is not exhaustive and agents will need to identify and consider other scenarios that are applicable to their business.

MODELLING

Where agents modelled operational risk, they adopted one of the following approaches:

- Monte Carlo simulations of elements of operational risk modelled within underwriting, reserving and investment risk;
- cumulative probability distribution modelling by means of stochastically modelling the operational risks in the risk register to build up a cumulative frequency distribution and required capital at 99.5% confidence;
- normal distribution modelling, e.g. mean £1m, standard deviation £1.25m, and drawing conclusions thereon; and
- as part of an overall economic capital model.

Where a modelling approach was adopted, only a small number of agents clearly documented how the modelled output had been supported by stress and scenario tests.

REQUIRED STANDARDS

When calculating the capital requirement for operational risk, agents should consider and address, as a minimum, each of the areas listed below and should justify in their ICA submissions why they believe that any of these areas are not applicable to their business:

- undertaking an assessment that is integrated with the risk management framework and risk register of the syndicate, and mapped to the FSA's risk categories;
- making transparent the categorisation of operational risk, whether categorised as part of other risks or as a stand alone risk (or any combination of these), and the analysis for the capital charge (if 'included' within other risk categories);

- undertaking a series of stress and scenario tests that are most applicable to their business, which may help avoid the challenge of correlating the results of many smaller scenarios; and
- making clear the approach adopted to reliance on systems and controls and the extent of reliance placed thereon.

Where a modelling approach is adopted, agents should compare their modelled output with appropriate stress and scenario tests in order to demonstrate that the capital allocations suggested by the model are reasonable. This should be clearly documented within the ICA.

E RELATIONSHIP WITH EXISTING FRANCHISE APPROACHES

REALISTIC DISASTER SCENARIOS / CATASTROPHE RISK

INTRODUCTION

Lloyd's realistic disaster scenarios (RDSs) are a well established means of measuring aggregate exposures within syndicates and across the market as a whole. However, there are some aspects of their basis and design that may need to be adapted by agents when developing suitable stress and scenario tests to support their ICA assessment.

In particular, agents should use scenarios that identify the peak exposures within their portfolios (which may or may not be identified by the existing RDSs) and which represent sufficiently extreme events to be relevant to solvency reserve requirements at the 99.5% confidence level (which will be beyond the level of some of the existing RDSs).

The following sections discuss the background, aims and use of the existing RDSs, and how they should be adapted for use in the ICA process.

BACKGROUND

The RDSs were introduced in 1995, requiring agents to carry out disaster planning against the occurrence of a number of hypothetical loss scenarios. The scenarios are generally based on historical occurrences, although the size and details of the events may be altered to provide a more challenging test and to improve the consistency in their application.

The process is now focused on the quantification of potential losses and the scenarios have developed over time to cover a wider range of potential aggregating events. Lloyd's will complete a two year project to overhaul the RDSs, improve their consistency and provide more guidance to agents, in April 2005. It should also be noted that Lloyd's may, and has in the past, introduced new RDSs outside the annual process, which may be more extreme than at present, in response to potential risk aggregations within the market.

AIMS AND USES

The RDSs fall into two categories: 'De-minimis' scenarios which agents should complete if their potential gross loss would be above 10% of Capacity or their net loss would be above 3% of Capacity, and 'Compulsory' scenarios that all agents should complete. All except one of the 'Compulsory' scenarios is a 'Specified' event, whose results can be aggregated across the market. The exception is the 'Second Event' scenario, which tests a syndicate's exposure to the second of two \$20 billion disasters.

The 'De-minimis' and 'Second Event' scenarios are used to measure potential exposures at syndicate level, to ensure that no one syndicate has a disproportionate level of aggregate exposure. The 'Specified' events are aggregated across all syndicates to test resilience at the market level. The RDS results are also used to test compliance with the 'Franchise Guidelines', which suggest a limit of 75% of stamp capacity on the gross loss from any RDS and 20% of stamp capacity on the final net loss.

RELEVANCE TO ICAS

To be relevant to the ICAs, which consider solvency at the 99.5% confidence level, it is necessary to demonstrate that an insurer can sustain loss events up to and above the '1 in 200' level, based on their own portfolio of exposures. Some of Lloyd's RDSs are considered to be more extreme than this level of likelihood, but others are not, and the following sections discuss this in greater detail.

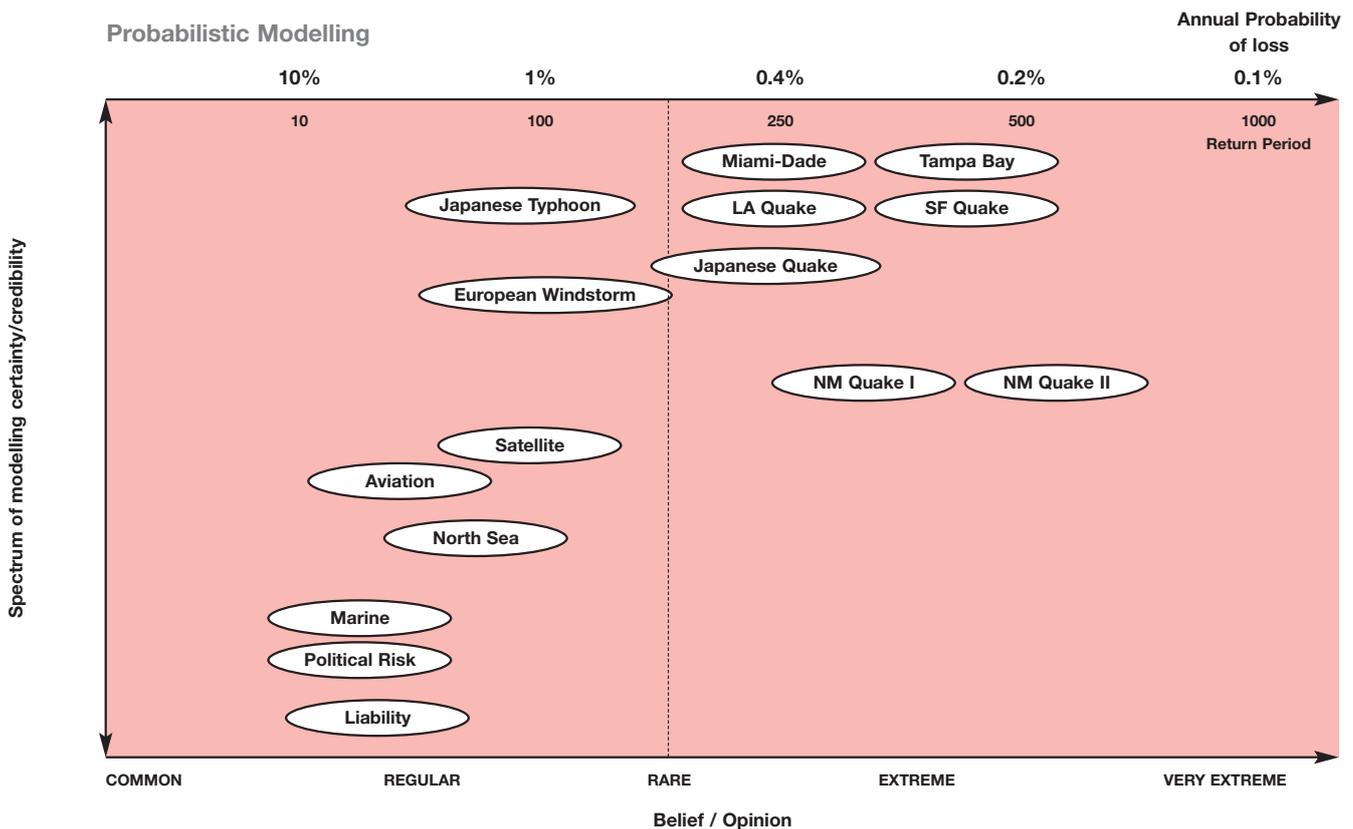
PROBABILITY AND CREDIBILITY ISSUES

There is much debate about the probability and return period levels that might be applied to the RDSs. However, it must be recognised that the levels of likelihood considered under the ICA process are extreme, well beyond those that would be expected in a typical working lifetime, and that the level of confidence that underlies an assessment of these probabilities will vary greatly, depending on the nature of the event being considered.

Some risk categories, such as natural catastrophe risks, have been modelled with some degree of confidence, based on a combination of the accumulated scientific knowledge of the underlying hazards (e.g. earthquake or hurricanes), the empirically-based engineering knowledge of the expected performance of different buildings under extreme conditions and information on the characteristics and values of the insured properties themselves.

Other risks, such as liability business risks, are even more complex and consideration of likelihood levels is largely based on conjecture. In dealing with such unquantified risks, it may be possible to agree on a categorisation of how likely it is believed that an event would occur, from commonplace (annually), to regular (every decade or so), to rare (once in a lifetime), to extreme (less than once in a lifetime).

The following chart illustrates Lloyd's present understanding of the likelihood levels of the different RDSs and shows the degree to which that assessment is based on structured probabilistic modelling or on Lloyd's current beliefs and opinions.



INDUSTRY LOSS RETURN PERIODS

The above chart is based upon consideration of the likelihood of observing industry loss levels equal to those generated by the RDSs. For example, it is believed that a \$70 billion Florida hurricane has a return period in the order of 250 years. However, that loss level (or greater) might arise from any number of scenarios, of which the RDSs give only two examples. Indeed, Lloyd's now seeks to develop its RDSs by first deciding on the appropriate level of industry loss for the relevant hazard region or market and then selecting a typical scenario that might generate that loss level.

The dotted line on the chart shows the level of likelihood above which capital adequacy should be tested under the ICAs. It can therefore be seen that a number of the natural catastrophe RDSs are, in theory, suitable to use in support of an ICA, but that more extreme loss scenarios (or a combination of the more likely RDSs) would be required for other areas.

MAPPING TO LLOYD'S AND SYNDICATE LEVEL

Agents should also consider a further adaptation to the RDSs that may be necessary in relation to the ICAs. The above analysis shows that some of the RDSs are not sufficiently extreme to support an ICA capital adequacy test in isolation. Another limitation is that the RDSs measure exposure levels using only one, or two, possible outcomes.

The dangers of this are that a syndicate may have a very different distribution of exposures to those of the insurance industry and the RDSs will 'miss' those exposures, giving the impression that less risk is being accepted. The introduction of additional RDS scenarios (in San Francisco and Tampa Bay) does address this 'miss' factor, but a full test of exposures in a particular region is best supported by a probabilistic assessment against a full range of possible events. It is for this reason that exceedance probability curves are more appropriate where a syndicate's exposure profile does not follow the insurance industry's.

Although a probabilistic approach can be applied to natural catastrophe risks, it is not practical to model against a full range of possible events for those risks where belief and opinion underlie the assessment of likelihood. Instead, careful consideration should be given to ensuring that the selected events are focused on the actual exposure profile of the syndicate. A number of the 'De-minimis' RDSs and the two 'Alternative' RDSs, in particular require agents to identify and test their syndicates' peak exposures.

SUMMARY

The RDSs are relevant to the ICA process, although careful consideration should be given by agents as to whether they identify peak exposures and whether they are sufficiently extreme to test above the 99.5% confidence level of a syndicate's risk profile for a particular segment of its underwriting portfolio. In particular, it is expected that more targeted and/or more extreme scenarios will be used by agents where their exposure is markedly different from the insurance industry's or where the recommended RDSs are not sufficiently extreme.

SYNDICATE BUSINESS FORECAST SUBMISSION

When calculating the syndicate's ICA, information regarding current / prospective underwriting should be consistent with the syndicate's SBF submission. See also page 26 of the guidance.

SOCIETY LEVEL ECONOMIC CAPITAL ASSESSMENT (ECA)

Syndicate ICAs represent the minimum amount of regulatory capital necessary to trade under the FSA's new ICAS regime. The ICAs are determined broadly at the equivalent of a 'BBB' rating. However, Lloyd's needs to maintain an economic capital level where economic capital represents the 'buffer' required to protect against unexpected losses, such that Lloyd's underwriting liabilities can be met and credit rating maintained.

This implies a distinction in capitalisation between a 'BBB' rating for ICAs and an A / A+ rating for Lloyd's. The FSA considers the setting of overall capital to be an important aspect of the Society's management of the market.

In order to arrive at final member funds at Lloyd's (FAL) requirements, Lloyd's will therefore undertake its own economic capital assessment. The methods being used in arriving at the Society's ECA are consistent with the guidance within this document. The LMA Capital Committee is being advised on the progress of the Lloyd's ECA and more details will follow in due course.

F DEFINITIONS

DEFINITIONS

Business strategy risk

Risk of loss inherent in organisation's market position, strategic direction and commercial interests.

Balancing amount

The balancing amount (as defined in LLD 19.4.14) is a function of the relationship between the syndicate ICA and the amount of assets held within the syndicate. As illustrations:

- if the syndicate holds no capital resources (but its liabilities are fully covered by relevant assets), the balancing amount equals the syndicate ICA (as there are no capital resources at syndicate level, all the capital resources must be held as funds at Lloyd's or central assets);
- if capital resources held at syndicate level are negative (i.e. if relevant assets do not fully cover liabilities for the syndicate), the balancing amount should be higher than the syndicate ICA by an amount corresponding to the negative capital resources held by managing agents on behalf of the syndicate; and
- conversely, if a syndicate holds positive capital resources for the syndicate, the balancing amount should be lower than the syndicate ICA by a corresponding amount.

Capital

There are four main types of capital:

- total capital (or equity or book capital), defined in GAAP or IAS as common equity, preferred stock and subordinated debt;
- regulatory capital as defined by the FSA using minimum rules for solvency capital for insurance businesses and used for prudential supervision (i.e. capital adequacy);
- rating agency capital, defined by rating agencies as capital required to maintain the current debt or financial strength ratings; and
- economic capital which represents the level of capital required to protect against unexpected losses, such that the market's underwriting liabilities can be met and Lloyd's credit rating maintained.

Capital risk

Risk of loss arising from inappropriate levels or sources of capital.

Confidence level

Under ICAs, capital must be sufficient to ensure that there is a certain probability that it will not be exhausted (currently set at 99.5% over one year). This probability is called the confidence level.

Control

A preventative and/or detective activity, intended to manage the inherent risks identified within a business. This will normally relate to management of the potential

impact and/or likelihood of risk exposure but may also involve risk transfer, mitigation or elimination.

Correlation

A random event can have a different probability of occurring if a second random event has occurred. In this case, the events are DEPENDENT. If the probability is not affected by whether the other event takes place, the events are INDEPENDENT. Correlation is a simple measure of dependence. Other more complex measures exist.

Credit risk

The risk of loss if another party fails to perform its obligations or fails to perform them in a timely fashion. For syndicates the key counterparties are reinsurers, brokers, insureds, reinsureds, coverholders and investment counterparties.

Diversification

Because losses are not completely dependent, generally less capital is needed at a given confidence level for a pooled portfolio than for the separate components of the portfolio considered alone. The degree to which this happens is called diversification. Diversification depends heavily on the correlation of the parts of the portfolio and also on the way risk is measured.

Economic capital

Represents the level of capital required to protect against unexpected losses, such that the market's underwriting liabilities can be met and our credit rating maintained.

Enhanced Capital Requirement (ECR)

An FSA indicative measure of the capital resources that a firm may need to hold based on risk sensitive calculations applied to its business profile.

Escalation triggers

A process whereby immediate reporting is instigated upon a particular indicator or variable moving outside an agreed range.

Final net loss

The final net loss is the expected value of the loss from an event after reinsurance recoveries have been received and reinstatement premiums have been paid and received.

Gross loss

The gross loss is the expected value of loss arising from the damage to the insured value, after the application of syndicate participations and policy or treaty limitations on cover, such as coinsurance, deductibles and limits. This is prior to inwards reinstatements or burning cost adjustments.

Group risk

The potential impact of risk events, of any nature, arising in or from membership of a corporate group.

Gross written premium

The projected gross written premium for the following underwriting year, gross of reinsurance and net of commission. This should equal the gross written premium figure in the SBF. For 2007 the definition will be reviewed in the light of annual accounting.

Individual Capital Adequacy Standards (ICAS)

An individual capital adequacy framework requiring syndicates to regularly self-assess the appropriate level of capital for their business and to hold that amount of capital.

Individual Capital Assessment (ICA)

Capital assessment performed by a managing agent under PRU 1.2.26R, LLD 18.2.1R, PRU 2.3 and LLD 19.4.1R(1) in respect of each syndicate managed by it.

Individual Capital Guidance (ICG)

Guidance provided by the FSA, having considered a firm's own capital assessment, on the level of capital it considers necessary given the firm's circumstances. ICG represents a regulatory intervention point.

Insurance risk

The risk of loss arising from the inherent uncertainties as to the occurrence, amount and timing of insurance liabilities.

Insured value

The insured value is the total value of an underlying asset (or activity, for example, in the case of business interruption insurance) that is covered by the syndicate by way of insurance and/or reinsurance. This value is determined before the application of policy or treaty limitations on cover, such as coinsurance, deductibles or limits. The insured value is also referred to as the total insured value or 'TIV'.

Integrated Prudential Sourcebook (PRU)

A reference that articulates the FSA's prudential requirements for banks, building societies, investment firms, and insurers. It includes rules and guidance on provisioning for liabilities and capital requirements.

Internal control

The system of control, financial or otherwise, established by the management of an agent in order to:

- carry on the business of the agent in an orderly and efficient manner;
- ensure adherence to management policies;
- safeguard the assets of the agent and other assets for which the agent is responsible; and
- secure as far as possible the completeness and accuracy of the agent's records.

Internal loss database

- Potential loss – An incident that has been discovered, that may or may not ultimately result in a financial loss;

- Near miss – An incident that was discovered through means other than standard operating practices and through good fortune or focused management action has resulted in nil financial impact; and
- Actual loss – An incident that has resulted in a negative financial impact

Internal loss databases are often referenced in the assessment of operational risk.

Liquidity risk

The risk that sufficient financial resources are not maintained to meet liabilities as they fall due.

Market risk

The risk that arises from fluctuations in values of, or income from, assets or interest or exchange rates.

Material

In general terms, a material issue is one involving actual or potential significant financial loss or reputational damage, which has been or needs to be escalated to the Board of Directors or Board Committee level.

Minimum Capital Requirement (MCR)

The minimum level of capital resources that the FSA requires a firm to hold.

Modelling

Creation, parameterisation and interpretation of a representation of the syndicate's business. Usually includes probability assumptions and simulation ('stochastic model').

Net loss

The net loss is the expected value of the loss from an event after reinsurance recoveries, but before reinstatement premiums have been paid and received.

Operational risk

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

Parameter

Numerical assumption in a model. Often the mean or higher moment of a probability distribution – e.g. the mean and standard deviation of a lognormal distribution. In a model, the risk calculated will depend on the parameters and is called process risk. Related to parameters, is parameter risk which involves the need to allow for uncertainty about the parameters.

Procedure

A formal system or process set out to achieve policy or operational aims.

Note: A procedure should be documented, with clear responsibilities given to all parties involved, and should be reviewed and tested regularly to ensure effectiveness and appropriateness.

Quantification of risk

The determination of the scale of risk by the allocation of a metric, such as £sterling cost, or impact on share price, relative to the frequency of occurrence. Most often, risk is quantified by reference to its impact on an organisation – e.g. loss of earnings, damage to profit, volatility of results – and the likelihood of its occurrence. Quantification can be derived from a combination of methodologies that can be qualitative in nature – particularly used in areas where risk is difficult to measure, such as operational risk – or quantitative – used where precise measurement and statistical analysis is possible.

Regulatory risk

The risk of loss arising from the organisation's dealings with both UK and overseas regulators.

Risk

The threat that an event or action will adversely affect the achievement of the objectives of the business resulting in, for example, financial loss or reputational damage.

Risk appetite

The tolerance that a business has for risk in its day to day and strategic business activities. Risk appetite is a function of the capacity to bear risk and the philosophy or attitude toward risk taking.

Risk capacity

The amount of risk, in aggregate, that an organisation is able to bear. Risk bearing capacity generally includes available capital, ability to raise capital and the capacity and strength of operational processes and related governance.

Risk category

Risks identified can be grouped in order to facilitate monitoring and reporting e.g. Insurance, Credit, Operational.

Risk components

Examples of causes, effects and examples of the risk issue and instances when it may have occurred in the past. This may include process failures or inadequacies that may, in combination, result in the risk event occurring. The list of components under any one risk would normally be illustrative rather than exhaustive.

Risk description

A detailed articulation of risk, designed to give clearer understanding of the risk.

Risk event

A high level articulation of risk and potential or actual exposure often used in risk registers / portfolios.

Risk framework

The overarching approach and process for the management of risk within an organisation, which is often expressed diagrammatically. The framework includes all the key building blocks for risk management which could include a common language for risk, the organisation's risk policy and appetite, identification and assessment of risk, monitoring and assurance of risk and of the risk management process, and reporting.

Risk management policy

Documented agreement of the approach and rules to be followed in relation to a particular area or issue that has been agreed by the Board or a properly delegated committee thereof.

Risk register

A schedule or table capturing the list of significant risks facing the organisation.

Significant control failure

An event, or series of events when a control failed to detect or prevent the risk it was intended to mitigate and the potential damage arising from that failure was substantial.

Syndicate Business Forecast

The forecast submitted to Lloyd's as part of the Syndicate Business Plan.

Stress & scenario tests

Stress and scenario tests are carried out to determine the expected financial consequences of adverse circumstances and events arising within the relevant time horizon. Stress tests are generally defined with reference to movements in key financial parameters (such as interest rates, asset values or liability values), whereas scenario tests may make reference to the cause of the adverse developments (such as a material natural catastrophe or major industrial incident).

Time horizon

The period of time over which risk is assessed in calculating the ICA. The confidence level for a longer time horizon should be lower than for a one year time horizon. Longer time horizons produce more uncertain ICAs, because sensitivity to all assumptions increased rapidly ('expanding funnel of doubt'), but they must be considered in order to demonstrate that the syndicate can be considered a true going concern.

G ICA CONTENT AND STRUCTURE

Set out below is the format for the submission of the ICAs. Each of the areas should be covered within the ICA submission. Agents should complete the pro-forma summary at the end of this section for each syndicate ICA.

NO.	MAIN SECTIONS	EXAMPLE SUBHEADINGS (and content)
1	INTRODUCTION	<p>Background:</p> <ul style="list-style-type: none"> ● objectives ● scope and limitations ● summary business profile ● summary operational profile ● ICA key contact details
2	EXECUTIVE SUMMARY	<p>Overview of approach:</p> <ul style="list-style-type: none"> ● approach to deriving the ICA – how the ICA links together the business plan, key risks to the business, risk management and capital ● ICA methodology – approach adopted and why appropriate to the syndicate's business ● quantification of risk – approach adopted and rationale ● modelling approach – approach adopted and rationale ● stress and scenario tests – which tests were used and why appropriate for the business ● assurance processes – over the ICA <p>Overview of ICA results:</p> <ul style="list-style-type: none"> ● ICA allocation by syndicate risk groups and year of account – where so analysed ● ICA allocation by FSA risk groups and year of account ● comparison with ECR <p>ICA review and sign-off:</p> <ul style="list-style-type: none"> ● board / sub-committee sign off ● SBF confirmation – confirmation that the ICA is based on data consistent with the business plan ● ICA Guidance – areas where the ICA Guidance and Instructions have not been followed with rationale
3	RISK MANAGEMENT SUMMARY	<p>Risk governance & responsibilities:</p> <ul style="list-style-type: none"> ● governance over risk and capital management ● risk policy – covering all risk categories

NO.	MAIN SECTIONS	EXAMPLE SUBHEADINGS (and content)
3	RISK MANAGEMENT SUMMARY (cont)	<p>Risk Management overview:</p> <ul style="list-style-type: none"> ● risk management framework – overview of operation ● risk management principles, practices and methodology – and why considered appropriate ● risk identification and assessment – approach adopted ● map of risk register to the six FSA risk groups ● risk limits and tolerances – what limits set, with the monitoring approach against those limits ● high level control overview – overall and by risk category ● risk management tools – use of risk and control self assessments, risk and control indicators and loss data (including recent loss events, ‘near misses’ and mitigating action taken)
4	ICA METHODOLOGY	<p>Overview of approach:</p> <ul style="list-style-type: none"> ● link between the risk framework, business plan and ICA calculation ● FSA risk categories – how these have been addressed, including detailed risk quantification, modelling approach, testing and rationale (also covering each area in ‘required standards’), for: <ul style="list-style-type: none"> – insurance risk – credit risk – operational risk – market risk – liquidity risk – group risk ● contribution of significant risk exposures to the ICA number – for each risk group ● modelling of risk groups – which risk groups have been incorporated in the modelled element of ICA calculations ● reliance on controls – significant risks for which reduced capital has been allocated due to reliance on controls (evidence to support the effectiveness of these controls to be provided) ● stress and scenario tests ● economic capital model methodology ● time horizon: one year ICA and capital requirement over longer horizon ● approach to remaining adequately capitalised ● use of loss modelling ● underwriting cycle ● dependencies, correlations and diversification ● reserving risk ● reinsurance modelling ● parameter setting

NO.	MAIN SECTIONS	EXAMPLE SUBHEADINGS (and content)
4	ICA METHODOLOGY (cont)	<p>For non-aligned syndicates:</p> <ul style="list-style-type: none"> ● syndicate reserves by year of account ● year of account changes – changes which materially alter the risk profile of the syndicate across different years of account
5	ICA CALCULATION	<p>Calculation approach:</p> <ul style="list-style-type: none"> ● assumptions, key input data and parameterisation ● modelled results, split by risk group ● sensitivity analysis ● model validation ● extent of reliance on external advice ● quality control and assurance processes
6	ICA CALCULATION: STRESS & SCENARIO TESTS	<p>Stress and scenario tests:</p> <ul style="list-style-type: none"> ● tests used, why appropriate and how determined ● assumptions and key input data ● method of combining stress & scenario tests – to validate the ICA ● test results – split by risk category
7	ICA FINAL RESULTS	<ul style="list-style-type: none"> ● overall ICA number – set out as in the pro-forma summary at the end of this section ● rationale for the final result ● comparison with ECR and rationale for difference
8	DATA	<ul style="list-style-type: none"> ● sources of data used ● completeness and integrity of data used – agent assessment of the data used

2006 ICA SUBMISSION PRO-FORMA SUMMARY

Syndicate Number:

Headline Figures

	£m
Syndicate ICA as at 31.12.05	
Syndicate ECR as at 31.12.05	

ICA Risk Category Breakdown

	£m
Insurance Risk	
Credit Risk	
Market Risk	
Liquidity Risk	
Operational Risk	
Group Risk	

ECR Breakdown

	£m
Net Premium Charge	
Technical Provision Charge	
Asset Charge	

Syndicate Capacity

Year of Account	£m
2006	
2005	
2004	
2003	

Financial Information

	Gross £m	Net £m
2006 Written Premium		
Earned Premium as at 31.12.05		
Unearned Premium Reserve as at 31.12.05		
Total Forecast Reserves as at 31.12.05		

Assumed Exchange Rate as at 31.12.05 (major currencies only)

Currency	Rate per £1
USD	
EUR	
CAD	

Additional information required for non-aligned syndicates only

Forecast Reserves at 31.12.05, by Open Year of Account

Year of Account	Gross £m	Net £m
2005		
2004		
2003		
etc.		

Notes:

1. Capacity and premium figures should be quoted net of brokerage and commission, and net of Qualifying Quota Share.
2. Reserves quoted should be on a syndicate annual accounted basis.
3. ICA figures quoted should be on a one year time horizon basis, or the first year of a three year time horizon calculation (as described in section B of the guidance). The main body of the submission should also give further commentary on the capital requirements over a period longer than one year.

APPENDIX 1

Parameter Setting

This appendix focuses on parameter setting for stochastic models although the contents can assist in stress test ICAs.

The choice of model parameters will be crucial to the final value of an ICA. To enable Lloyd's to review an ICA sufficiently, the submission should contain information as to how parameters have been chosen together with the logic of the model that brings the assumptions together.

When choosing parameters for a model, reference will be made to data and to judgement. The link between data and judgement may be more or less formal and explicit, but there is always a balance to be struck between different sources.

Parameters are likely to be driven by the following sources:

Source	Example
Syndicate specific data	Historical experience Current trading conditions facing the syndicate Syndicate business plans
Market average data	Historical experience Current market conditions
Benchmark data	ECR
Judgement / views	Underwriters' views Claims managers' views Management views
External models	Catastrophe software Rating agency models

Credibility of syndicate historical experience

A common theme across many ICA submissions is that syndicates may have overstated the credibility given to their own experience, either in terms of the available historical data or in terms of the expectations of the syndicate's prospective performance. Inherent in any active syndicate's history will be 'survivor bias', that is by virtue of not going insolvent in the past, the observed experience of the syndicate may tend to be better than the market average. However, given that many syndicates have not been in existence for very long, survivor bias will make little practical difference. What may be more important is that the syndicate will not have had a stable business profile or unchanged management and underwriting team over a sustained period. Agents should therefore consider carefully the extent to which they may be overstating the credibility of their own experience, and where the model parameters are driven largely by the syndicate's own experience, a margin in the parameters will often be appropriate. Alternatively, the parameters should reflect a wider market experience: in this case the first point below will be relevant.

Credibility applies not only to history, but also to the size of the dataset. Small syndicates, in particular, may not have the scale to have a credible dataset, and should not place over reliance upon their own data.

It is worth noting two technical points that are frequently mistaken when setting parameters:

- A smaller portfolio will have a larger standard deviation, as a percentage, than will a larger portfolio. As a result, the standard deviation (SD) of a syndicate should be set higher than the observed SD of the whole market. This is the principle of pooling or the law of large numbers. It affects not just the SD itself but also the estimate of the mean (average), which is more uncertain for a small portfolio
- If observations are not independent then the usual formula for the SD needs to be amended. If (and this is likely to be a key hypothesis supporting the use of syndicate specific data) the observations are positively correlated with each other, the estimate of the SD will be too low unless the formula is adjusted.

As a rule of thumb, a 10% correlation results in a 5% underestimate of the standard deviation and a 50% correlation results in a 30% underestimate.

Inevitably use of market data and/or use of judgement may be required in setting parameters. The balance between syndicate data, market data, and judgement should therefore be clearly outlined in the ICA submission.

Fitting distributions

Parameter estimation using historical data typically involves fitting a distribution or statistical model to the dataset. The choice of model or distribution may be due to theoretical reasons or be common market practice; however, several models should be considered and investigated before a final choice is made. Typical approaches include method of moments, maximum likelihood, or regression techniques (e.g. econometric or generalised linear models) to determine fixed parameter values.

Agents should remember that fitting models / distributions can be as much an art as it is a science. While tests exist to determine the appropriateness of parameters, often they can be best determined by viewing data graphically. Agents should take care in removing so-called 'outlier' observations from historical data on the basis that they distort historical results. Where observations are removed, some additional loading is normally appropriate to avoid understating the experience. Similarly, truncating the tails of distributions may not always be appropriate and should be justified in all cases.

In a few examples, syndicate ICAs have been based on fairly complex mathematical loss distributions, which require a large number of parameters. In such cases, the extent of any over-parameterisation should be carefully considered by the managing agent.

Parameter and model error: Sensitivity tests

A statistical model, at best, is a fair representation of the underlying reality. At worst it is a biased and incorrect view of the risk. Invariably, there is insufficient data to be totally confident of the parameters or model, and some degree of parameter or model error is likely. To compound matters, parameters themselves may not be fixed and might follow their own distribution. Sophisticated ICAs will therefore include some allowance for parameter uncertainty.

Given the uncertainty surrounding parameters, it is essential that agents do not view the final set of assumptions as somehow 'correct'. It is imperative that the management understands the uncertainty in setting parameters. Agents will be expected to have undertaken extensive sensitivity testing and for sensitivity analyses to have been communicated to the management. The ICA submission should identify which of the parameters are the most critical to the ICA value, and give indicative movements in the ICA value for the most sensitive parameters.

APPENDIX 2

Factors to consider when assessing insurance risk

A firm should:

- analyse the potential for catastrophe losses;
- determine the likelihood of any other feature of insurance risk that may lead to a variation in projected outcomes;
- analyse the potential for claims reserves to deteriorate beyond the current reserving level;
- determine the effect of loss ratios being higher than planned by analysing historic loss ratio experience and volatility;
- analyse the potential for mathematical reserves subsequently to prove inadequate compared with the current reserving level; and
- determine the effect of claims experience being more costly than planned by analysing historic claims experience volatility and trends in experience.

Further areas to consider for general and long term insurance business might include:

- the adequacy of the firm's pricing;
- the uncertainty of claims experience;
- the dependence on intermediaries for a disproportionate share of the insurer's premium income;
- the appropriateness of policy wordings;
- the risk of mis-selling;
- the tolerance for expense reserve variations or variations in expenses;
- the length of tail of the claims development and latent claims;
- the effects of rapid growth or decline in the volume of the underwriting portfolio;
- the uncertainty of future investment returns;
- the effects of rapid growth or decline in the volume and nature of new business written; and
- the ability of firms to adjust premium rates or charges for some products.

For reserving and claims risks:

- the frequency and size of large claims;
- possible outcomes relating to any disputed claims, particularly where the outcome is subject to legal proceedings;
- the ability of the firm to withstand catastrophic events, increases in unexpected exposures, latent claims or aggregation of claims;
- the possible exhaustion of reinsurance arrangements, both on a per risk and per event basis;
- social changes regarding an increase in the propensity to claim and to sue; and
- other social, economic and technological changes.

For general insurance business:

- the adequacy and uncertainty of the technical claims provisions, such as outstanding claims, IBNR and claims handling expense reserves;
- the adequacy of other underwriting provisions, such as the provisions for unearned premium and unexpired risk reserves;

- the appropriateness of catastrophe models and underlying assumptions used, such as possible maximum loss (PML) factors used;
- unanticipated legal judgements and legal change with retrospective effect specifically with regard to the claims reserves; and
- the effects of inflation.

For long-term insurance business:

- the adequacy and sensitivity of the mathematical reserves to variations in future experience, including:
- the risk that investment returns differ from those assumed in the reserving assumptions;
- the risk of variations in mortality, morbidity and persistency experience and in the exercise of options under contracts;
- the rates of taxation applied, in particular where there is uncertainty over the tax treatment; and
- unanticipated legal judgements and legal change with retrospective effect specifically with regard to the impact on mathematical reserves.

APPENDIX 3

Factors to consider when assessing credit risk

A firm should allow for:

- the financial effect of non-payment of reinsurance; and
- the financial effect of non-payment of premium debtors.

Further areas to consider might include:

- the adequacy of the reinsurance programme;
- the collapse of a reinsurer or several reinsurers on the firm's reinsurance programme and the subsequent impact this may have on the firm's outstanding reinsurance recoveries and IBNR recoveries;
- a deterioration in the creditworthiness of the firm's reinsurers, intermediaries or other counterparties;
- the degree of credit concentration;
- the degree of concentration of exposure to reinsurers of particular rating grades;
- the prospect of reinsurance rates increasing substantially or reinsurance being unavailable;
- any existing or possible future disputes relating to reinsurance contracts on a pessimistic basis and the extent that they are not already reflected in the value attributed to the reinsurances;
- greater losses from bad debts than anticipated;
- deterioration in the extent and quality of collateral; and
- guarantees given by the insurer of the performance of others, whether under contracts of insurance or otherwise.

APPENDIX 4

Factors to consider when assessing market risk

A firm should allow for:

- reduced market values of investments;
- variation in interest rates and the effect on the market value of investments;
- a lower level of investment income than planned; and
- the possibility of counterparty defaults.

Further areas to consider might include:

- the possibility of a severe economic or market downturn or upturn leading to adverse interest rate movements affecting the firm's investment position;
- unanticipated losses and defaults of issuers;
- price shifts in asset classes, and their impact on the entire portfolio;
- inadequate valuation of assets;
- the direct impact on the portfolio of currency devaluation, as well as the effect on related markets and currencies;
- extent of any mismatch of assets and liabilities, including reinvestment risk;
- the impact on the portfolio value of a dramatic change in the spread between a market index of interest rates and the risk-free interest rates; and
- the extent to which market moves could have non-linear effects on values, such as derivatives.

APPENDIX 5

Factors to consider when assessing liquidity risk

A firm should:

- perform scenario analysis in relation to liquidity risk, which should include a cash flow projection for each scenario tested, based on reasonable estimates of the impact of that scenario on the firm's funding needs and sources;
- have a contingency funding plan for taking action to ensure, so far as it can, that in each of the scenarios tested, it would still have sufficient liquid financial resources to meet liabilities as they fall due; and
- consider the extent of mismatch between assets and liabilities and the amount of assets held in highly liquid, marketable forms should unexpected cash flows lead to a liquidity problem. The price concession of liquidating assets is a prime concern when assessing such liquidity risk and should be built into any assessment of capital adequacy.

Further areas to consider might include:

- any mismatching between expected asset and liability cash flows;
- the inability to sell assets quickly;
- the extent to which the firm's assets have been pledged;
- the cash flow positions generally of the firm and its ability to withstand sharp, unexpected outflows of funds via claims, or an unexpected drop in the inflow of premiums; and
- the possible need to reduce large asset positions at different levels of market liquidity, and the related potential costs and timing constraints.

APPENDIX 6

Factors to consider when assessing operational risk

A firm may wish to refer to:

- Senior management Arrangements, Systems and Controls (SYSC); and
- Operational Risk: Prudential Systems and Controls (PRU 2.1).

A firm might want to consider:

- the likelihood of fraudulent activity occurring that may impact upon the financial or operational aspects of the firm;
- the obligation a firm may have to fund a pension scheme for its employees;
- the technological risks that the firm may be exposed to regarding its operations. For example, risks relating to both the hardware systems and the software utilised to run those systems;
- the reputational risks to which the firm is exposed. For example, the impact on the firm if the firm's brand is damaged resulting in a loss of policyholders from the underwriting portfolio;
- the marketing and distribution risks that the firm may be exposed to. For example, the dependency on intermediary business or a firm's own sales force;
- the impact of legal risks. For example, a non-insurance related legal action being pursued against the firm;
- the management of employees – for instance staff strikes, where dissatisfied staff may withdraw goodwill and may indulge in fraud or acts giving rise to reputational loss; and
- the resourcing of key functions such as the risk management function by staff in appropriate numbers and with an appropriate mix of skills such as underwriting, claims handling, accounting, actuarial and legal expertise.

A firm may consider that investigation of operational weaknesses and corrective action is a better response than holding capital and may consider that a certain degree of operational risk is within its pre-defined risk tolerance.

However, until the firm corrects any identified deficiencies, it should consider capital as an interim response to the risk.

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