



Islamic Finance

THE FIRST OF TWO ARTICLES INTRODUCING
ISLAMIC BANKING AND FINANCE CONCEPTS

WRITTEN BY MARK ANDREWS, HEAD OF ISLAMIC BANKING AND FINANCE, RISK REWARD LTD

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- WHERE IS REGULATION REALLY GOING?

Dear Subscriber

The reporting of some positive news from several global banks suggests that the worst of the credit quake may have passed. However, no one is yet certain that the upturn has really begun properly and at Risk Reward we remain cautious. It is simply too soon to tell. The real challenge facing the sector at the moment is how to replace the existing regulatory and commercial framework with a system that avoids the mistakes made in the past.

Until a clearer picture of the way ahead emerges, re-building, preparing and/or developing a banking system means sticking with the basic principles of quality, sustainability, soundly based systems, appropriate infrastructures and above all the implementation of prudent controls and practices.

We are not advocating going "back to basics" in its entirety – this will not work in modern banking environments – but by ensuring that the banking sector has the correct blend of basic principles and innovation is in our view the key to successful growth. This process involves revisiting and re-examining at least some of the banking practices which have stood the test of time and complementing them with innovations or upgrades which do actually deliver and which will make a real difference.

At Risk Reward we have been working with banks and regulators in developed and emerging markets since 2002 and we are proud of our reputation for delivering high quality consulting and training with a global perspective driven by customer service excellence and good value for money.

Our experts have developed a range of banking and treasury courses which are available at refresher, intermediate and where appropriate, advanced levels. These will endow bank management and staff at every level with the range of skills necessary to build a sound and prudent infrastructure and to create, manage, operate, monitor and control a sustainable banking business without losing sight of the need to generate a commercial return.

Whatever new regulatory framework emerges, soundly based banks with proper supervision and management systems and which actually generate real profits, will be best placed to take advantage of the full upswing when it eventually arrives. When it does, we believe that mergers and takeovers will follow. The strong – and not necessarily the largest – will take over the underdeveloped and underperforming.

Where do you want your bank to be when this occurs?

With best wishes



Dennis Cox BSc, FSI, FCA
Chief Executive Officer



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STRESS TESTING PRACTICES AND SUPERVISION

What is Stress Testing?

The Bank for International Settlements (BIS) published a paper under the Chairmanship of Mr Klaas Knot entitled "Principles for sound stress testing practices and supervision" in May 2009. It stated that stress testing plays an important role in:

- providing forward-looking assessments of risk;
- overcoming limitations of models and historical data;
- supporting internal and external communication;
- feeding into capital and liquidity planning procedures;
- informing the setting of a bank's risk tolerance ; and
- facilitating the development of risk mitigation or contingency plans across a range of stressed conditions

We define sensitivity analysis as the unitary movement of key variables and the stress test as the impact of taking such movements to a plausible extent. Basically you look at the relationships that underpin the analyses and then look to see at what point the relationships fail to hold together. The point at which an accepted (or expected) relationship breaks down can be defined as the Stress Event. With previous Basel papers the soundness standard had been set at 99.9%, so it would appear appropriate to use the same confidence level for stress testing as is used for capital calculation.

Before looking at the principles themselves, one should ask a number of questions: Can stress testing really achieve what is suggested in the paper? Can stress testing achieve what is claimed? Is it forward looking? Well stress testing certainly looks to ascertain the financial impact of what might happen in a relatively unlikely event - but even if that event is found to be manageable, the evaluation is hardly likely to be accurate. Can it get over the model problems and the limitations of historical data? Since the stress testing uses these models extensively it surely cannot achieve that – and it is calibrated using historic data.

Communication is a real problem. Providing the populace with data to

deal with events that are unlikely to occur is likely to cause unnecessary concern. Even internally information needs to be provided with care – but externally?? Be scared – be very scared.

Risk tolerance is set by the Board and drives other behaviours as set out above. It is a view about the goals and missions of the bank and the appetite of management to the level of risk that they are willing to take. The stress testing will tell the bank the events that are unacceptable so that they can change the approach and avoid the loss occurring. This idea that stress testing needs to result in action is absolutely crucial and needs to be considered carefully by management. So given that the objectives for stress testing in the introduction are open to question – how about the principles themselves?

Principle 1
Stress testing should form an integral part of the overall governance and risk management culture of the bank. Stress testing should be actionable, with the results from stress testing analyses impacting decision making at the appropriate management level, including strategic business decisions of the board and senior management. Board and senior management involvement in the stress testing programme is essential for its effective operation.

Analysis

This focus on corporate governance is welcomed and important, operating as it does throughout all subsidiaries of the bank. If there is no action resulting from the calculations conducted, the entire process becomes meaningless – turning into a pointless mathematical exercise. The strategic options may well include ceasing some form of sales activity to alter the risk profile, for example.

Principle 2

A bank should operate a stress testing programme that promotes risk identification and control; provides a complimentary perspective to other risk management tools; improves capital and liquidity management and enhances internal and external communication

Analysis

This is the principle that is a little confusing. Banks should maintain risk registers as a fundamental part of risk management, with each risk clearly identified and designated. Capital management is based on the expected loss and income data, so stress testing will not directly impact this exercise. Liquidity reserve



STRESS TESTING PRACTICES AND SUPERVISION CONTINUED

lines and strategies may be based on likely or plausible stress tests, but these also are at an extreme – not in the day-to-day. Communication can be dangerous - as has been seen in part in this crisis through the inappropriate explanations provided by journalists who should know better.

The paper does include the requirement that stress testing is fundamental within the internal capital adequacy assessment model or ICAAP –but this is about how the regulators assess the capital within a firm, and is in itself perhaps questionable. That the ICAAP must address such matters (together with risk appetite) will encourage banks to look towards such plausible events and is clearly welcomed.

Principle 3

Stress testing programmes should take account of views across the organisation and should cover a range of perspectives and techniques.

Analysis

This is where the BIS link stress testing with scenario analysis, without really adding anything new.

Principle 4

A bank should have written policies and procedures governing the stress testing programme. The operation of the programme should be appropriately documented.

Analysis

They state that the following should be documented:

1. the type of stress testing and the main purpose of each component of the programme;
2. the frequency of stress testing exercises;
3. the methodological details; and
4. the range of remedial actions envisaged.

How bold of them! These requirements really only represent common sense – which perhaps is not very common and can, of course, keep the internal and external auditors busy! Interestingly we are now through four principles without actually giving any real guidance to anyone as to what should be done in practice.

Principle 5

A bank should have a suitably robust infrastructure in place, which is sufficiently flexible to accommodate different and possibly changing stress tests at an appropriate level of granularity

Analysis

Is this really guidance? We recommend that the suite of stress tests should be conducted monthly where possible and reviewed quarterly to ensure that they meet the demands of the market and the business. This, of course, is real guidance, so clearly would not be in the principles.

Principle 6

A bank should regularly maintain and update its stress testing framework. The effectiveness of the stress testing programme, as well as the robustness of major individual components, should be assessed regularly and independently.

Analysis

They state that the independent control functions such as risk management and internal audit should also play a key role in

the process, although what this role should be is not specified. Of course internal audit will conduct such work as they consider appropriate, so that is clear. Risk management in many cases are conducting the stress tests and if the wording here is suggesting that this should not be the case, then it would be a major change for many firms – which perhaps in time will be appropriate.

Principle 7

Stress tests should cover a range of risks and business areas, including at the firm-wide level. A bank should be able to integrate effectively, in a meaningful fashion, across the range of its stress testing activities to deliver a complete picture of firm-wide risk.

Analysis

The integrated stress testing requirement has been stated before. However firms, and to some extent regulators, have still been looking in silos. The stress tests used for market risk, for example, were rarely considered in credit risk. This is both illogical and unhelpful, so these requirements may help to redress this issue.

Principle 8

Stress testing programmes should cover a range of scenarios, including forward-looking scenarios, and aim to take into account system-wide interactions and feedback effects.

Analysis

I think this really repeats previous principles.

Principle 9

Stress tests should feature a range of severities, including events capable of generating the most damage whether through size of loss or through loss of reputation. A stress testing programme should also determine what scenarios could challenge the viability of the bank (reverse stress tests) and thereby uncover hidden risks and interactions among risks.

Analysis

What is interesting here is the term “most damage”. This poor wording means that the worst case scenario should be considered. I suppose that would be 385,000,000% inflation, for example... but if that is not plausible what is the point of working it out? I suppose the sun could go out and everyone could die – any point in working out the impact? What would the action be? Move to Mars??

Earlier I suggested we aim for the 99.9% soundness standard for consistency and I would hope that is what the target in practice will be. Of course we do not expect to hit the target accurately – it is stress testing after all and at best an estimate.

The Other principles are:

Principle 10

As part of the overall stress testing programme, a bank should aim to take account of simultaneous pressures in funding and asset markets, and the impact of a reduction in market liquidity on exposure valuation.

Principle 11

The effectiveness of risk mitigation techniques should be systematically challenged.

Principle 12

The stress testing programmes should explicitly cover complex and bespoke products such as securitised exposures. Stress tests for securitised assets should consider the underlying assets, their exposures to systematic market factors, relevant contractual arrangements and embedded triggers, and the impact of leverage, particularly as it relates to the subordination level in the issue structure.

Principle 13

The stress testing programme should cover pipeline and warehousing risks. A bank should include such exposures in its stress tests regardless of their probability of being securitised.

Principle 14

A bank should enhance its stress testing methodologies to capture the effect of reputational risk. The bank should integrate risks arising from off-balance sheet vehicles and other related entities in its stress testing programme.

Principle 15

A bank should enhance its stress testing approaches for

highly leveraged counterparties in considering its vulnerability to specific risk categories or market movements and in assessing potential wrong-way risk related to risk mitigating techniques.

Analysis

Principles 16 to 21 provide the rules for the supervisors and really echo the principles for the banks. As you can see what they have actually done is provide some high level principles, then allowed some people to put in specific areas that concern them now. These are not forward looking concerns for what might happen in the future – for example a massive increase in interest rate volatility or a US default – rather they are things that have happened and would actually appear in a historic data set. So many words and so little content, but remember it will be reviewed “regularly and comprehensively”, so no doubt we will all be tying ourselves up in ‘Knots’ to make sure we comply. In doing so please do not lose sight of the objectives of stress testing – to enable you to see what might happen and then **GET OUT OF THE WAY**. This is not about counting the dead; it is about prolonging the living.

ISLAMIC FINANCE

AN INTRODUCTION

THIS IS THE FIRST OF TWO ARTICLES INTRODUCING ISLAMIC BANKING AND FINANCE CONCEPTS WRITTEN BY MARK ANDREWS, HEAD OF ISLAMIC BANKING AND FINANCE, RISK REWARD LTD. PART 2 WILL APPEAR IN THE NEXT RISK UPDATE Q3 2009.

There is much to both admire and praise about Islamic Finance. Its stated ethos and principles are probably as close to a model for truly ethical and moral banking that has yet been developed and actually implemented on a large scale.

Based on the Quran, Islamic Finance offers its clients Shari’ah compliant banking but the real meaning and to be fair, the true benefits of this, are often lost on Western observers, some of whom have tended to dismiss the sector as yet another example of fundamentalist religious doctrine applied to real life. But this cynical view is not only undeserved it is also mostly inaccurate. In reality, even a cursory study of Islamic Finance and its guiding principles will confirm it is indeed probably the most successful model for ethical banking to date. But it is not without its weaknesses, not least of which is whether any institution can

actually achieve the blueprint and live up to its full potential. The answer is almost certainly “no” but does this detract from its merits?

The whole concept of Shari’ah compliant banking is by Western terms still very much in its infancy. Some conventional banks have been trading for more than 400 years, most for at least 50 and it is often a surprise to many observers that modern Islamic Finance actually started in its present format as recently as 1985. Of course trading and commerce in the Islamic world is actually thousands of years old and pre-dates not only banking but Islam itself. The remarkable legacy of this ancient history is that the basic trading contracts have been refined over millennia and still survive, still work (in the main) and still underpin Islamic Finance.

The guiding principle of Islamic

Finance is to provide banking and financial services which are compliant with Shari’ah. Shari’ah is the Divine Law as revealed in the Quran (Book of Allah SWT) and Sunnah (words or acts) of His Prophet Muhammad (PBUH).

The primary authority for Shari’ah is the Quran which means “the text of God” and is actually a blueprint for running a society with detailed rules covering every aspect of a Muslim’s life including religious, family, community and of course trading obligations. It stresses fairness, honesty, integrity and morality to all, even towards non-believers, which comes as a surprise to some people.

Next is the Sunnah which means ‘well known path’. It covers the words, acts and tacit approvals of the Prophet (PBUH) as recorded at the time and subsequently and includes the Sayings

ISLAMIC FINANCE CONTINUED

(Hadith) which He used to lay down the law and give moral guidance.

Next comes Ijma or “consensus/agreement” under which suitably qualified Islamic Scholars or Jurists are asked to rule on points of Shari’ah law where the answer is not immediately available from the two senior sources. Then follows Qiyas or “analogy”, which extends the law by applying common underlying attributes. Finally there is Ijtihad or “interpretation”, where Islamic Scholars are asked to rule on an apparently unique problem.

This structure seems to be comprehensive enough until you are reminded that the primary sources, the Quran and the Sunnah, are actually 1,400 years old and chronicle the moral, commercial and religious challenges of that time. Even though the Prophet (PBUH) was clearly a pragmatist and may well have accommodated some of the modern structural differences, it is obviously a matter of faith that the historical texts are doctrine and must be applied literally and strictly.

Having to apply ancient standards to modern banking is and has been a real challenge. Critics say it is disingenuous involving replication and retrospective “shoe horning” to make it fit, but this dismissive swipe cheapens unreasonably the value of what has been achieved in a very short time. If you study the subject in detail it is hard not to congratulate most scholars for reaching remarkably successful compromises even where the challenge seemed incapable of being resolved.

Underpinning Islamic Finance are several basic rules which cannot all be listed in detail in this article but the main ones are:

- No uncertainty
- Trade must be in real goods and assets
- Sellers must be honest, totally frank and actually own what they sell
- There can be no speculation or gambling
- No trade in activities or products considered Haram or un-Islamic

These prohibited activities are generally well known and include no trade in pork, alcohol, armaments, pornography, etc.

The most significant basic rule and the

one that perhaps most defines the ethos of Islamic Finance, is that all commerce must involve the real sharing of both profits and losses so that all parties, including the bank, have a real and tangible stake in the outcome of the transaction being undertaken. Consequently, and unlike a conventional bank which does, an Islamic Bank does not have a debtor or creditor relationship with its depositors and customers.

With one exception (Amanah or Trust accounts which are safe custody deposits and are not usually significant in numbers or amount) “depositors” are actually investors, all of whom agree to invest alongside or via the Islamic bank and whose return is based on a share of the banks actual profit and losses. Investors place money in the Islamic bank as trading partners and are given a profit (and loss!) sharing share based on the term, purpose, maturity, etc of the investment.

The actual investor accounts are based on the ancient contracts of Amanah, Wikala, Wadia, Mudaraba and Musharaka but are generally also reported as current accounts, investment accounts and special investment accounts by many Islamic Banks.

The key difference between Islamic “investors” and the “depositors” in a conventional bank is that Islamic investors agree to share profits and losses whereas conventional depositors do not, especially the loss part! In theory, therefore, a loss making Islamic Bank could and should pass on these losses to its investors who would see their investments reduced as a consequence.

So far, this has not been put to the test in a major way and it is debatable whether an Islamic Bank could actually pass on losses on a large scale, given that in reality most investors regard their stakes as a one way bet. Would it trigger a Northern Rock exodus? Possibly.

There are many myths about Islamic Finance principally that it is banking for Muslims only. This is not true at all. Anyone can open an investment account and apply for the full range of services on offer. Non-Muslims are welcomed.



The biggest challenge facing the sector is liquidity but not in quite the same sense that we use when looking at conventional banks. In a conventional bank liquidity is needed to repay depositors and liquidity “difficulties” usually means the bank cannot meet their withdrawal requests. It is fear that drives this process and usually triggers panic, which in turn starts a wholesale stampede as depositors jostle to get their money out first. Restoring confidence, very quickly, is the only solution, something the authorities failed to do with Northern Rock.

Faced with bank collapses in the West, all Islamic jurisdictions made it clear in unequivocal terms that they stood fully behind the Islamic banks in their territories. As these territories included some of the richest countries in the world, most Islamic investors are now satisfied that the risk of losing their money is minimal. Anecdotal evidence from various institutions suggests investors having seen the worst are now relaxed and no major withdrawals have been reported.

The liquidity challenge in Islamic banks is actually a treasury and profitability problem. There is no effective Islamic inter-bank market and banks cannot lend to or borrow from each other in conventional terms. As a result a bank that finds itself with too many investments or is short of cash, has limited options. The issues posed by this are beyond the scope of this article but typically surplus funds have to be held in low or nil yielding cash form and shortfalls are met by seeking discreet deposits from sovereign departments on a “lender of last resort” basis. This “super tanker” approach to liquidity management will be a real constraint on future growth.

Islamic Finance: Part 2

In the next quarterly Risk Update we consider Riba or the banning of interest and the asset side of an Islamic Bank, including Musharaka which should be the star of Islamic banking but sadly is not.

BASEL SETS THE STANDARD...IS YOUR BANK INTERNAL AUDIT FUNCTION UP TO IT?

Peter J Hughes, Head of Risk & Internal Audit at Risk Reward Ltd, (former Head of Internal Audit, ChaseManhattanBanco, Brazil), is a risk-based bank internal auditor co-sourcing and training in emerging markets. Two recent assignments, one for a Gulf bank and one southern Africa bank led him to suggest here it is worth investing in a high quality, modern risk-based audit function as one major positive step towards meeting Basel requirements and preventing the next financial crisis.

In October 2006 the Basel Committee on Banking Supervision issued its Core Principles Methodology which sets the standards for the prudential regulation and supervision of banks. Among its 25 principles is Principle 17 that addresses internal audit and control. Specifically, with respect to Internal Audit, supervisors will need to conclude whether a regulated bank:

- “has sufficient resources and staff that are suitably trained and have relevant experience to understand and evaluate the business they are auditing;
- has appropriate independence, including reporting lines to the Board and status within the bank to ensure that senior management reacts to and acts upon its recommendations;
- has full access to and communication with any member of staff as well as full access to records, files or data of the bank and its affiliates, whenever relevant to the performance of its duties;
- employs a methodology that identifies the material risks run by the bank;
- prepares an audit plan based on its own risk assessment and allocates its resources accordingly; and
- has the authority to assess any outsourced functions.”

Apart from setting high expectations, Principle 17 expects Internal Audit departments to have a methodology that identifies material risks and an audit plan based on its own risk assessment. In other words, there is an expectation that banks will have adopted risk-based audit approaches.

So what is risk-based audit? In his book Phil Griffiths¹ describes risk-based auditing as, ‘a process, an approach, a methodology and an attitude of mind rolled into one’. This may seem a little vague. But there’s a good reason for this vagueness because there’s no standard risk-based ‘one-size-fits-all’ audit template. Quite simply, it’s about being totally professional.

The best analogy for risk-based audit is to be found in a doctor’s surgery. The good, professional doctor is highly trained to recognise and interpret the symptoms of ill health, makes enquiries to understand what the patient is suffering or potentially could suffer, conducts an examination to identify and assess the causes of the suffering, decides on a course of treatment to remediate the causes and monitors the patient to ensure that the course of treatment is being adhered to and having the desired effect.

This doctor analogy applied to banking is what risk-based auditing is. Gone are the standard audit checklists and audit



programmes that are applied systematically and repetitively and, sometimes mindlessly. Gone are the audit reports that only discuss what the auditor did and found with the accompanying exception statistics. Gone is the auditor who sits in judgement of management and staff to declare them ‘satisfactory’ or ‘unsatisfactory’ or even ‘marginally satisfactory’.

Instead we have a new breed of auditor who has in-depth understanding of the business, knows how to identify and assess the risks inherent in the business, is able to apply expertise and creativity to suggest and agree with management how identified risks can be most effectively mitigated and writes audit reports that explain the risks with appropriate quantification, the actions agreed to mitigate the risks to acceptable levels and details of the cost benefit of such actions and their risk reduction impact.

Many banks now perceive a need to modernise their internal audit function. Indeed, Risk Reward is advising a number of clients on audit modernisation programmes and providing immediate solutions through co-sourcing² and training.

It’s a moot point whether higher standards of auditing would have prevented the current financial crisis and the concomitant failures, bailouts and nationalisations that affected banks of all sizes. But one thing is for certain... it’s probably worth investing in a high quality, modern audit function as one major positive step towards preventing the next financial crisis.

¹ *Risk Based Auditing* by Phil Griffiths, published by Gower Publishing Limited

² Refer to the article in the Risk Update Q1 2009 ‘Co-Sourcing or the New Way to Ensure Audit Excellence’

THE BIAS RATIO – CAN FRAUD BE MODELLED?

Gary van Vuuren PhD, a risk and financial modelling expert asks the question can fraud risk be modelled and therefore predicted. The US\$50bn losses expected from the US firm, Madoff Securities (recently exposed as a giant pyramid scheme), are severe and extensive. Astonishingly, the fraud escaped regulatory scrutiny for years. The Securities and Exchange Commission claims that only monthly returns were provided and these did not warrant suspicion. Had the Bias ratio – a metric which augurs potential fraudulent activity – been applied, potential deception would have been signalled after only a few months of monitoring returns. Gary offers a description of the ratio and suggests a practical implementation scheme and then further illustrates this on a South African hedge fund returns.

Introduction

The US hedge fund firm, Madoff Securities LLC, was recently exposed as a giant pyramid scheme and losses derived from its inevitable collapse are now estimated at US\$50 billion. Bernie Madoff – the owner of the firm – had provided investors with modest, steady returns, claiming to be generating these by trading in Standard & Poor's 500 Index options. All positions were closed prior to mandatory reporting dates so investors were denied access to the hedge fund holdings. Madoff was a former chairman of NASDAQ Stock Market Inc., well-known, popular and apparently above suspicion: individuals, charities and numerous 'funds of funds' had invested in Madoff Securities hedge funds, amongst them HSBC Holdings PLC and Banco Santander SA. The steady positive returns Madoff offered to his clientele – even in turbulent times – perpetuated the illusion of responsible investing.

The severity and reach of these losses have been disastrous. That the fraud escaped regulatory scrutiny – as well as

reported monthly fund returns, it could not have detected foul play.

The Bias ratio, introduced in 2008, is a new metric devised to highlight possible fund return manipulation. As such, the ratio may be used as an indicator (but not ultimate proof) of fraudulent activity. Despite its novelty, the Bias ratio would have identified suspicious activity early in the history of the deception (i.e. using relatively few monthly return data): results show that deliberate attempts by Madoff to skew smooth monthly returns would have been exposed after only eight months. The need for wide dissemination of just such early indicators is important, particularly given the fragile nature of the current market which is prone to overreaction to bad news.

The remainder of this review article is structured as follows. Section 2 presents a brief literature overview of the subject of the fraudulent manipulation of returns and other financial statistics. Section 3 outlines

the mathematics underlying the Bias ratio and Section 4 then explores some interesting features of the measure. A base case (a normal distribution of returns) is determined and other potential return distributions assessed relative to this base case.

The Madoff fund returns are then scrutinised using the Bias ratio and, for completeness, three different sets of hedge fund returns (which each employ a different investment strategy) are examined using the new metric.

Section 5 concludes the article.

What the Literature Says

Several studies have reported strong evidence of a positive relation between fund performance and the subsequent flow of investor capital. Berk and Green (2004) interpreted this relationship as the entirely rational response to updated beliefs about fund managers' investment skills. Even after allowing for cumulative returns, investors exhibit an incremental sensitivity to the number of prior monthly losses – in other words, zero was found to be a powerful 'quantitative anchor'. In addition, in order to consistently achieve positive returns (no matter what the economic milieu), many institutional investors pursue 'absolute return' strategies (Waring and Siegel, 2006). Investors are also prone to exaggeration – particularly in the current fragile economic environment – and tend to overreact to bad news (for example, when a negative monthly return is reported, regardless of how small the negative return) lest worse news awaits.

The prevalence of misreporting in the hedge fund industry was investigated by Bollen and Pool (2008) who examined discontinuities in pooled monthly returns.¹ A sharp discontinuity was indeed detected at zero: the number of small gains was significantly greater than expected while the number of small losses was substantially lower. An interpretation of the anomaly was that hedge fund managers distort monthly returns to avoid reporting losses. If this construal were correct, subsequent fund performance should weaken since overstatement must eventually reverse (though this may not necessarily occur in the month immediately subsequent to the



suspicion, given the level of investor nous – is difficult to comprehend. The US agency responsible for fund oversight (the Securities and Exchange Commission) has claimed that, without significantly more information than the

¹ These returns were those reported to the Center for International Securities and Derivatives Markets (CISDM) database from 1994 to 2005. The CISDM database includes live and defunct hedge funds, funds of funds, CTAs, commodity pool operators, and indices.

overstatement month). Results from several tests concluded that, indeed, the discontinuity was due to temporarily overstated returns Bollen and Pool (2008). The discontinuity was also found to be prevalent in both live and defunct funds, so it was not simply a reflection of survivorship or backfill bias.

Approximately 10% of fund returns studied were distorted, indicating that overstating returns was a widespread occurrence. Though these small return distortions do not place investors at risk directly, they could indicate a more serious violation of managerial fiduciary duty. Fund net asset values were also overstated when returns were overstated resulting in new investors overpaying for entry to the fund (Getmansky, Lo and Makarov, 2004). If reporting of fund losses is avoided, investors may underestimate hedge fund risks and overestimate managerial performance. As a direct result, investors may allocate more capital to hedge funds than is warranted.

Getmansky, Lo and Makarov (2004) also report that the purposeful smoothing of hedge fund returns biased fund volatility downwards and the Sharpe ratio upwards.

Fund returns were also found to be positively serially correlated. Serial correlation does not necessarily indicate misreporting: positive serial correlation is sometimes recorded when marking to model those funds which are invested in illiquid securities even though there is no intention to deceive. Bollen and Pool (2008) speculated that a fund manager would be more likely to smooth losses than gains, resulting in greater serial correlation when funds perform poorly. Cross-sectional analysis indicates that the propensity for funds to feature conditional serial correlation is positively related to proxies for the risk of capital flight.

Carhart et al. (2002) examined the daily returns of equity mutual funds around quarter (and year)ends and found that funds with the highest year-to-date returns tended to feature larger returns on the last day of a quarter (or a year). These returns were largely reversed the following day. Carhart et al. found that some mutual fund managers temporarily inflated fund asset values by adding illiquid stocks to their positions on the final day of a quarter (or a year). Buying pressure

then increased trade prices and the entire position was re-valued upwards. Next-day reversals provided convincing evidence that year-end performance was distorted, since the impact of the trading activity on the last day of the year is only temporary.

Agarwal, Daniel and Naik (2007a) found that average hedge fund returns were higher in December than all other months. The incentive for fund managers to report higher end-of-year returns was measured and the December pattern was found to be more pronounced for managers with higher incentives.

Several studies have also documented evidence of discontinuities in corporate

principal components and neural networks have been used in evaluating this evidence, but these are complex to implement and the output is no less ambiguous than that derived from much simpler techniques (Derrig, 2005).

The Madoff fund has now been exposed as a Ponzi scheme.² These offer abnormally high short-term returns to entice new investors. The perpetuation of high returns requires an ever-increasing flow of investor funds in order to maintain the scheme. Ponzi schemes have been responsible for US\$ billions (Algo, 2009), but Madoff's deception dwarfs the remainder, as shown in Table 1.

Table 1: Large Ponzi schemes sorted in order of decreasing loss amounts.

Organization	Loss Amount	Settlement Date
Bernard Madoff Investment Services LLC	50,000,000,000	11-Dec-08
Princeton Financial Group	950,000,000	14-Sep-99
Mutual Benefits Corp.	837,000,000	31-Dec-04
Bennett Funding Group Inc.	750,000,000	01-Jan-97
RBG Resources	597,393,000	01-Jun-02
Towers Financial Corporation	500,000,000	31-Dec-93
InverWorld	325,000,000	01-Jan-99
Evergreen Security, Ltd.	214,000,000	31-Dec-01
Mustang Development	139,000,000	31-Mar-95
Gestion Privee Japon	102,000,000	31-Jul-05

Source: Algo FIRST Newsletter.

earnings or changes in corporate earnings around zero, including Hayn (1995), Burgstahler and Dichev (1997) and Degeorge, Patel and Zeckhauser (1999). Dechow, Richardson and Tuna (2003) as well as Burgstahler and Dichev (1997) found a discontinuity in the distribution of corporate earnings deflated by market capitalisation.

Large Sharpe ratios have been used to indicate possible fraud (KPMG, 2009:6). Asset purchase prices, returns, periodic growth rates, dividends and other relevant statistics have been employed to accurately assess asset return values, but for illiquid assets these may not be readily available nor reliable. The Bias ratio, introduced by Abduli (2006), may be used to overcome limitations inherent in other statistics and may also be applied to statistics suspected of manipulation. Some evidence of positive correlation between Sharpe and Bias ratios exists:

Technical Details

The Bias ratio operates on return data with mean μ and standard deviation σ . A closed interval $[0.0, +1.0\sigma]$ and a half-open interval $[-1.0\sigma, 0.0]$ is then defined. The fund return in month i is r_i where $1 \leq i \leq n$ and n is the total number of returns in the data series. The Bias ratio (BR) is then defined as:

$$BR = \frac{\sum_{i=1}^n r_i \in [0.0, +1.0\sigma]}{k + \sum_{i=1}^n r_i \in [-1.0\sigma, 0.0]} \quad (1)$$

The numerator summation is over the closed interval $[0.0, +1.0\sigma]$ while the denominator summation is over the open half interval $[-1.0\sigma, 0.0]$. The

² Fraudulent investment operation that pay returns to investors from their own invested funds or paid by subsequent investors rather than from profit.

THE BIAS RATIO – CAN FRAUD BE MODELLED?

small positive constant, k , is included in the formulation to prevent division by zero in cases where there are no returns reported in the interval $[-1.0\sigma, 0.0)$. In continuous terms, Equation 1 may be stated as follows:

$$BR = \frac{\int_0^{+\sigma} r dr}{k + \int_{-\sigma}^0 r dr} \quad (2)$$

The Bias ratio also has the following properties:

1. $0 \leq BR \leq n$,
 2. if $r_i \leq 0, \forall_i$ then $BR = 0$ and
 3. if $r_i > 0, r_i > +1\sigma, \forall_i$ then $BR = 0$.
- This formulation is easily implemented in spreadsheet software: only return data are required as input.

Data and Results

To understand the operation of the ratio, first consider normally

distributed data with $\mu=0\%$ and $\sigma=1\%$ as shown in Figure 1. A histogram of the data is shown as well as the normal distribution curve on the same x -axis.

The area (using the histogram) over the intervals $[0.0, +1.0\sigma]$ and $[-1.0\sigma, 0.0)$ are identical for a normal distribution, hence using Equation 1, $BR = 1.0$. Return data manipulation should ideally be signalled by several indicators, rather than total reliance upon only a single – potentially fallible – one. There are many ways in which return data may be manipulated, these will be distributionally manifest in prominent ways, i.e. through the mean and the overall shape of the curve, e.g. the skewness and kurtosis. The statistical coefficients of skewness and excess kurtosis (i.e. >3) are thus included in Figure 1 for comparison. For a normal distribution, both of these are 0: the values indicated in Figure 1 above are measured values.

Bias ratios (all > 0) that could arise from an infinite number of ‘mean return adjustments’. It is important to note, however, that a Bias ratio > 1.0 should not automatically trigger suspicion of wrongdoing. Skilled fund managers can easily (and often do) obtain Bias ratios > 1.0 with no deception involved. It is the maintenance of these high Bias ratios for long periods of time as well as the magnitude of the excess above 1.0 that should provoke suspicion.

Assume now that the shape of the distribution is lognormal. Again, there is no incentive to adjust returns such that these returns are negatively skewed (i.e. a long tail to the left of 0%): any fraudulent modifications are likely to adjust returns such that the altered values are positively skewed, i.e. to the right of 0%. The situation is shown in Figure 3. Since the Bias ratio formulation assumes a normal distribution² (for the calculation of μ and σ), the ‘fit’ in Figure 3 is therefore not accurate.

Figure 1: Histogram of normally distributed return data with $\mu=0\%$ and $\sigma=1\%$ and normal distribution superimposed over the same data bins.

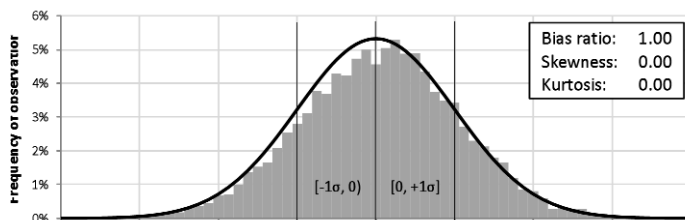


Figure 2: Histogram of normally distributed return data with $\mu=+1\%$ and $\sigma=1\%$ and normal distribution superimposed over the same data bins.

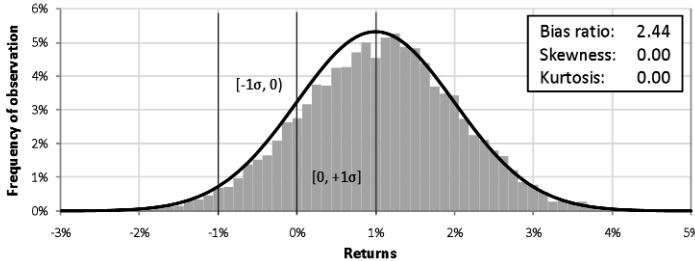
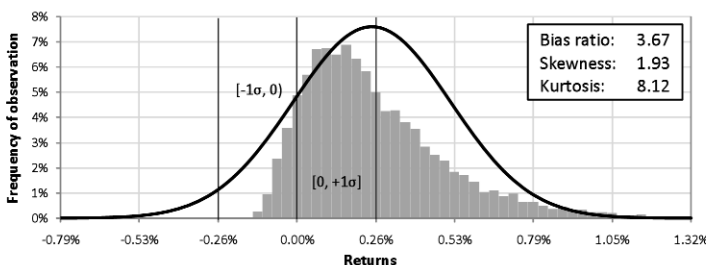


Figure 3: Histogram of lognormally distributed data. The normal distribution is superimposed over the same data bins.



Assume first that the shape of the distribution (in this example, normal) is maintained, but the average return has been altered. There is clearly no incentive to adjust returns such that the new average return is lower than the true mean, hence, any modification is likely to shift the mean in such a way as to only increase it. The situation is shown in Figure 2. The data are normally distributed, but now with $\mu=+1\%$ and $\sigma=1\%$. The histogram and normal distribution curve are again shown on the same x -axis.

The areas measured over the requisite intervals are no longer identical. In the example illustrated in Figure 2, $\text{Area}:[-1.0\sigma, 0.0) < \text{Area}:[0.0, +1.0\sigma]$ and Equation 1 gives $BR = 2.5$. Note that Figure 2 is for illustrative purposes only: there are an

infinite number of

infinite number of

infinite number of

infinite number of

² The area used in the Bias ratio formulation is, however, empirically derived.

measured over the period January 2000 to December 2006, others later, but all spanned at least four years ending in December 2006.

Although the skewness coefficient is highest in (b) – the market neutral fund – this value is not disproportionately high. Analysis indicates, however, that all three strategies report high Bias ratios and kurtosis coefficients. In particular, the Bias ratios of funds employing market neutral and fixed income strategies might hint at possible return manipulation. These results are not presented to raise the alarm on South African hedge funds, but rather to illustrate real-life examples of measured Bias ratios and point out the conclusions that may be drawn from high values thereof.

Conclusions

The early detection of fraud – or at the very least – the early signalling of potential fraud is of paramount importance at all times, but particularly in the current economic milieu of falling asset prices, failed banks, reduced lending and broad market uncertainty. The Madoff Securities deception cost investors many US\$ billions and, at the time of writing (February 2009), these have not yet necessarily all been disclosed. The need for a simple, effective early warning metric is long overdue. Complex techniques for possible fraud recognition exist, but are usually difficult to implement and exact a heavy resource toll – both in skilled quantitative personnel and in computing requirements. The Bias ratio is a simple, robust technique for evaluating possible deception and may be easily implemented in simple spreadsheet software. Interpreted together with other (standard) statistical coefficients, it could provide the much-needed measurement currently sorely lacking in the market.

For more on this topic

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Figure 4: Histogram of Madoff's Fairfield Sentry fund return data. The normal distribution is superimposed over the same data bins.

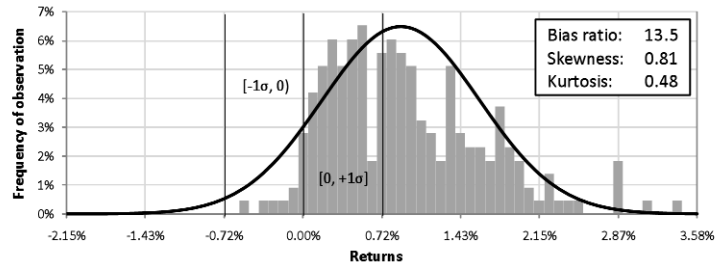
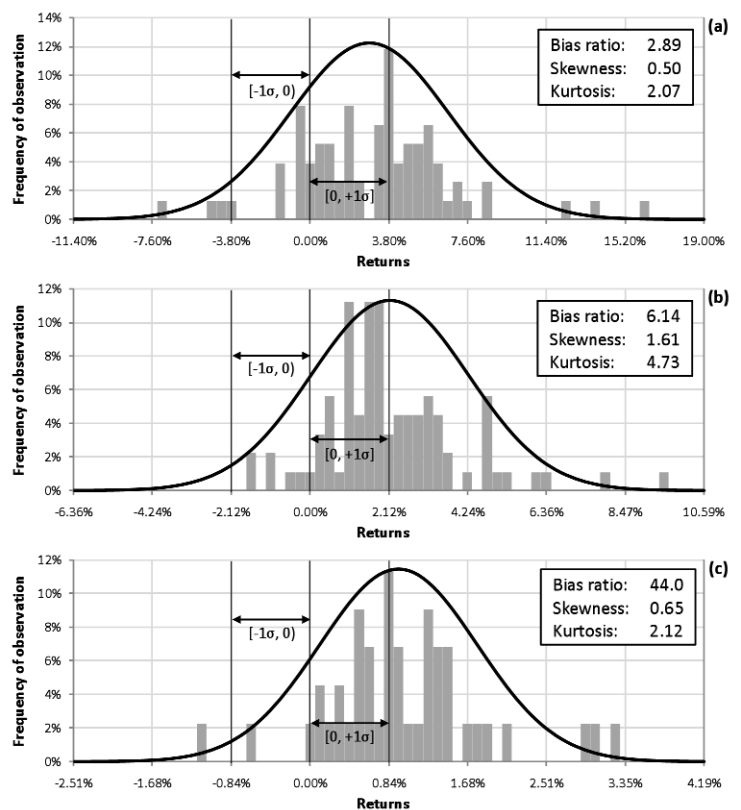


Figure 5: Histogram of three South African hedge fund strategy returns: (a) a long-short equity fund, (b) a market neutral fund and (c) a fixed income hedge fund. The normal distribution is superimposed over the same data bins in each case.



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CROSS BORDER TRADING

This article, written by Anthony J Smith, FCII, Head of Risk & Compliance, Risk Reward Ltd, focuses on why, for a financial services firm working across different jurisdictions, it is imperative to manage its regulatory footprint.

Many investors consider putting their nest egg savings into offshore investment bonds to take advantage of ‘tax free’ roll up and protection from inheritance tax through trusts. However local tax requirements will still apply and there may be other restrictions on the way the policy is sold depending on the residency of the policyholder.

The impact of the global recession has brought increasing attention to the offshore financial services industry and brought greater attention by governments on the retention of precious tax revenues as the impact of the credit crunch reduces the amount of revenue through regular sources. Turning a blind eye is no longer an option and the chances of loopholes being closed have never been greater.

The 3rd Life Directive in the European Economic Area (EEA) covers 30 countries (EU member states, Norway, Liechtenstein and Iceland) and is designed to allow cross border trading of life assurance enabling firms to sell policies in other EEA countries without establishing a branch on what is known as a ‘freedom of services’ basis. Unfortunately tax rules and other local requirements have not been harmonised and insurers must abide by the ‘general good’ in each country where the policyholder is habitually resident. It makes no difference where the sale takes place e.g. a life company based in the Isle of Man sells a policy through an intermediary in Jersey to a Spanish resident (Spanish general good requirements apply).

To sell life policies to Spanish residents requires a tax representative based in Spain and translation of policy documents into Spanish. Just to complicate matters the policyholder will soon be able to select the contract law of their native state e.g. a UK ex pat resident in Spain could have a UK contract however all other general good requirements including taxation still apply.

General good also applies to other local requirements. Belgium in particular lays out whole areas of Belgian law in Royal Decrees that must be compliant with for its residents. Germany does not allow illustrations of with profit policies, Portugal requires a contribution to its insurance institute and Latvia expects firms to participate in its insurance guarantee scheme (IGS) or plan.

Policyholders also expect an insurance guarantee scheme (or plan) to be in place but only 8 EEA countries offer such schemes for life assurance with very restrictive cross border coverage. A German policyholder with a UK policy is not covered by the UK Financial Services Compensation Scheme (plan) and even if the UK firm had a German branch it would not be allowed to participate in the German scheme. This is probably in breach of Article 12 of the EC Treaty but so far has remained unchallenged. In Spain branches of EEA offices must contribute to the Spanish IGS but their policyholders are not covered. Many compensation schemes also fail to recognise individual policyholders with investments in life policies and treat the insurer as an investor with limited or no recognition by the

scheme. France allows foreign branches to participate in its IGS but so far no EU branches participate in the French Insurance Guarantee Scheme (FGAP).

When you multiply these scenarios across many different countries it soon becomes uneconomic to sell across the EEA without focusing on key markets and imposing strict residency restrictions on intermediaries. The new Payment Services Directive will also restrict recognition of life policies cross border to those providing 110% life cover unlike the 101% currently offered by many UK life bonds.

Of course the difficulties of the 3rd Life Directive only apply in the EEA but countries outside the EEA have their own requirements. Switzerland imposes stamp duty on policies for Swiss citizens and the multiplicity of regimes and requirements worldwide would require a large team of regulatory and tax experts to manage effectively. The offshore life industry in Europe has some very difficult questions to consider if it is to continue to trade compliantly. The recent G20 conference also focused attention on offshore tax havens where tax rates are often considerably less than developed countries.

Of course the life industry is not the only one affected by the dangers of cross border trading. In one Canadian province additional taxes are charged for non licensed brokers and unauthorised insurers. Whilst they allow them to operate for non standard risks the costs can be considerable with taxes as much as 10% and 20% respectively. The impact of failing to be aware of these local difficulties can amount to a considerable back tax bill to pay and a possible fine when the authorities find out making it essential to fully investigate the local market before going on risk.

For a financial services firm working across different jurisdictions, it is imperative to manage its regulatory footprint. This will begin with identifying where business is taking place and to whom services are being sold. Just because a sale takes place in one jurisdiction does not necessarily prevent it from being subject to the requirements of another. Often a deep understanding of the requirements of local law and taxation is essential to avoid the pitfalls of penalties and prosecutions for tax violations. As countries become even more sensitive about avoiding tax leakage the control of such risks will become much greater.



WHERE IS REGULATION REALLY GOING?

HERE WE GO AGAIN. EVERYONE APPEARS TO BE POSTURING BASED ON THE THINGS WE THINK HAVE HAPPENED AND SO WE NEED NEW REGULATIONS. NEW REGULATIONS FOR OFFSHORE FINANCIAL CENTRES. NEW REGULATIONS FOR LIQUIDITY AND STRESS TESTING. NEW REGULATIONS FOR CAPITAL CALCULATION, BONUSES AND THE PRICE OF A CUP OF TEA....

Regulation always makes the same mistake – it looks at what has happened and designs a regulatory structure to stop it happening again. Of course there are two main problems with this approach:

1. What happened last time will not happen next time, and
2. Most of the politicians, regulators and reporters really have very little idea about what happened last time anyway.

Hearing a prominent reporter from a so-called reputable newspaper referring to the crisis starting in 2008, for example, is all part of the problem. Of course the crisis did not start with a credit crisis, but with a liquidity crisis, and this commenced in 2004. If you look at responses from 2008 you are looking at symptoms not causes, and acting on symptoms may actually make matters worse.

Put at its simplest we need more regulation like a whale needs a hole in the head.

International Regulation

In the US there are 47 main regulators and probably a load of other minor ones. In the UK we have a single regulator for almost everything. Which is better? The answer is that they both have advantages and disadvantages. You clearly cannot regulate a major business by looking at a part that only represents perhaps 5% of the total. The risk of multiple regulators is that something gets missed. But the single regulator may not have sufficient skills to get into all of the issues of a specialist area. So what is best?

If we move towards international regulators for international firms, that is taking a view that they will somehow do a better job that is currently the case. The international regulators will



not be based in any one country and will take a high level view of matters. They are less likely to understand the role a firm plays in a local market, or the legal jurisdictional rules that apply. In short they are likely to have their findings ignored since they would be inconsistent with those of other firms in the market – perhaps creating an even more uneven market.

For us the best system is the lead regulator structure, where the Head Office regulators take the lead and coordinate the activity of subsidiary regulators – with each regulator ensuring that the firm maintains sufficient capital and liquidity locally to protect the local market. These are the rules that have only just been put into place, so clearly should be allowed to work for a while. If we move towards a central international regulator, we can

expect one of the next problems to be caused by exactly that change.

Capital for Stress

There is a lot of nonsense being written about the capital in the system. I remind you that we started with a liquidity crisis that caused a credit crisis. There is no suggestion that if Lehman Brothers had 50% more capital, then it would have survived. Put at its most basic, when the reputation of the firm has been impacted (rightly or wrongly), it is going to fail and no level of capital is likely to help it. If we allow the regulators to put capital charges onto the banks at a stress (or near stress) level this will be an unmitigated disaster for mankind.

The argument goes like this. The banks will need to have more capital and will

WHERE IS REGULATION REALLY GOING? CONTINUED

therefore not be able to lend, since each loan increases the capital they need. The cost of borrowing will increase and the availability decrease. The increased rates on loans will cause more companies to fail, unemployment to increase and poverty to follow. It cannot work and must not be allowed to happen. What is capital for? If it is to guard a bank against a rainy day, then capital rules should be reduced now, not increased. A rainy day? It is pouring outside. Neither the reporters, politicians nor regulators appear to really understand why we have capital and what its role really is. Forcing banks to keep capital that they cannot use is like buying a painting and leaving it in storage. It does not achieve anything or add to the common good.

Stress Testing

As you will see later the Bank for International Settlements (and most other regulators) has mandated stress testing. They have not really said what should be done, or how much, or even how. They just want some. Actually they want rather a lot. So how could the US government stress test for unemployment be exceeded within three months? Do they really understand what stress testing is about? I am not sure that they do. The tool needs to be used carefully and not as a capital calculator. You do not want the stress event to happen. If you know that there is a tree in the road and if you crash into it you will die, will you just say "Oh Well, Never Mind" as you drive headlong into disaster? I would hope that you might at least brake, or change direction – avoiding hitting the tree. So you would not need capital for stress testing – you need thinking. More of this later.

More Regulation

There is a call for more regulation – almost anything so long as there is more of it. The regulators and politicians are forgetting the law of unintended consequences: Man that changes rules needs to rule the changes. As you make changes there is greater stress within the business caused by changing roles, processes, systems and controls. Some of these will be effective, but other will be ineffectual. Basically the uncertainty resulting from change inhibits the control structures, distorts historic results and trends and can actually mask true trends that need to be acted upon.

Worse than that, the last problem will not be the next one. Whatever the focus of the regulations are this time,

will warn you what the problems will be next time. I would suggest that interest rate volatility, high interest rates and a default by a major Western country all would need to be factored into any new regulatory structure. If it cannot deal with that type of event then it will not provide the level of protection that we all require.

Salary and Bonus Caps

The greed culture is now working overtime. Is it true that some people were over remunerated for what they did? What about footballers or pop stars? Do you want to call up Wayne Rooney and tell him that he is only worth £200,000 a year? Banking is not unusual in paying large sums to so-called stars, and in those terms corporate CEOs are definitely stars. If you limit their remuneration in the banking sector some will pack up, others will go to places where they can earn more and a few will take the reduced remuneration and work just fine. What has that got to do with the crisis? Do you really think that the bonuses made any difference to the actions taken?

From experience we know that many people are actually not motivated by money, what they want is recognition and success. That means that even if they were not paid much they would probably have done exactly the same things. When you look at the new regulations see if they are driven by greed or malice, or whether they would really make a difference.

What do we need?

I would suggest a few changes are required:

1. We do not need a longer rule book, instead we need a better rule book. Too much regulation is almost worthless, really being little more than pointless motherhood statements. Other rules go to a level of detail which is nothing to do with risk. We need a risk based rule book that actually hits the big issues, rather than getting lost in massive amounts of detail.
2. We need better and more intelligent regulators who have actual experience of the areas that they are looking at. Too many junior staff have been relied upon to do work that experienced staff need to do.
3. We need enlightened debate that is not biased through ignorance, self

interest, envy or blind prejudice. This area is too important for that and reporters in particular need to take heed.

4. The schools need to be part of the solution providing education into financial principles such that key issues will be better understood.
5. Risk based modelling should drive risk management, regulation, internal and external audit. It should be at the heart of regulation, rather than a sometime peripheral figure that is dragged out only when there is a problem.
6. The rules should encourage more thinking and less modelling. Spurious data sets that mask real problems inhibit the ability of Boards to achieve their objectives.
7. We need to enhance corporate governance, raising the standing of internal audit and non-executive directors. We would recommend that all non-executive directors should be required to attend courses to understand the business they are doing and in particular should be required to attend risk management courses. One non-executive director with risk management expertise should be appointed to the Board to provide the level of independent scrutiny that is really required.
8. The Lead regulator concept should be made to work effectively, requiring formal coordination between regulators.
9. We do not need more transparency and reporting, instead we need better regulation and understanding. A set of 400 page accounts in tiny print is not transparency; it is purely a hernia for the postman and the end of another forest of trees. Clear information that is short, concise and easily understandable is the requirement.
10. Fair value as it was introduced was a disaster. Fair value is not market value when the market is not fair – neither on the way up, not on the way down. There should be a rule based on intrinsic value, being represented by expected future cash flows to amend the current rules which clearly do not work effectively.

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