

# GARP Risk Review

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Hedge Funds, Liquidity Risk and Counterparty Risk

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## Measuring Risk: The Buy-Side Portfolio Challenge

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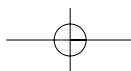
##### B. Risk Budgeting & Effective Risk Control Techniques for Hedge Funds

Lars Jaeger, Partners Group AG

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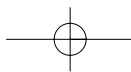
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# Risk Review

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## Asset Management: A Risk Measurement Tale

In the constantly evolving realm of financial services, there are no shortages of ideas on risk measurement techniques. Money managers, in particular, use a variety of methodologies calculate portfolio risk and return. In this month's cover story (Page 16), Gary van Vuuren, Marius Botha and Paul Styger explain the intricacies of key risk equations and provide portfolio managers with guidance on how to implement and leverage measures such as the Sharpe Ratio and Appraisal Ratio.

As part of our special asset management focus, *GARP Risk Review* also examines the risk deduction challenges facing institutional investors trading illiquid securities ('Illiquid Securities: A Challenging Risk Environment,' Page 23). While Kai D. Leifert explores the potential pitfalls of illiquidity and outlines a five-point plan for minimizing liquidity risk, Hugh Finlay provides advice on procedures and policies that can effectively control counterparty risk on the buy side ('Institutional Investors and Their Agents,' Page 30).

Unfortunately, it's difficult for investors to measure the risk of companies they're pumping money into – especially if they're receiving misleading financial information. Gordon E. Goodman questions whether companies are taking advantage of insufficient accounting rules and long-dated contracts to hide their real earnings from investors, and urges FASB to adopt changes that will improve the transparency of financial statements ('Differences in the Quality of Earnings: A Proposal to Improve Financial Statements,' Page 6).

Interesting features on insurance risk, risk budgeting, reputational risk, clearing (Q&A with Dennis Dutterer), credit derivatives and synthetic CDOs round out this month's issue. If you're interested in significant 'comings and goings' in the risk management industry, you may also want to check out our new People Tracker department (Page 5). ■

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**Pim Poppe (left) and colleagues at a GARP Netherlands chapter meeting**

## News Analysis

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**Hans Christensen**



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JPMorgan Chase's  
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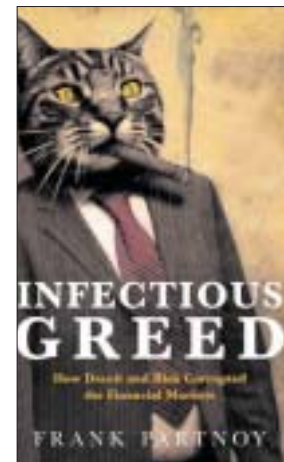
Janet Tavakoli

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## NEWS ANALYSIS

## Basel II Exemptions Spark Euro-US Debate

Whereas all banks, of every shape and size, are expected to comply with Basel II in Europe, the risk-capital accord will apply to only the largest, most internationally active banks in the United States. American banking regulators plan to grant Basel II exemptions to thousands of small-to-mid-tier US-banks, forcing only the 20 largest banks to adhere to the accord.

Proponents of the limited American approach to Basel II say that the banks covered under the accord comprise nearly 100 percent of the foreign assets of all US banks. They also note that while Basel II-compliant US banks will be forced to adopt advanced approaches to measuring credit risk and operational risk, European banks – regardless of their size – will be able to choose from a menu of approaches for measuring risk.

But skeptics wonder whether the US policy will cause smaller banks to take a less proactive approach towards risk management, and question what will unfold if a Basel II-exempt American bank expands into Europe.

Not surprisingly, some strong opinions have been formed on both sides of the debate.

Adam Gilbert, a managing director in the credit portfolio group at JPMorgan Chase, says that Basel II was specifically created for internationally active banks – and only a small group of American banks fit that description. Moreover, he says that smaller US-banks would not reap risk management or capital benefits from Basel II. “I don’t see the need, or the benefit, of trying to drill down very complicated approaches to the thousands of community banks out there,” says Gilbert.

Brandon Davies, head of retail market risk at London-based Barclays Bank, says he understands Gilbert’s concerns about the com-

plexity of the accord – but questions America’s strategy to “break ranks” on Basel II. Problems could arise, he says, if a Basel II-exempt US bank decided to open up some branch offices in Europe between now and January 2007. “If such a bank is regulated by the US, will it still stay outside of the reach of Basel II?” Davies wonders aloud.

European banks, naturally, may cry foul if a Basel II-exempt US-bank encroaches on their turf. But Michael Haney, a senior analyst covering risk management at the Boston, MA-based research and consulting firm Celent Communications, says that Basel II should only apply to the largest American banks. The stance of US banking regulators is justified, he says, because Basel II has “not demonstrated that the costs won’t outweigh the benefits” for “smaller and mid tier” banks.

However, Haney also thinks smaller banks will face pressure to at least move towards Basel II. “Over time we definitely expect to see tier two and tier three banks succumbing to market pressures, either from shareholders or customers, to adopt the best of the best – in terms of new processes and risk calculations,” he says.

A source close to the Basel Committee on Banking Supervision says the litigious component of operational risk may be one of the factors driving the decision not to extend Basel II to smaller banks. The American justice system, he notes, is flooded with frivolous lawsuits, and litigation is a form of operational risk – one of the risk disciplines covered under Basel II. “If you go to a hospital in Switzerland and they cut off the right leg instead of the left leg, you can’t do anything about it. But in the States, it’s rather different. So what (US banking regulators) are saying is ‘we are open to more operational risk, and therefore (smaller banks) are going to be suffering under Basel II,’” says the source. “Well, I’m not sure that that’s a very good argument. (Perhaps) the argument should be to change your litigation system.”

Some banking executives say that differing points of view on compliance are not unhealthy, so long as Basel II moves forward. “I don’t have real strong opinion either way, but I hope it does not become something that ends up poisoning the accord,” says Credit Suisse First Boston Head of Strategic Risk Management Wilson Ervin. ■



“Over time we definitely expect to see (American) tier two and tier three banks succumbing to market pressures, either from shareholders or customers, to adopt the best of the best – in terms of new processes and risk calculations”

Celent analyst Michael Haney



## GARP Board Members in Transition

### Persaud Partners with GAM, Leaves State Street

Seeking a career transition into the fund management business, Avinash Persaud recently bid adieu to State Street Global Markets and accepted a position as an investment director at GAM – an asset management firm headquartered in Dublin, Ireland. At GAM, Persaud will manage a fund named in his honor: the GAM-Persaud Global Investment Fund.

Persaud, the former global head of research at State Street, joined GAM on October 15. Noting that the GAM-Persaud fund will leverage quantitative techniques to evaluate and exploit macro themes in liquid markets, Persaud says he left State Street because the opportunity to partner with an established investment firm was too good to overlook.

In his new role, Persaud will be primarily concerned with preserving and enhancing the capital of GAM clients. "Like all hedge fund managers, our principal concern will be getting a good and safe return for our investors," he says.

During his tenure at State Street, Persaud developed a theory on liquidity black holes – and provided guidance on how investors could avoid such liquidity pitfalls. Persaud, who plans to author a book on liquidity black holes in the near future, also performed research on how investor behavior impacted investment decisions.

Prior to hooking up with State Street, Persaud gained acclaim and fame as the creator of the Risk Appetite Index and EMU Calculator – a pair of innovative investment analytics products. Persaud, who has also worked as the head of currency and commodity research at JPMorgan, is currently a director on GARP's board of trustees. Persaud's book on liquidity black holes will include a foreword section written by GARP Chairman Bill Martin.

### Christensen Exits Barclays In Search of Greener Pastures at MJX

Towards the end of Hans Christensen's tenure at Barclays Capital Asset Management, the firm no longer wanted to be in the leveraged loan business. Christensen, in turn, decided he wanted to partner with people to launch an investment management firm of his own.

Consequently, Christensen – the former head of BCAM's leveraged loan business – is now a managing director and partner in MJX Asset Management. Launched in September, MJX is a money manager that is owned, in part, by Christensen, seasoned investor Robert Sillerman and Martin Davey – one of Christensen's former fund management colleagues at BCAM.

In September, leveraging the knowledge and experience of

Christensen and Daley, MJX also struck a deal to acquire the US-based CDO asset management business of Barclays Capital PLC. That agreement, which is expected to be finalized prior to year-end, calls for MJX to inherit the management of a pair of Barclays' funds: Venture CDO 2002 and Venture II CDO 2002.

Christensen, a director on GARP's board of trustees, declines to comment on his new role at MJX. However, he says BCAM's exit strategy forced him to consider a new career path. "I worked for Barclays and Barclays wanted to exit the (leveraged loan) business," explains Christensen. "It's pretty simple: when they're shutting down your business, you hop."

Christensen declines to comment further, but a source close to Barclays confirms that BCAM is getting out of the leveraged loan business. "The area that Hans was close to in the CDO area was leveraged loans. That's a segment that does not match up well with the other Barclays Capital businesses, which tend to be the investment-grade arena," explains the source.

Prior to joining BCAM in 2001, Christensen – who has more than 25 years of credit, banking and corporate finance experience – worked as the senior portfolio manager in Citigroup's Alternative Investment Strategies unit.

### Former Head of Market Risk Sees Future in Grapes

Would you like to retire to run your own vineyard in Spain? If that sounds like a good plan, then you may be envious of Alejandra de Gaustad, a successful risk management executive who recently decided to call it quits after more than two decades in the investment banking and asset management business.

Gaustad, a director on GARP's board of trustees, most recently served as the head of market risk control for DePfa Investment Bank. During her four-year stint at DePfa, Gaustad spearheaded the bank's initiative to become compliant with Financial Accounting Standard 133, a regulation that governs accounting for derivatives. Gaustad was also responsible for setting up 'risk control' for DePfa's public sector bank, she says proudly. "When I say risk control, I mean everything, including systems, policies and strategic objectives," explains Gaustad.

Ultimately, however, she decided that she wanted to pursue her passion on a full-time basis. Consequently, on October 1, Gaustad officially resigned from DePfa. "I decided to part ways with DePfa because I'm 54-years-old and I have a vineyard in Spain that needs care," she says.

Though she will be too busy running her Spanish vineyard to take on another full-time risk management position, Gaustad describes herself as only 'semi-retired.' She plans to perform 'risk consulting and risk advisory' work for financial institutions on a part-time basis. "One financial institution has already contacted me to (ask me) to provide advice to their board on matters of risk management," she notes.

Gaustad also plans to retain her position on GARP's board.

# Differences in the Quality of Earnings: A Proposal to Improve Financial Statements

Are companies hiding their real earnings from investors by using long-dated price curve extrapolations to calculate current income? And are current accounting rules insufficient for identifying qualitative differences in company earnings? **Gordon E. Goodman** weighs in with his thoughts on modern accounting procedures and rules, and argues that FASB needs to implement changes that will improve the transparency of financial statements.

Major changes are needed in the structure of financial statements to distinguish between differing types of earnings based on their timing (either past or future) and, with respect to future earnings, their probability – depending on the liquidity of the market. Current accounting principles and rules do not sufficiently identify these qualitative differences for investors in earnings statements. In particular, the current practice of recognizing current earnings based on measures of fair value for long-dated contracts, through the use of economic models in illiquid markets, should not be permitted.

I readily acknowledge that financial statements contain many estimates that impact earnings, and some of these estimates involve events that may not occur until far into the future. What concerns me about these particular estimates (i.e., for long-dated contracts) is the lack of transparency and disclosure about what is being recorded. Many of these economic models are the proverbial ‘black box,’ and a reader of the financial statements has little hope of understanding what’s in the box, let alone how it may impact the financial statements.

The Securities and Exchange Commission (SEC) acknowledged this problem when they issued Financial Reporting Release (FRR) 61, recommending that for energy trading contracts being marked to fair value, registrants disclose, in MD&A, information about:

- The manner in which those fair values were determined;
- The time period over which the values will be realized; and
- The nature of changes in fair values between periods.

These disclosures have proven to be quite helpful to investors analyzing the financial performance of a company, and I believe that some of these same concepts need to be incorporated into company financial statements themselves.

## Rescission of 98–10: A Partial Solution

The Energy Trading Working Group (the Working Group) was established by the Financial Accounting Standards Board (FASB) to review proposed changes in accounting for ‘energy trading contracts,’ as defined in Emerging Issue Task Force’s (EITF) Nos. 98–10 and 02–3. EITF 98–10 was first effective in 1999 and focused on activities and contracts that were deemed to be used in ‘energy trading’ activities. Financial Accounting Standard (FAS) No. 133 was effective in 2001 and focused more broadly on contracts that met the criteria for a ‘derivative.’ FAS No. 133 is the standard that governs accounting for derivatives. What these standards had in common was an extensive reliance on the determination of reliable fair value estimates, and a general lack of guidance and disclosure surrounding the resulting estimates.

As many readers know, within the energy industry, some ‘energy trading contracts’ did not qualify as ‘derivatives’ – and vice versa. Many contracts qualified as both ‘energy trading contracts’ and ‘derivatives.’ Finally, some contracts failed to qualify as either ‘energy trading contracts’ or ‘derivatives.’

At the end of the EITF’s review period, with active encouragement from the SEC, the FASB and the EITF decided to rescind Issue No. 98–10, which effectively ended the marking to fair value of those energy trading contracts that did not also qualify as derivatives.

Unfortunately, this limited action by the EITF and FASB left the larger long-dated contract issue – at least as it applies to derivatives – unresolved. The long-dated contract issue typically arises in markets where there are no liquid pricing mechanisms (such as NYMEX or other publicly-traded markets) and there are no comparable private transactions readily ascertainable for the applicable time periods.

### Economic Models and Fair Value

In order to establish fair value for accounting purposes, many financial service companies, and some energy companies, have taken the position that even when there are no liquid markets for the applicable time periods, it is still appropriate to build an economic model of these illiquid markets. After building such a model, these companies then extrapolate the unknown values for the 'out' years from the known values for the 'near' years, and subsequently mark these long-dated transactions to a hypothetical 'market.' This process is more accurately called marking-to-model, because to describe this process as marking-to-market is a misnomer.

Based on our discussions within the Working Group, many members of the risk management profession in both the energy and financial services industries believe that long-dated price curve extrapolations, based on mathematical models, should be acceptable as the basis for making fair value entries that flow through public companies' income statements. Within the Working Group as a whole, this was clearly the accepted wisdom.

Respectfully, I disagree.

In some cases, these price curve extrapolations extend for years (or even decades) past the point where true liquidity ceases to exist. Any data subject to this great a degree of varying interpretation, though useful for some planning purposes, should not be recognized as current income for accounting purposes.

My basic concern is with the high level of subjectivity inherent in the macroeconomic models used to develop these extrapolated price curves for long-dated contracts. Both the buyer and seller of a long-dated contract currently develop economic models and, based on their differing assumptions and methods, either party may indicate their side of the transaction is 'in the money.' Further, either side may recognize that profit in earnings, depending on the accounting alternatives they have elected to follow. Even acting in good faith, it is possible for both parties to claim profits from the same transaction. However, as every investor knows, it is logically impossible for both parties on opposite sides of the same transaction to claim a profit.

FASB's Concept Statement No. 5 on Recognition and Measurement (CON 5) outlined the criteria for revenue recognition in financial statements. Three of these criteria are as follows:

- **Measurability:** The information must have a relevant attribute measurable with sufficient reliability;
- **Relevance:** The information must be capable of making a difference in user decisions; and
- **Reliability:** The information represented must be faithful, verifiable and neutral.

I do not believe that any existing model can meet those criteria – and remain particularly against using a model that depicts what may happen in periods well beyond those in which willing buyers and sellers can agree on a

price. Simply stated, recognition of unrealized gains and losses should not be allowable in the absence of quoted market prices or current market transactions.

It can also be argued that existing guidance within FASB's CON 5 already prohibits the mark-to-model process. CON 5 states:

“Revenues and gains are realizable when related assets received or held are readily convertible to known amounts of cash or claims to cash. Readily convertible assets have interchangeable (fungible) units and quoted prices available in an active market that can rapidly absorb the quantity held by the entity without significantly affecting the price.”

It defies logic for people to suggest that many of these long-dated contracts are 'readily convertible to cash' or are based on 'quoted prices in an active market.' I believe that long-dated contracts in illiquid markets cannot meet the FASB's definition of the term realizable.

During the discussions of the Working Group, I encouraged the EITF and the FASB to prohibit the recognition of unrealized gains and losses in the absence of quoted market prices, or current market transactions, for applicable time periods. This was the minority opinion of the Working Group.

But I am happy to report that FASB Chairman Robert Herz recently stated that the board plans to address the mark-to-model, or long-dated contract, question. Specifically, in remarks to Congress earlier this year, Herz said:

“In October 2002, our Emerging Issues Task Force ('EITF') and the FASB staff addressed certain practice issues related to the accounting for energy trading contracts. The EITF decided to preclude mark-to-market accounting for certain difficult-to-value energy trading contracts. The EITF also decided to require that gains on certain energy trading contracts be shown net (rather than gross) in financial reports. At the same time, the FASB staff observed that no enterprise should recognize an upfront gain at the inception of entering into certain financial contracts, unless the fair value of those contracts are clearly evidenced by observable market transactions or market data.

“We also have a current project on our agenda to improve the existing accounting requirements for measuring and disclosing the fair value of essentially all financial instruments, including those whose fair value cannot be reliably measured by observable market transactions or market data.”

Chairman Herz has enthusiastically supported efforts to eliminate many of the problems described in this article, and I am confident that he will take appropriate action in the near future.



## FINANCIAL ACCOUNTING

## Realized and Realizable Events

In my discussion of the definition of realizable contained in CON 5, I suggested that rigorous enforcement of existing guidance is one way to deal with the mark-to-model problem.

Another way in which the FASB might address these concerns is by more clearly differentiating between past and future events within the accounting hierarchy. Moreover, they could also distinguish between mark-to-market adjustments based on liquid versus illiquid market pricing mechanisms.

The current accounting model recognizes both past revenues and gains (from realized events) and future revenues and gains (from realizable events) in a single statement of earnings. I advocate that earnings statements be divided into three parts to reflect this temporal distinction – along with another distinction for realizable events involving liquidity.

In Concept Statement No. 6 on Elements of Financial Statements (CON 6), the FASB noted the effects of uncertainty on business activities and results. Though CON 6 mentions the degree of probability required for recognition of an asset (or liability) is a matter of 'recognition and measurement,' the level of probability required for revenue recognition has not yet been fully developed by the FASB.

In CON 5, FASB noted that revenues and gains should generally not be recognized until they are realized or realizable and earned. In Concept Statement #7 on Accounting Measurements (CON 7), the FASB noted that fair value should capture and reflect five basic elements:

- Future cashflows;
- Variations in amount or timing;
- Time value of money;
- Price of uncertainty; and
- Illiquidity.

CON 7 states that fair value is the amount at which an asset could be bought or sold in a current transaction between willing parties.

Though these FASB concept statements discuss the tim-

ing of events, they do not require the separation of earnings from differing time periods (i.e., past and future). The discussion of realized or realizable events in CON 5 accepts either past or future events as the basis for revenue recognition, integrated into a single earnings statement. There is a meaningful, commercial difference however between events that have occurred and been realized and events that have yet to occur and are realizable – and are therefore subject to change.

For these reasons, I propose that FASB distinguish temporally at the highest level of its conceptual hierarchy between realized events (in the past) and realizable events (in the future). I expect that most investors will place a significant premium on revenues and earnings that have been realized versus revenues and earnings that are only realizable.

Within future events (i.e., those which are realizable, but not yet realized), I would further distinguish between events that can be measured against liquid markets versus events that can be measured only against illiquid markets – e.g., the mark-to-model phenomenon. Again, I think that investors will place a premium on events that are realizable in liquid markets versus events that are realizable only in illiquid markets.

One final issue is whether this third category of earnings, realizable in illiquid markets, should even be included in current revenue and earnings statements.

In conclusion, I recommend that the FASB divide earnings statements into three clearly distinguished parts:

- Realized earnings;
- Realizable earnings in liquid markets; and
- Realizable earnings in illiquid markets.

In measuring and recognizing fair value for realizable earnings, especially in illiquid markets, all five basic elements listed from CON 7 above should be carefully reviewed, and must be met before allowing recognition of revenue or gain. Moreover, even then the FASB should carefully consider whether this third category of earnings should be included in current earnings statements. ■

**Gordon E. Goodman** is the Trading Control Officer (TCO) for Occidental Petroleum Corporation. As Occidental's TCO, Gordon is responsible for managing the corporation's credit-related risk and trading risk. During 2002, Gordon was appointed to the Energy Trading Working Group at the Financial Accounting Standards Board (FASB). He is also the chairman of the American Petroleum Institute's Risk Control Committee.

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## INSURANCE RISK

# Betting on Death

Life insurance is a growing investment sector. But since it is difficult to predict the life expectancy of a person or a group, these investments are fraught with risk. **David Ingram** takes an in-depth look at the pros and cons of investing in different life insurance programs, including Senior Settlements and Bank Owned Life Insurance.

“In this world, nothing is certain but death and taxes,” said Benjamin Franklin in 1789.

Every year, someone claims to have devised a way to avoid paying taxes, but no one has come up with a credible way to avoid death. That may be why some people have become comfortable with the idea of investing in death, or, to put it more precisely, in death proceeds of life insurance policies. However, while death is a certainty for all of us, predicting exactly when someone will die is a very tricky business.

Investors in general, and banks in particular, have been committing funds to programs where they should be very concerned with the uncertainty of timing of death. Senior Settlements and Bank Owned Life Insurance (BOLI) are two programs where the primary payoff is in the form of

life insurance death benefits. Uncertainty of timing of death may cause some of these programs to have a much higher degree of volatility than some participants may imagine.

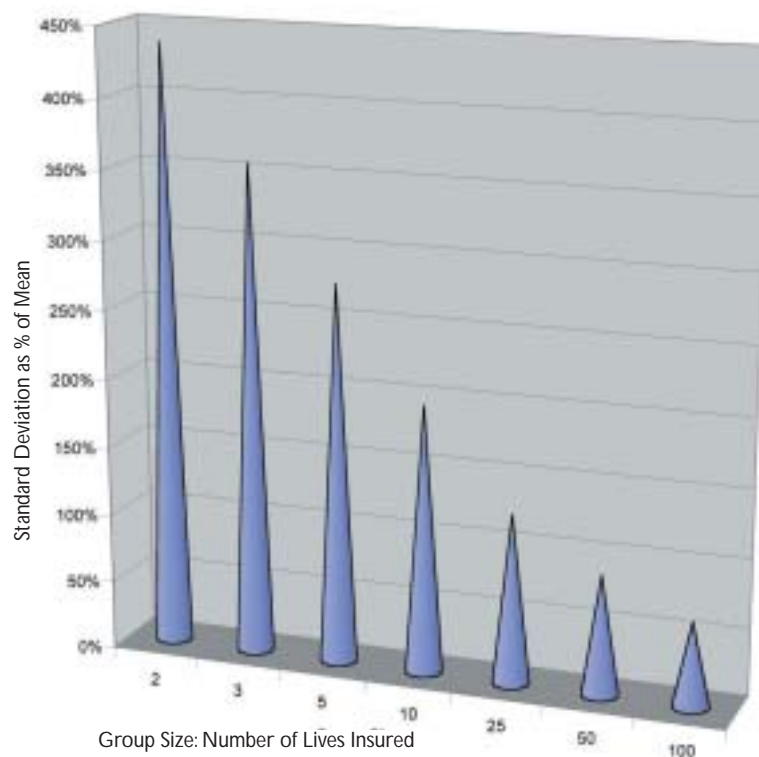
When insurance companies sell protection from premature death, they are aggregators of diversifiable risks. Except in tragic and fairly rare catastrophe situations, incidence of death of individuals is almost completely independent. While death for any individual is nearly totally unpredictable, incidence of death claims for a large enough group of insureds is almost totally predictable. Most large insurance companies have very little volatility of their total claims paid.

Senior Settlements are an offshoot of the viatical market that sprung up in the late 1980's. In the viatical business, investors bought an insurance policy from terminally ill insureds. The amount paid for the policy was usually substantially in excess of the cash surrender value. It seemed like a win-win situation until the discovery of drugs to control AIDS symptoms. Suddenly, large numbers of terminally ill AIDS patients were given a reprieve. Great for them, but disastrous for the investor who suddenly had their payoff deferred.

The industry that had developed around intermediation of these deals turned instead to Senior Settlements, under which investors bought up policies from older insureds who no longer had any use for the insurance. This practice also took place when companies purchased 'key person' insurance on someone who was no longer 'key.' As with the viaticals, the investors were able to offer the insureds a premium over the cash surrender value offered by the insurance company – in this case much smaller than with the viaticals, but definitely additional money with no apparent downside to the policyholders. Pricing of these deals is often determined based on a medical prediction of life expectancy. Some investors purchase individual policies as an investment and others act as aggregators, developing pools of policies and then reselling shares in the pools.

As investments, Senior Settlements are considered to be totally non-correlating to any financial market risks. Certainly, it is true that mortality has no correlation to bond or stock markets. However, these small groups of

**Chart 1: Death Claims for 70-year-Old People**  
One-Year Period





lives may have very high volatility of incidence of deaths and therefore volatility of the payoff of the senior settlement investment. Chart 1 shows the part of the standard deviation of one-year death claims that is driven totally by statistical variability. For reference, the same ratio for annual S&P 500 returns from 1993 to 2002 was 173%.

The preceding analysis assumes that the actual rate of death is exactly known. When insurance companies underwrite individuals, the thought is that they do not need to be exactly correct on any one life, if the errors are unbiased and therefore cancel each other out. In addition, insurance companies regularly test their actual results against their predictions and refine those predictions. For small groups, it would take many, many years to even know whether predictions of rates of deaths are reasonable or not. These parameter estimation errors could double the standard deviation for the small groups usually associated with the Senior Settlements.

Ultimately, everyone dies. Therefore, the return will always be there, just with a different timing, right? Well, sort of. Realize that these Senior Settlements are not traded. Intermediaries set prices based on fairly simple algorithms that they are generally willing to share. The investors are faced with making their own evaluations of the return that they will get based on the offered price. To evaluate a hypothetical price, I modeled a 25-life group of 68 year-olds for 10 years, over 500 random scenarios. I found that I could reproduce the price at the target level of return. In addition, I found that the standard deviation of return is 75% of the mean return. The worst annual return is -14% and the best is 30%. That sounds good compared to the aforementioned S&P 500 figure of 178%.

However, when I looked further into the S&P 500 information, I found that for a 10-year holding period, the standard deviation of S&P 500 return is only 62% of the mean return. (In the same S&P model, the best 10 return was 30% and the worst was -6% and the best was 30%.) In addition, the S&P investment is completely liquid during the 10-year holding period, while the senior settlement is nearly completely illiquid. To hit the 62% risk return ratio, the price of the Senior Settlement must fall by about 10%. So far, this analysis does not take into account the tax advantage of the Senior Settlement. If you think of that tax advantage as the compensation for illiquidity, you can say that the Senior Settlement has similar risk return characteristics to a stock market investment.

That is a standalone look at the risk reward relationship of the senior settlement. On the other hand, if the Senior Settlement investment is only 1% of a large portfolio of investments that are all tied to the market for their risk, the marginal volatility is negligible. Add a non-correlating investment with a volatility of 1 to a portfolio with volatility of 100 and the combined volatility is 100.005. With that point of view, the original price for the Senior

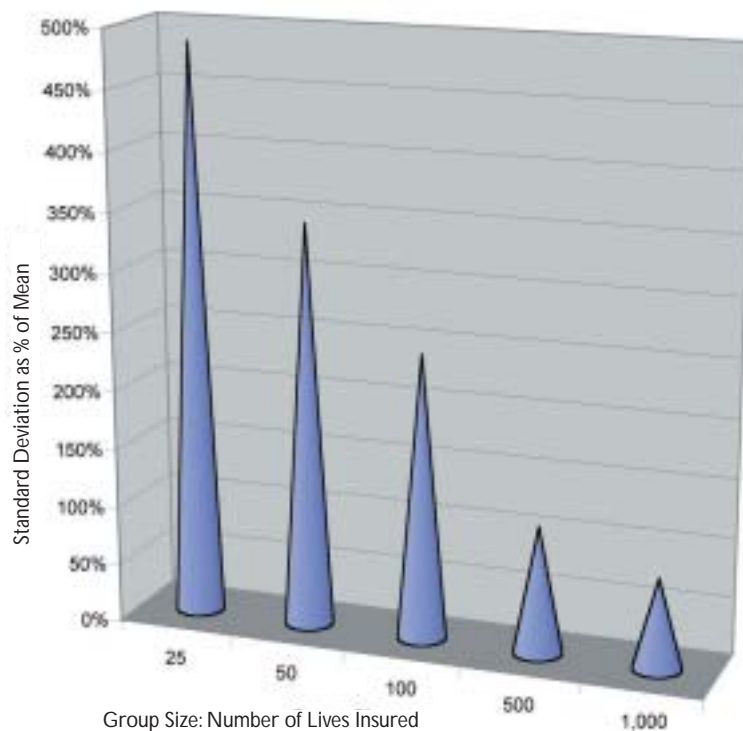
Settlement example above is actually a bargain for the marginal volatility.

#### BOLI: A Group Discussion

Banks are faced with the same challenges when they use a BOLI program to finance employee benefits. Most often, groups of employees are the insureds for the BOLI policies. Often, the groups are current active employees at the inception of the program. This means that the insureds are much younger and their health is probably better than the senior settlement people. Both those facts lead to much lower expected mortality and therefore lead to much higher statistical volatility of claims as a percentage of expected claims. For the BOLI program to achieve its objectives, the returns to the bank usually take the form of the death benefit proceeds from the policies. That means that the timing of cashflows depends on the mortality that is actually experienced by the group.

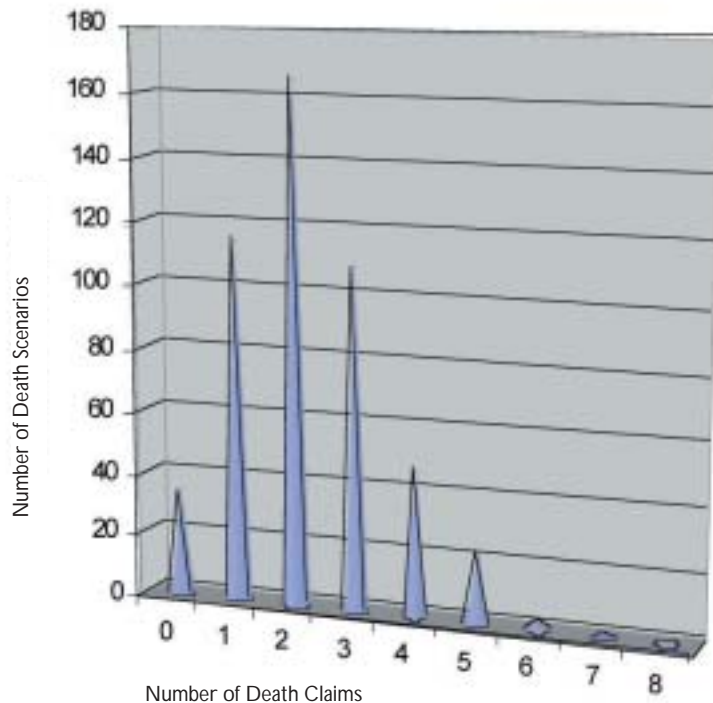
Chart 2 below shows the same statistic as chart 1, but for a healthier and younger population. Note that for a 50-life group, the risk reward ratio was about 175% for the Senior Settlements, but for the BOLI group that ratio is almost 350%! When that underlying volatility is reflected in a return on investment for the bank, what starts out looking like an attractive after tax return starts to look fairly low for the amount of risk involved – at least for smaller groups. In a 500-scenario test of ten years of experience for a 50-life group with average age of 45, 222 of

**Chart 2: Death Claims for 45-Year-Old People One-Year Period**



## INSURANCE RISK

**Chart 3: BOLI Group: 100 Lives – Age 45**  
10-Year Period



the 500 scenarios had not one single claim. That means that 44% of the time there was no cashflow from the BOLI program, for 10 years! Mortality volatility for such small programs can reach 500% to 1000% the expected return.

For these smaller BOLI groups, that volatility often overwhelms the market risk associated with the investment funds in the BOLI product. However, when taken in the context of the entire bank risk profile, the mortality risk of the BOLI program may melt away due to lack of correlation with the other risks of the bank. That may look good when viewing the overall risk profile of the entire bank, but may be very troublesome if a BOLI pro-

gram with mortality volatility of 500% has the zero cash return over 10 years that is predicted in the aforementioned model 44% of the time.

Investing in death proceeds seems very simple, until you look at the underlying statistical nature of the investment. The risk from timing of death claims can easily be aggregated to very low levels. Life insurance companies with blocks of millions of insureds can predict their death claim payments to within less than 10% margin of error. Investors with groups of dozens or even hundreds of lives do not have anything like that degree of certainty, and can in fact assume levels of volatility that are similar to investing in lottery tickets. That volatility may or may not add anything material to the total risk of a portfolio or bank, but could be the cause of a very rough ride for the annual returns of the mortality-based investment program.

A BOLI program could have a particularly rough ride, due to the low expected mortality rates of a group who is much younger and healthier than a Senior Settlement group. For an actively working BOLI group with an average age of 45, the expected death rate could easily be one-tenth the rate for the Senior Settlement group. For a 100-life group, the volatility of returns could be over 250% the expected return.

Chart 3 shows the number of claims that the BOLI group can experience from 500 random scenarios. Pricing will be at the level of 2.25 claims. At 2.25, the program hits its target return. However, there will definitely not be 2.25 claims. At 2 claims, the program breaks even. Over 60% of the 500 scenarios tested show a loss for the program. The big difference between the 100-life BOLI group and the 25-life Senior Settlement group is the level of expected claims. The smaller Senior Settlement group has over 8 expected claims and showed losses on only 30% of the 500 trials.

Participants in these programs generally know that they are taking on non-market correlating risks, but they should do their homework and know how much of that risk they are assuming. ■

**David Ingram** is a Consulting Actuary with the New York office of Milliman USA. He consults on risk management, mergers and acquisitions, demutualizations, market conduct lawsuit settlements and annuity product development.

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# The Clearing Corp.: Risk Management and Eurex on Agenda

Starting earlier this year with its divorce from the CBOT, its largest customer, The Clearing Corporation – formerly known as the Botcc – has been on a roller-coaster ride in 2003. Recently, *GRR* Editor-in-Chief Robert Sales spoke with TCC President and CEO **Dennis Dutterer** about counterparty risk, intra-day risk and systemic risk. Along the way, Dutterer also discussed the risk management concerns of TCC's clearing members, and fielded questions about his organization's re-birth via its recent partnership with Eurex – the German-Swiss Derivatives Exchange that plans to clear all of its US transactions through the TCC.

*GRR:* Can you tell me about the clearing membership requirements you have in place to protect your organization from counterparty risk?

*Dennis Dutterer:* The clearing member requirements are important, but to suggest that they are what protects us from counterparty credit risk does not do justice to our whole series of procedures that we use. By that I mean we mark-to-market positions twice a day, and we collect those losses and pay them out as profits twice a day. That is extremely significant. We are not talking about T+1 or T+3 or end-of-month settlement .... You have to pay your losses, on a mark-to-market to the real world basis, twice a day. That's the most significant thing that we have.

Secondly, we collect original margin. And that's based on our analysis of what will be the most the significant move, of a firm, over some period of time. Typically, we look at a 90-day period and 180-day period, (scanning for) the biggest moves. We perform that kind of analysis, and collect original margin on that.

We also have the ability to call firms for additional margin requirements at any time. We can mark-to-market in the middle of the day, if we see that the market is really volatile .... All of those things are (in addition) to member requirements. We obviously don't let

just any firm be a clearing firm. But my point is, in terms of our day-to-day risk management, those are the things that we look at.

In terms of our member requirements, they have to demonstrate familiarity with the markets and the ability to trade and clear. They also have to have risk management tools within their own organizations, as well as meet some minimal capital requirements.

*GRR:* How does The Clearing Corp. protect itself from systemic risk in the event that one of its clearing member's defaults? Some clearing corporations use stress testing to identify and limit potential exposures to clearing members from extreme price movements. Do you perform stress testing?

*Dutterer:* When you say limit (exposures), how do they limit it? Do they refuse to take any more trades, is that what you mean? You see, a stress test simply identifies the potential loss, under a certain scenario, that a firm may have. And unless you limit the number of transactions coming in that are away from the market, (a stress test) simply provides a (rough) number for (potential exposures).

But we certainly do all of those things. We run a real-time system, where any time throughout the day – minute to minute – I can tell you the profit or losses for the firm that

day at the clearinghouse. We do that with systems and bells and whistles that compares (P&L) to their capital and their margin and their previous history. The system can also alert our analysts, who would call a firm to discuss their P&L (if they find something out of the norm).

If a firm today looks like its lost \$5 million, at a mark-to-market at 11 a.m., we really don't know if that is significant or not unless we compare it to their activity over the last 90 days. So if in the last 90 days their profit or loss has been \$100,000 for a typical day – and now at 11 a.m. they have lost \$5 million or profited \$5 million – that means there is something very active going on that you need to look at. So we do a lot of those comparisons, for the purpose of keeping informed about our (clearing) firms' activity.

*GRR:* In addition to what we've already discussed, do you have any other mechanisms in place that help you monitor and control intra-day risk?

*Dutterer:* Well, there are a huge, huge number of things that would consume a day presentation.

*GRR:* I understand, but can you specify a few of the most key mechanisms?

*Dutterer:* Well, I think it's very important that



## Q &amp; A



"10 years ago, there was a hue and cry that you should have one clearinghouse for the whole world. But with technology today, you don't really need that, because firms can tie in and interact with clearinghouses through technology"

Dennis Dutterer

our systems are real time. We know the instant a trade comes in, and we then run that (trade) into a risk system. We also know instantly whether (a trade generated) a profit or a loss .... The other thing we do is run an information-sharing system for all of the futures markets in the United States. We (integrate) all of the activity every night from every futures market and compare it and add it up, and provide it back to the markets for risk analysis. So I can look at this system this morning and tell you the amount of funds that Merrill Lynch or Morgan Stanley ... may have paid or collected in the futures markets, and the options markets, throughout the United States.

**GRR:** Do you use the CME Clearinghouse's SPAN system for calculating portfolio bond requirements on the basis of overall portfolio risk?

**Dutterer:** We use a version of SPAN. There are probably 20 exchanges that use SPAN, and there are probably 20 versions. Everybody does something with it.

**GRR:** In that case, you're using a competitor's system. Why use that system instead of developing a rival platform to SPAN, which you could not only use internally but license to other markets?

**Dutterer:** Well, you have to remember that customers – such as Merrill Lynch – trade in all the markets. So they are really not interested in 10 different risk systems.

**GRR:** Do you think exchanges and clearinghouses are working together sufficiently, today, to meet the needs of risk managers?

**Dutterer:** Yes.

**GRR:** What are the primary concerns of risk managers that you deal with on a regular basis?

**Dutterer:** The thing that our clearing participant risk managers want more than anything else is current, real time information. And we provide that for them, instantly. That's what it's about. The things that frustrate a risk manager are when trades come in an hour or two hours late, and you don't get them into the system and you don't know if their priced out or not priced out .... They want current, real-time, solid information to do their own evaluation.

**GRR:** Does a risk manager at a prime brokerage firm have much different concerns than a risk manager at an FCM, in terms of doing business with clearing corporations?

**Dutterer:** I don't know what their individual needs are.

**GRR:** Switching gears for a minute, can you give me your take on why the CBOT decided to transfer its clearing business to the CME's Clearinghouse Division earlier this year?

**Dutterer:** That's difficult for me to do. We have been a clearing house for 75 years, and I think we are well-known and well-respected in the industry, among other clearinghouses and other firms. We have embarked on a program, over the last 10 years, of providing a wide variety of services for clearing member firms ... For many years, we processed the Cotton Exchange in New York ... We have also done processing for the Merchants Exchange, CMX and ChemConnect. So we have (supplied) a wide range of services for a number of different clearing firms and clearing exchanges.

**GRR:** After reading through all of the CME's literature, and talking with different people in the futures industry, one issue that kept coming up was the operational efficiencies that the CME/CBOT clearing partnership will provide for FCMs. The CME, specifically, has talked about how this partnership will allow clearing members of both the CBOT and CME to house all of their positions and all of their collateral in a single location, eliminating expenses tied to moving collateral between clearinghouses and eliminating the need for operational support that the previous BOTCC/CME Clearing House cross-margining agreement required. Do you think that was a significant factor in the CBOT's decision?

**Dutterer:** I really don't know. A lot of (clearing) firms have arrangements with many clearinghouses around the world. It's not unusual for the Morgan Stanley's of the world to do business with 20 or 30 clearing houses. So it's hard for me to address operational efficiencies in a specific context like that.

**GRR:** Recently, The Clearing Corp. signed a partnership with Eurex. That deal calls for you to clear all of the transactions for Eurex's new US exchange, which is scheduled to launch in early 2004. That agreement also calls for Eurex to take a 15 percent equity stake in The Clearing Corp. Does this agreement still have to be approved by your clearing members, and what other steps do you need to take before finalizing the Eurex deal?

**Dutterer:** There are two different things out there. The first is a services agreement, whereby Eurex, as a marketplace, sends us order flow for seven years, and we'll clear and settle

that order flow coming out of Eurex's US exchange – and also out of the Eurex Frankfurt Exchange. If a participant clearing firm wishes to clear the trades they have executed in Frankfurt, they can do that by just (sending) those trades to us .... That's a contractual arrangement that's not voted on by (our) shareholders.

The second part of what we're doing is a corporate realignment. Today, we are a Delaware corporation with 87 shareholders and \$192 million in capital. We also have no guarantee fund, and collect, of course, original margin. Following the corporate realignment (with Eurex), we will be a capital corporation of \$100 million, with a guarantee fund and original margin. The target is \$100 million in capital, and that will include a \$15 million investment from Eurex.

We are also inviting all of our shareholders to remain with us. If they do, we'd have capital substantially in excess of \$100 million. But we're also giving our shareholders the opportunity to sell back to us shares in The Clearing Corporation. So a shareholder can sell back as many shares as they own, up to 150. By selling back up to 150 shares, if everyone did that – and we don't think they will – our capital would then be about \$100 million. We'd have \$85 million from our shareholders and \$15 million from Eurex. We'd be a regular, traditional, modern corporation – based on a 'one-share, one-vote' model.

*GRR:* What are the primary benefits of the Eurex deal, from a clearing perspective. Do you already have netting agreements in place that will significantly reduce collateral requirements for your clearing members? And if you provide netting or cross-margining, how is that process going to work?

*Dutterer:* We will be providing clearing and settlement for Eurex's US marketplace. And Eurex will use the clearing engine they have currently licensed to the CBOT ... to trade US Treasury products. We are hooked to all of the firms that are trading that product today. So there are simply no costs and no additional work involved for the firms to be hooked up to the Eurex exchange in the US.

We will also clear the Eurex (Frankfurt) products and the (Eurex) US products, and we will provide a portfolio margining between those products, which will substantially

reduce the margining requirements of firms.

So when you say netting, I assume you mean portfolio margining. And that's what we'll do, and that will reduce costs (for clearing firms). Obviously, netting of the contracts – the buy and sell – would occur almost automatically.

*GRR:* In terms of other organizations you clear for today, such as BrokerTec and the Merchants Exchange, are you going to provide netting between the those markets and Eurex?

*Dutterer:* We don't do that now, and we would not do that, unless the marketplace asks us to.

*GRR:* So you have not seen much demand for netting for instruments traded on different exchanges, from your clearing firm customers, thus far?

*Dutterer:* No, because (the range) of products traded (on the markets we clear for) are fairly wide. CMX wants to trade metals, but they have not started yet. They're going to start (trading) in November. ChemConnect (trades) chemical products. The Merchants Exchange is trading a small amount of energy products. We only process for BrokerTec, which trades Treasury contracts .... So we have not seen (much demand) for (cross-market) netting, because these markets are just starting (and) their products don't really lend themselves to that.

*GRR:* After you officially take on your new identity at The Clearing Corp., your guarantee function will be outsourced to a separate clearing fund. Consequently, you will no longer require customers you do business with to also maintain stakes in your organization. Can you provide specific details about the separate fund your setting up to handle the guarantee function, and explain the impact this will have on customers?

*Dutterer:* The Clearing Corporation today has capital, but no guarantee fund. And all of our capital backs the transactions. In our new, modern approach to this, we will have capital as an enterprise, or as a regular company, and then we'll also have a guarantee fund. We're sort of splitting those two things, if you will. Guarantee funds are very common – the Options Clearing Corp. has one and the

Chicago Mercantile Exchange has one, as well as the New York Mercantile Exchange and London Clearing House. It's very common to have a guarantee fund – and we simply didn't have one before. So we're really moving to a traditional corporate structure with the guarantee fund.

*GRR:* What kind of benefits does the guarantee fund provide for clearing members?

*Dutterer:* Are you talking about the clearing participants or their customers?

*GRR:* The clearing participants.

*Dutterer:* By splitting (the guarantee fund) from the traditional corporate company, the clearing participants than have the opportunity to invest in the corporate company – or not. We can have someone who is a clearing participant and not an equity holder, or someone who is an equity holder and not a clearing participant.

*GRR:* Do you currently clear any OTC products? And, if so, do you currently net exchange-traded futures with OTC positions?

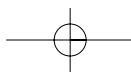
*Dutterer:* At this moment, we do not clear OTC products. We will be providing clearing for ChemConnect for some OTC-type products. But we don't net any of those against futures. For one thing, we're not clearing any OTC products today. But I don't know that they lend themselves to netting with exchange-traded futures.

*GRR:* Do you have any plans for clearing additional OTC products in the future?

*Dutterer:* No. Our focus right now is on our corporate realignment, as well as preparing for the clearing of Eurex (products) in the US and Europe.

*GRR:* Are there any clearing trends that you see emerging in 2004 and beyond?

*Dutterer:* No, I don't see anything I would call a trend. There are some obvious things. Technology, for example, is substantially enhancing the flexibility of member firms. 10 years ago, there was a hue and cry that you should have one clearinghouse for the whole world. But with technology today, you don't really need that, because firms can tie in and interact with clearinghouses through technology. ■



# Tricky Business: Measuring Risk and Return

Asset managers use a variety of formulas to calculate portfolio risk and return. Leveraging data obtained from the largest asset managers in South Africa, **Gary van Vuuren, Marius Botha** and **Paul Styger** explain and analyze key portfolio measurement techniques.

Portfolio managers and risk practitioners have always required accurate and reliable risk and return measures, but in today's highly competitive financial world those requirements have become even more onerous. The few equations used to quantify these components have concise definitions, unburdened by the mathematical complexity that plagues many other areas of finance. Despite this relative simplicity, risk and return measures are often misunderstood and incorrectly implemented, especially when scaling in time is involved, and in situations where combinations of risk and return are required such as the Sharpe and Appraisal (or Information) Ratios. A better understanding of the *fundamental* nature of both risk and return measures helps clarify these misunderstandings, and paves the way towards improved accuracy.

This article initially explores the assumptions behind risk and return measures, and then extends standard, single-period definitions to embrace longer-term ones. This approach exposes the little-known intricacies of scaling in time, to which these measures are subject. After establishing these subtleties, we then explore various quantities that involve either or both measures to ascertain the effects of the differential scaling.

## Calculating Risk and Return

The fundamental archetype of asset price dynamics is the random walk with drift model. Portfolio prices,  $P_t$ , are assumed to follow this process, namely:  $P_t = \theta P_{t-1} + \sigma \varepsilon_t$  where  $\theta$  is the growth in period  $t$  and the disturbance term,  $\varepsilon \sim \text{IID}, N(0,1)$ , is identically and independently distributed (JP Morgan, 1996). The white noise process,  $\varepsilon_t$ , has an expected value  $E[\varepsilon_t]$ , constant variance ( $\sigma^2 \neq \sigma^2(t)$ ) and is uncorrelated with any past values of  $\varepsilon_t$ .

Most, if not all, South African asset managers rely on monthly return data for use in the estimation of both portfolio risk and return. Portfolio pricing on a weekly and daily basis is possible, of course, but these data are not generally available for public perusal outside an analyst's specific investment house. *Monthly* prices and returns are, however, reported and widely available – and form the

basis of the results presented here. (The analysis discussed in this article was also performed on weekly and daily price data [for the authors' investment house] and identical results were found.)

Monthly returns are determined using:

$$r_t = \frac{P_t - P_{t-1}}{P_{t-1}} \quad (1)$$

where  $P_{t-1}$  is the value of the portfolio in the  $(t-1)^{\text{th}}$  month and  $P_t$  the value in the  $t^{\text{th}}$  month.

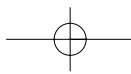
Monthly portfolio risk (or volatility),  $\sigma$ , is almost invariably<sup>1</sup> calculated using the following well-known, equally-weighted standard deviation formula from statistical theory:

$$\sigma = \sqrt{\frac{1}{T-1} \sum_{t=1}^T (r_t - \bar{r}_a)^2} \quad (2)$$

where  $T$  is the total number of monthly portfolio returns used in the calculation,  $r_t$  is the  $t^{\text{th}}$  month's portfolio return and  $\bar{r}_a$  is the arithmetic mean<sup>2</sup> of these returns over  $T$  months (Alexander, 1997). For statistical significance, it is usually considered inadvisable to use less than three years, or 36 months, of returns in this calculation (Investopedia, 2001a; Ginns, 2003), and it has been implicitly assumed that the distribution of returns is normal. This is not necessarily always the case, as *market* returns are known to exhibit thin waists and fat tails – i.e., they are generally leptokurtic. Our analysis of *portfolio* returns showed a far greater degree of normality – i.e., kurtosis was  $\approx 3$  in most cases and skewness  $\approx 0$  (and confirmed using the Jarque-Bera test for normality [Cromwell, 1994; Trapletti, 2003]). For the purposes of this article, therefore, normal distributions of returns have been assumed in the mathematical exposition.

The interpretation of the monthly risk measure is straightforward. Since  $\sigma$  represents, by definition, one standard deviation from the arithmetic mean of the return observations,  $\bar{r}_a$ , approximately 68% of all returns measured over the period concerned will fall between:

$$\bar{r}_a \pm \sigma \quad (3)$$





Note that here and throughout this article,  $\sigma$  refers to the standard deviation of *monthly* portfolio returns.

A database of South Africa's top 20 asset managers' monthly returns – measured over 10 years – was used in this study. In addition, although the availability of international fund manager return data was limited, some were obtained due to the recent acquisition – by South African asset managers – of US-based firms. No difference between local and international results was found.

Figure 1 shows a sequence of 36 months of returns for one particular asset manager for which  $\bar{r}_a = 1\%$  and  $\sigma = 2\%$ . By definition, approximately 68% of the returns fall within  $r_t \in [\bar{r}_a \pm \sigma]$  or  $r_t \in [-1\%, 3\%]$ .

### Scaling Up

The values discussed so far are *monthly* figures, but reporting standards often demand *annualized* values of risk and return quantities. The 'scaling-up' of these risk and return measures is a simple operation, but the interpretation requires a fundamental understanding of the way in which financial quantities scale.

The cumulative portfolio return,  $r_T$ , over any period of  $T$  months, is calculated using the relevant monthly portfolio returns,  $r_t$ :

$$r_T = \left[ \prod_{t=1}^T (1 + r_t) \right] - 1 \quad (4)$$

The geometric average monthly return,  $\bar{r}$ , is measured using:

$$\bar{r} = \sqrt[T]{1 + r_T} - 1$$

or

$$r_T = (1 + \bar{r})^T - 1 \quad (5)$$

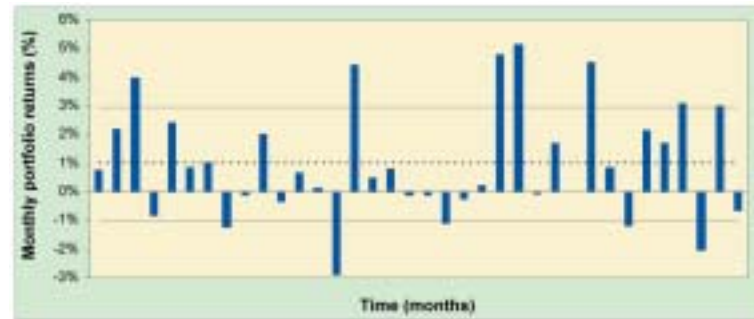
Note that this analysis proceeds from simple returns as calculated in Equation 1. Using continuously compounded returns is also a commonly employed method used to measure returns. The conclusions reached in this study, however, apply equally well to simple and continuously compounded returns<sup>3</sup>.

It can be shown that the one-period forecast error is  $e_1 = r_{t+1} - E[r_{t+1}] = (\bar{r}_a + r_t + \varepsilon_{t+1}) - (\bar{r}_a + r_t) = \varepsilon_{t+1}$  and that  $\text{var}(e_1) = \text{var}(\varepsilon_{t+1}) = \sigma^2$  (Gujarati, 1995). The  $T$ th period variance, therefore, is  $\text{var}(e_T) = \text{var}(\varepsilon_{t+1}) = \sigma^2$  and the standard deviation after  $T$  months is given by:

$$\sigma \cdot \sqrt{T} \quad (6)$$

Extending the definition of Equation (3) and combining Equations (5) and (6) leads to the fact that ~68% of all *cumulative* returns measured over a period of  $T$  months will lie between  $(1 + \bar{r})^T - 1 \pm \sigma \cdot \sqrt{T}$ . These results are summarized in Table 1 on the right, out to two years.

Figure 1



Three years of monthly returns with  $\bar{r}_a = 1\%$  and  $\sigma = 2\%$ . The volatility or risk band (i.e.  $\pm 1$  standard deviation) measured over this period is shown as solid lines on either side of the average arithmetic return – shown as a dotted line – measured over 36 months. Approximately 68% of all returns in this period lie within the solid lines.

### Scaling Down

It is common practice, *in an effort to obtain better estimates of long-run annual returns*, to use 2-year, 3-year or even longer periods of cumulative returns and 'annualize' or 'scale down.' The technique employed is again straight-forward (in fact, it involves determining the geometric average of the data set), but often incorrectly applied. Consider the case in which 24 months of cumulative return data are used to obtain an annual cumulative return.

Using Equation (5) above:

$$\bar{r}_{2y} = (1 + \bar{r}_a)^2 - 1 \quad (7)$$

that is, it is assumed that the geometric average cumulative 2-year return may be calculated using two equal annual returns,  $\bar{r}_a$ . Rearranging Equation (7) gives:

$$\begin{aligned} \bar{r}_{2y} &= (1 + \bar{r}_a)^2 - 1 \\ &= 1 + \frac{1}{1!} \bar{r}_a + \frac{(1)(1)}{2!} \bar{r}_a^2 + \frac{(1)(1)(1)}{3!} \bar{r}_a^3 - 1 \\ \bar{r}_{2y} &= \bar{r}_a + \frac{1}{2} \bar{r}_a^2 + \frac{1}{6} \bar{r}_a^3 \end{aligned} \quad \text{by Taylor expansion}$$

Given that the cumulative rates of return for 'standard' portfolios, even after 2 years, is generally 'small', it is not unreasonable to ignore terms  $\geq \bar{r}^2$ . Hence:

$$\bar{r}_{2y} \approx \bar{r}_a \quad (8)$$

Table 1: Return and risk measured over various periods.

	Monthly	Annual	2-years	After $T$ periods
Actual return	$r_t$	$\left[ \prod_{t=1}^n (1 + r_t) \right] - 1$	$\left[ \prod_{t=1}^{2n} (1 + r_t) \right] - 1$	$\left[ \prod_{t=1}^T (1 + r_t) \right] - 1$
Average return	$\bar{r}_a$	$(1 + \bar{r})^n - 1$	$(1 + \bar{r})^{2n} - 1$	$(1 + \bar{r})^T - 1$
Risk	$\pm \sigma$	$\pm \sigma \sqrt{12}$	$\pm \sigma \sqrt{24}$	$\pm \sigma \sqrt{T}$

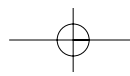
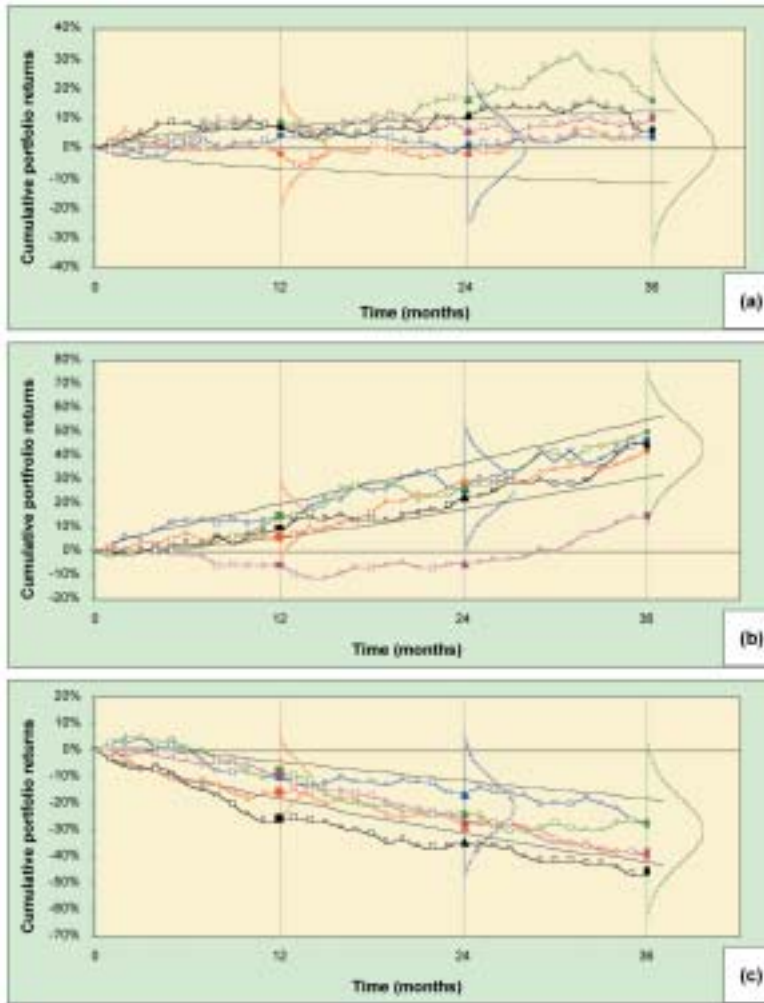


Figure 2



One, two and three years of cumulative monthly returns for five different asset managers with (a)  $\bar{r} = 0$ , (b)  $\bar{r} = +1\%$  and (c)  $\bar{r} = -1\%$ . The monthly standard deviation was measured as 2% in all cases. The volatility or risk band (i.e.  $\pm 1$  standard deviation) is shown (solid lines) evolving over the 36 months according to Equation (4). Closed circles, triangles and squares represent the annual, 2-year and 3-year cumulative returns, respectively. Approximately 68% of relevant returns were found to lie within  $\pm$  one standard deviation, 16% in the region  $r \geq [(1+\bar{r})^T - 1] \pm \sigma\sqrt{T}$  and 16% in the region  $r \leq [(1+\bar{r})^T - 1] \pm \sigma\sqrt{T}$ , as predicted by theory.

Thus, to obtain the geometric average (or annualized) rate of return, simply halve the 2-year rate. But this is not the whole story. Recall from Table (1) that the 2-year cumulative returns fall within the range:

$$r_{2y} \in \left[ \bar{r}_{2y} \pm \sigma\sqrt{24} \right] \text{ (with probability } \sim 68\%)$$

Dividing through by 2 gives:

$$\frac{1}{2} \cdot r_{2y} \in \left[ \frac{1}{2} \cdot \bar{r}_{2y} \pm \frac{1}{2} \cdot \sigma\sqrt{24} \right] \text{ with probability } \sim 68\% \tag{9}$$

and using Equation (8) gives:

$$r_{1y} \in \left[ \bar{r}_{1y} \pm \frac{\sqrt{2}}{2} \cdot \sigma\sqrt{12} \right] \text{ with probability } \sim 68\% \tag{10}$$

However, recall from Table (1) that, in fact, for 1-year cumulative returns:

$$r_{1y} \in \left[ \bar{r}_{1y} \pm \sigma\sqrt{12} \right]$$

Thus, geometric averaging fails to account for the change in the risk profile because of the differential scaling of risk and return. On average, therefore, the range ( $\pm 1 \times \sigma$ ) of 1-year returns estimated from Equation (8) above will be a factor of  $\frac{\sqrt{2}}{2}$  ( $\sim 71\%$ ) times their true range as shown in Figure 3.

Using 36 months of cumulative return data works in a similar way. Proceeding via the same logic as before, it can be shown that  $\bar{r}_{3y} = \frac{1}{3} \bar{r}_{3y}$ , and thus:

$$r_{3y} \in \left[ \bar{r}_{3y} \pm \frac{\sqrt{3}}{3} \cdot \sigma\sqrt{12} \right]$$

yet, according to Table 1, for one-year cumulative returns:

$$r_{1y} \in \left[ \bar{r}_{1y} \pm \sigma\sqrt{12} \right]$$

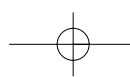
Hence, if three years of monthly data are used then, on average, the range  $\pm 1 \times \sigma$  of 1-year returns estimated from Equation (8) will be a factor of  $\frac{\sqrt{3}}{3}$  ( $\sim 58\%$ ) times their true range, and so on. Figure 4 presents a graphical summary of these results.

### The Sharpe Ratio

The Sharpe Ratio, also known as the risk-adjusted rate of return (Sharpe, 1966, 1975, 1992, 1994 and Investopedia, 2001a), is calculated using:

$$\text{Sharpe Ratio} = \frac{E(r_T) - r_f}{\sigma\sqrt{T}}$$

where  $r_T$  is the cumulative portfolio return measured over  $T$  months,  $r_f$  is the cumulative risk free rate of return measured over the same period and  $\sigma$  is the monthly portfolio volatility (risk). Here arises the situation where a combination of risk and return are manifest in the same equation, with each factor scaling differently in time. As long as the correct measures are used (i.e., 1 year of cumulative returns with 1-year volatilities, 2 years of cumulative returns with 2-year volatilities, and so on), the values obtained for this ratio will be valid. Scaling backwards using more than one year's worth of return data to obtain



annual values will consistently underestimate the Sharpe Ratio.

The Information Ratio

The Information Ratio, or Appraisal Ratio, is defined as the quotient of the active return and the active risk where *active* refers to the fact that this is a measure relative to a given benchmark (Investopedia, 2001b). It is similar in form to the Sharpe Ratio, but for the fact that both risk and return are measured relative to a benchmark. Thus

$$IR = \frac{\overline{\left[ \prod_{t=1}^T (1 + (r^p - r^b)) \right]} - 1}{\left( \frac{1}{T-1} \sum_{t=1}^T ((r^p - r^b) - (r^p - r^b))^2 \right)^{1/2} \cdot \sqrt{T}}$$

where  $r^p$  is the portfolio return,  $r^b$  the benchmark return and the overbar indicates the mean of the relevant quantities. Again, a combination of risk and return occurs in the same equation, and, again, caution must be exercised when scaling these quantities. The Appraisal Ratio is used extensively in asset management to ascertain value added by portfolio managers. Failure to account for differential scaling produces, on average, *smaller* Appraisal Ratios than those actually attained.

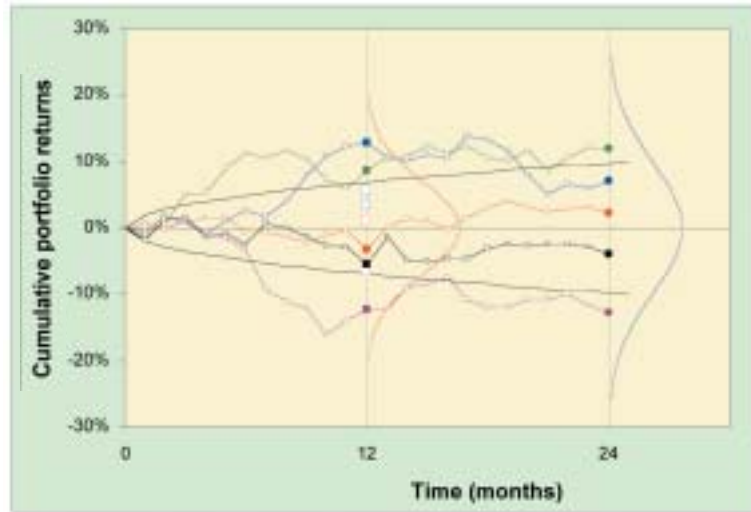
Conclusion

The equations that are employed to determine risk and return are neither complicated nor difficult to implement, and are commonplace in the asset management arena. Despite this simplicity, these measures are sometimes misunderstood at the basic level, and thus incorrectly implemented when scaling in time is required. A good understanding of the *fundamental* nature of both risk and return measures helps clarify these misunderstandings and prevents this confusion. ■

Notes

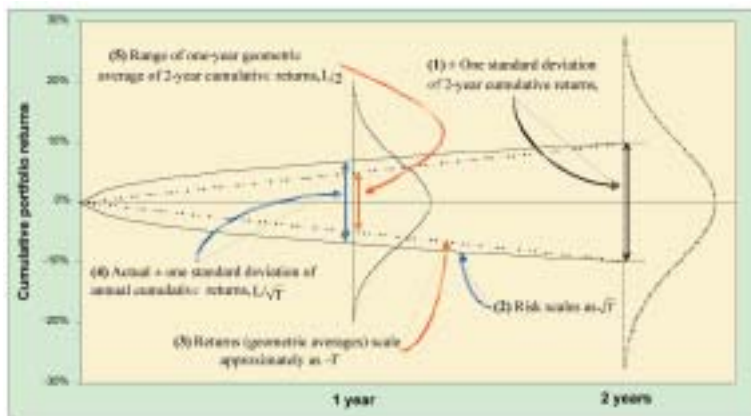
- Several alternative methods to estimate the volatility exist (e.g., the exponentially weighted moving average technique, GARCH, etc). We have concerned ourselves here only with the standard, 'equally weighted' technique.
- Recent work (Hallerbach, 2003) highlights the cross- and auto-correlation problems that arise from averaging returns. It is well known that averaging introduces spurious autocorrelation effects in the first differences of the data series. Hallerbach's paper presents a method to filter these correlation components from the averaged series. These findings require further investigation, but could indeed resolve some of the issues discussed in this article.
- Consider  $T$  months of continuously compounded monthly returns,  $r_t$ . By definition, the total return over  $T$  months is  $R = \sum_{t=1}^T r_t$ . If  $\bar{r}$  is the average monthly return, Equation 5 becomes (for this case)  $\bar{r} = R/T$ . Equation 7 becomes  $\bar{R} = 2\bar{r}$ , i.e., the average 2-year rate is exactly double the average 1-year rate. This is a key point: continuously compounded average returns scale *exactly* linearly, not *approximately* linearly using Taylor expansion as in the case for simple returns. In the analysis that follows in the article, we show that  $\bar{R} \approx 2\bar{r}$  using the Taylor series on simple returns, while using continuously compounded returns we obtain  $\bar{R} = 2\bar{r}$ . The returns in Figure 4 scale only approximately with  $T$ , while the continuously compounded ones scale exactly with  $T$ .

Figure 3



One and two years of cumulative monthly returns for 5 different asset managers with  $\bar{r} = 0$  and  $\sigma = 2\%$ . The risk band is again shown evolving in time over the 24 months. Closed squares and circles represent the annual and 2-year cumulative returns, respectively. Open squares represent annualized (scaled-back) returns calculated from the 2-year values (closed squares) using Equation (8). Although only five data sets are shown here, of all the sequences studied it was found that, on average, the width (range) of the open squares (i.e.,  $r_{1y}$  [calculated]) was a factor of  $\frac{\sqrt{2}}{2} = 0.71$  times the range of the closed squares (i.e.,  $r_{1y}$  [measured]) as predicted by theory.

Figure 4 Graphical explanation of theory in the text



## PORTFOLIO RETURNS

## ASSET MANAGEMENT

are aware that the majority of fund managers and consultants use simple returns, however, hence the analysis in the article.

- 4 It is important to note that the claim here is that (from Equation (8))  $r_{i,t} = \mu_i + \sigma_i \epsilon_{i,t}$  and *not* that  $r_{i,t} = \mu_i \pm \sigma_i$  as might seem to be implied from Equations (9) and (10). Note that it is the *range of possible returns* that fall within  $\pm$  one standard deviation from the mean to which we refer in these equations, *not* that  $r_{i,t} = \mu_i \pm \sigma_i$ .

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## Liquidity Risk Management Survey

**GARP** has joined the Center for Entrepreneurial and Financial Studies of the Technical University of Munich, Dr. Christian Kronseder of CSFB and Dr. Heinz R. Kubli of Sensalis to launch a survey about Liquidity at Risk. GARP members are invited to participate.

Current methods to manage liquidity risk are based on different derivations of gap analysis. Gap analysis is largely scenario based and does not quantify the probability of liquidity risk events to crystallize. There is a need for a liquidity risk management framework that is complementary to scenario-based techniques. Some VaR-like methods have been published recently but there is no common standard and many questions remain to be answered. This survey aims to analyse the current status of risk management tools that are available and used. It aims to understand which management frameworks are used especially for the end of day positions a company has. Thus, its goal is a comprehensive review of current practice and to gather views on how to integrate liquidity risk in an existing risk management framework.

For further information and to participate in the survey go to:

<http://www.sensalis.com/liquidity.html>

or contact **Seana Lanigan** at [Seana.lanigan@garp.com](mailto:Seana.lanigan@garp.com) or +44 (0) 20 7626 9302.



# UK Fund Managers: Ignoring Derivatives Investment Risk?

Earlier this year, Warren Buffett described derivatives as “financial weapons of mass destruction.” And there certainly is a long history of well-publicized derivatives disasters – including misuse at Barings Bank and Proctor & Gamble. But a recent survey suggests that in spite of these warnings, UK fund managers still do not take much interest in the way the companies in which they invest use derivatives. Fund managers, however, claim the survey’s findings are flawed. **Emily Saunderson** examines the results of the survey, and asks whether they are a cause for concern.

Many UK fund managers have a woeful lack of awareness and understanding of derivatives use at the companies in which they invest, according to a recent survey dubbed “Derivatives Disclosure and Corporate Governance: A Fund Management Perspective.” The September 2003 survey concludes that fund managers are not overly concerned with the financial risk management practices of the companies they pump capital into. Rather, they place great emphasis on the strategic and operational activities of these companies.

While fund managers say the survey’s findings are broadly representative of the approach they take to derivatives, they suggest it misunderstands the relationship between shareholders and the companies in which they invest. It is the job of company directors to police their investments and ensure that they maintain proper risk controls, fund managers say. They also point out that derivatives disclosures by companies are still generally opaque, despite the evolution of more stringent reporting standards. And besides, they say, it would be a waste of time to examine disclosures closely – because they are usually out of date by the time a company makes them.

The survey – which was conducted by Chris Mallin and Kean Ow-Yong from the Birmingham Business School and Theresa Dunne and Christine Helliard from the University of Dundee – was based on interviews with 15 large institutional investors in the UK. Funded by the Institute of Chartered Accountants in England and Wales, the survey examines the impact of the UK’s Financial Reporting Standard 13 (FRS 13).

Effective since 1999, FRS 13 requires entities with publicly-traded capital instruments and all financial institutions – with the exception of insurance companies – to give sufficient narrative and numerical disclosures about their use of derivatives and other financial instruments.

The survey’s most startling findings include a number of

misconceptions fund managers have about risk management processes and derivatives use at the firms in which they invest. For example, one UK manager interviewed for the survey said his firm thinks risk “is important,” but does not factor in the “actual impact of derivatives” when assessing risk.

## No Documentation Needed

While most fund managers consider a firm’s risk management when making their investment decisions, according to the survey, none had ever asked to see documented risk management policies. One fund manager said that while a company’s financial risk management was taken into consideration, it was not seen as crucial. Another said: “We don’t look specifically at a company’s hedging policy ... (but) we do look at the type of decisions management take on these sorts of issues as an indication of the quality of management.”

In fact, the fund managers interviewed for the survey did not generally place importance on either the amount of hedging a company carries out or the products it uses to manage its financial risk. Two fund managers even suggested that the completeness of company disclosures was less of an issue to them because of the ‘quality’ of their investments – suggesting, the survey said, that these issues are of less concern for holdings in larger global companies.

It is perhaps worth noting that before its calamitous demise, Enron was at one point the seventh-largest company in the US – so perceived ‘quality’ is not necessarily a sign of a healthy balance sheet. That said, several fund managers are keen to point out the survey’s shortcomings. “There is usually a huge gap between academic studies and financial market reality, and this is no exception,” says one UK-based analyst at a US fund-management firm. “For a start, you cannot really talk in such generalities about the approach fund managers take to the derivatives exposure of all companies. For example, we might look more closely at a bank’s derivatives use than that of an industrial company, simply because deriva-

"This survey apparently misunderstands the relationship between institutional investors and the firms in which they invest."

IMA's Julie Patterson



"One key way to mitigate the risk... is to hold a diversified portfolio."

JPMorgan Fleming's  
Michael Hughes



tives would account for a larger part of a bank's business."

Additionally, the sort of information that would indicate an imminent Barings Bank-type derivatives disaster could not be found in any publicly-available disclosures, the analyst explains. And fund managers can only examine publicly-available information, the analyst elaborates, because they would otherwise be open to a charge of insider trading.

"This survey apparently misunderstands the relationship between institutional investors and the firms in which they invest. A regulated company necessarily has audit, compliance and risk management functions, which help ensure the company uses derivatives responsibly. It is ridiculous to suggest that fund managers should ask for all the internal documentation to evidence these processes," says Julie Patterson, director of regulations, operations and tax at the UK's Investment Management Association (IMA).

Moreover, funds rarely have massive holdings in a single firm, so they usually cannot control companies to the extent that they could influence risk management policy at the detailed level, she says.

The diversity of a fund's holdings also helps the fund deal with any potential risk management or derivatives-related problems at a company in which it is invested. "One key way to mitigate the risk ... is to hold a diversified portfolio," says Michael Hughes, product manager in the UK and European equity group at JPMorgan Fleming in London. "Our core European equity fund , [for example], contains over 250 stocks, so problems with individual stocks have far less impact on our overall portfolio."

Even the firm's most concentrated funds tend to have over 80 stocks. But in funds with fewer stocks, Hughes concedes that fundamental research would be the only way to find out about a firm's derivatives use and its risk management policies.

Recent initiatives to improve derivatives reporting, such as International Accounting Standard 39 and Financial Accounting Standard 133, may eventually improve the quality of derivatives disclosure. Thus far, however, the UK's FRS 13 has attracted criticism from industry commentators for being unclear.

"At the moment there is little consistency about the way different types of companies value derivatives, so it is difficult to compare standards .... That is another reason investors do not focus on derivatives disclosure," says an equity analyst at a European investment house. For example, if a department store entered into an interest-rate swap

with a bank, the bank may mark the position to market. The store, on the other hand, would use accrual accounting, netting off any gains or losses against other assets and liabilities. So the same instrument might have an apparently different value, depending on whether you looked at the bank's or the store's accounts, the analyst explains.

"Disclosures about the financial controls and pricing related to derivatives are certainly not all they might be, and we are working with national and international standard setters to improve financial disclosure. But at a basic level, internal controls are a matter for company directors; shareholders do not manage companies," says Patterson.

#### Complex Disclosures

The complexity of companies' disclosures about derivatives is one of the main reasons fund managers do not focus on this area for investment decisions. "The information you get about derivatives from the public accounts is not usually understandable. Even if you can understand it, the information will probably be out of date by the time you read it, because the value of the instruments will have changed by the time the accounts are agreed and published. So the information is irrelevant," the European analyst explains.

But publicly available accounts can at least provide clues about a firm's activity in the derivatives markets. "Gains and losses in derivatives can show up as swings in other areas," the analyst adds. "For example, huge profits or losses in the trading book might indicate strong derivatives use, and we would usually ask a company to explain those figures."

Given that fund managers might have a one-hour meeting once or twice a year with a firm in which they invest, they will not set out to ask specific questions about the company's hedging program, says another analyst. "We would ask more general questions, such as how a certain rise in the value of the dollar would impact their business. And that may lead to a discussion about their hedging policy. But we wouldn't start a meeting with a question about their forward foreign-exchange positions," he says.

So while fund managers may not make detailed inquiries into a company's derivatives use before they decide to invest in it, they do make the most of the intelligible information available to them. And there is general agreement among the analyst community that until regulators develop company reporting guidelines that require firms to make comprehensive disclosures about their derivatives use, there is nothing more fund managers can do. ■

# Illiquid Securities: A Challenging Risk Environment

Managing risk arising from illiquid securities is no easy task for mutual funds and institutional investors. **Kai D. Leifert** explains the potential pitfalls of illiquidity and outlines a plan for integrating an optimal liquidity risk management process.

“Liquidity Risk: The risk stemming from the lack of marketability of an investment that cannot be bought or sold quickly enough to prevent or minimize a loss. Usually reflected in a wide bid-ask spread or large price movements.”

This is one of many definitions regarding liquidity risk in today’s literature. Liquidity – or the lack thereof – is probably the type of risk that has traditionally received the least focus. Ironically, however, liquidity risk has typically inflicted the greatest damage at asset management firms. Consequently, understanding the liquidity of a portfolio is a critical component of effective risk management on the buy side.

Whether you are investing for institutional clients or managing a mutual fund, you will face situations where you will find yourself holding illiquid securities in those portfolios. In those situations, the key question is: Can your risk management department detect those securities? This turns out to be the most important question of the whole risk management process. Before we delve into how to manage and report risk on illiquid securities, let’s first take a look at some indicators. You may be holding an illiquid asset if the security you are trading displays any of the following characteristics:

- Bid/Ask spreads are wide and tighten rarely.
- The size of a portfolio position is high compared to an average trade volume of that security.
- Securities have had an (positive or negative) impact on the fund NAV already.

If prices remain unchanged for several days, that may be yet another indicator of illiquid securities.

However, the best information you receive usually comes from either the portfolio manager or a broker. Therefore, building a risk management framework effects multiple departments within any given firm. Nevertheless, you have to provide incentives to extract necessary information from other parties.

## Liquidity Management: A Five-Point Plan

Five steps can lead to effective risk management of illiquid securities:

1. Identify a list of securities that you think are illiquid. Once you are able to set up a list of securities, you can begin to care about those investments.
2. Ask whether the current pricing of illiquid securities is adequate. In most organizations, this task remains in the operations department.
3. Set up a ‘pricing committee.’ Instead of relying solely on the operations department for pricing determinations, this committee will integrate operations personnel, portfolio managers, compliance officers and other risk management staff. The task of this group is to either confirm or reject prices of securities placed on the illiquid asset list. Afterwards, they will draw conclusions and make recommendations to portfolio management. This will ensure proper handling of illiquid assets and corresponding risk management activities.
4. Make things happen. This might sound like one of the easiest tasks, but remember that portfolio managers might be reluctant to sell on someone else’s behalf. Therefore, awareness of the risks you bear, holding illiquid assets, is essential. Sometimes it might help to

“Always remember, liquidity risks can arise at any stage of your investment process. Implementing proper risk management processes can protect you against losses. ”



## LIQUIDITY RISK

## ASSET MANAGEMENT

Illiquid securities exist in all markets, even on the floors of exchanges, such as the one depicted below



calculate loss scenarios, showing the effect illiquid assets can have on the fund's NAV and the corresponding performance.

5. Monitor the pricing committee's recommendations and report its results to senior management. It is important to bring this up on your agenda every month, to enhance awareness on the senior management level.

### Risk Reporting

The above thoughts lead us to the following question: What are the right measures to report risks of illiquid assets to your risk committee? On the one hand, risks are greater the greater the volume of illiquid assets is within a single fund. Therefore, a proper indicator could be the number of funds, where illiquid assets comprise more than 5% of the fund's total net assets (TNA). On the other hand, to receive an aggregated view, one can also report the total AuM a fund manager holds in illiquid assets.

Usually, you will realize that the longer you hold an illiquid asset, the greater your risk will be. Due to a lack of correct pricing information, the value of an illiquid asset will differ more and more from its actual valuation in the fund over time.

An additional source of risk can come from fund management in foreign currencies. Often, these kinds of assets are even more exposed to the risk of liquidity. Therefore, one might report the total amount of illiquid assets traded in foreign currencies as another key risk indicator.

Since the head of portfolio management has to decide whether he or she wants to follow the pricing committee's recommendation, those actions must be part of the risk

officer's report. Senior management therefore has the final decision on how to deal with the firm's liquidity risk.

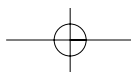
Earlier, I mentioned that identification of illiquid assets is the crucial step to set up an efficient risk management process. However, trying to implement the above thoughts, in practice, could lead to some problems. Obviously, fixed income securities are more exposed to liquidity risk than most equity securities. However, for equity securities, data gathering turns out to be most difficult.

Even if you have quite a few different data providers, you still might not be able to receive correct bid/ask spreads for illiquid securities. Therefore, implementing a completely automated procedure for identifying illiquid assets is impossible in practice. Most asset managers have to collect data manually and investigate which prices are most correct in the current market environment. This makes it very difficult, if not impossible, to confirm the completeness of the list you set up.

Always remember, liquidity risks can arise at any stage of your investment process. Implementing proper risk management processes can protect you against losses. However, you can never capture every illiquid asset in your portfolio – due to manual processes that arise from a lack of data. Capturing indicators for illiquid assets is one way to receive information. Another way is to include subjective considerations and portfolio manager's comments in your framework. Integrating illiquid assets into a general risk report will enhance senior management awareness, and ensures that portfolio managers follow recommendations made by a pricing committee. ■

Kai D. Leifert, regional director of GARP's German chapter, is the Head of Risk Management at Credit Suisse Asset Management.





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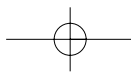
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## PROGRAMME AT A GLANCE

### CONVENTION DAY ONE: TUESDAY, FEBRUARY 24, 2004

07:30	Delegata Registration			
08:30	Opening Remarks: <b>Richard Apostolik</b> , President & CEO, GARP			
08:40	<b>GARP Board of Trustee Forum</b> ■ <b>Bill Martin</b> , Global Head of Investment Risk, <b>INVESCO Asset Management</b> & Chair, GARP Board of Trustees ■ <b>Riccardo Rebonato</b> , Head of Group Market Risk, <b>Royal Bank of Scotland Group</b> ■ <b>Michael Hofmann</b> , Chief Risk Officer, <b>Koch Industries</b> ■ <b>Prof. Peter Tufano</b> , Sylvan C. Coleman Professor of Financial Management and Senior Associate Dean, <b>Harvard Business School</b>			
09:20	Inaugural Address: <b>The Honorable Jaime Caruana</b> , Governor, <b>Banco de España</b> & Chairman, <b>Basel Committee on Banking Supervision</b>			
10:00	Reinventing Risk Management <b>Amy Woods Brinkley</b> , Chief Risk Officer, <b>Bank of America</b>			
10:40	Morning Coffee			
11:10	<b>LATEST MARKET RISK MANAGEMENT TECHNIQUES</b> <i>Developing a framework for stress testing</i> <b>Joseph Masri</b> , Head of Market Risk, North America, <b>ABN Amro</b>	<b>BASEL II &amp; CREDIT RISK</b> <i>Implementing a rating methodology that adds economic value to the firm as well as being Basel II compliant</i> <b>Philip Lofts</b> , Chief Credit Officer, Americas, <b>UBS</b>	<b>BASEL II, SARBANES-OXLEY &amp; OPERATIONAL RISK</b> <i>Operational Risk and Sarbanes-Oxley - complying with the latest operational risk requirements, quantification methods and procedures</i> <b>Roger Cole</b> , Associate Director, Division of Banking and Regulation, <b>Federal Reserve Board</b> and Chairman, Risk Management Group, <b>Basel Committee on Banking Supervision</b>	<b>ALM TRACK</b> <i>Basel II and beyond: the strategic issues</i> <b>Brandon Davies</b> , Head of Market Risk, <b>Barclays Bank</b> & Member, GARP Board of Trustees
11:45	<i>Flexible risk analysis</i> <b>Senior Representative, Barra</b>	<i>Combining quantitative and qualitative data for internal ratings based approach under Basel II</i> <b>Dr. Sebastian G. Fritz</b> , Head of Risk Analytics & Instruments, Credit Risk Management, <b>Deutsche Bank AG</b>	<i>Sarbanes-Oxley, Six Sigma and Basel II - leveraging your efforts</i> <b>Rob Ceske</b> , Chief Risk Manager, <b>GE Corporate Treasury</b> & Member, GARP Board of Trustees	<i>Anatomy of current issues in the global pension system</i> <b>Ronald Gebhardt</b> , Senior Pensions Fellow, <b>American Academy of Actuaries FSA, FCA, EA, MAAA, MSPA, Lawrence Johansen</b> , Actuary, <b>New York State Teachers' Retirement System, EA, FCA, MAAA, MSPA, ASA Mike Sze</b> , President, <b>Sze Associates Ltd FSA, FCIA, EA, Bryan Boudreau</b> , Executive Director, <b>Cross Shore Capital Management LLC FSA, FCA, EA, MAAA</b>
12:20	<i>Liquidity adjusted VaR - an alternative measure of market risk</i> <b>Victor Ng</b> , VP, Head of Risk Modeling, Firmwide Risk, <b>Goldman Sachs</b> & Member, GARP FRM Committee	<i>Internal ratings, economic capital, and the role of market based stress tests</i> <b>Chris Lewis</b> , Managing Director, <b>Fitch Risk Advisory</b>	<i>Effectively developing internal models for capital allocation of operational risk</i> <b>Huib ter Haar</b> , Head Of Operational Risk, <b>ING Group NV</b>	
12:55	Lunch	Lunch	Lunch	Lunch
14:10	<i>How to design and implement a regulatory-compliant VaR backtesting framework</i> <b>Eduardo Epperlein</b> , VP, Head of Market Risk Analytics, <b>Citigroup</b>	Session tbc	Session tbc	<i>Uniform capital requirement for financial institutions.</i> <b>Allan Brender</b> , Senior Director, <b>Actuarial Division, Office of Superintendent of Financial Institutions of Canada, FCIA, FSA, PhD Stuart Wason</b> , Chair, <b>International Actuarial Association's Working Party on Insurer's Solvency Assessment</b> & Managing Director, <b>Mercer Oliver Wyman: FCA, FCIA, FSA, MAAA</b>
14:45	<i>VaR in an equity-credit hybrid framework</i> <b>Dr. Marcus Overhaus</b> , Managing Director, Global Head of Quantitative Research, <b>Deutsche Bank AG</b>	<i>Risk ratings – consistency and validation</i> <b>Michel Araten</b> , Sn VP, Head of Capital & Portfolio Management, <b>JPMorganChase</b>	<i>Effective operational risk governance – deciding on and effectively combining top-down and bottom-up approaches to operational risk</i> <b>David Keenan</b> , Global Head of Operational Risk, <b>Barclays Capital</b>	
15:20	<i>Measuring risk on non-traded books</i> <b>Ken Abbott</b> , Managing Director, Head of Market Risk for Western Hemisphere, <b>Bank of America</b> & Member, GARP Board of Trustees	<i>Questioning the unquestionable: the limits of statistical analysis in risk management and strategic decision-making.</i> <b>Riccardo Rebonato</b> , Head of Group Market Risk, <b>Royal Bank of Scotland Group</b> & Member, GARP Board of Trustees	Session tbc	<i>ALM in light of time horizon considerations</i> <b>John Brierley</b> , Senior VP & Corporate Actuary, <b>RBC Insurance, FCIA, FSA</b>
15:55	Coffee Break	Coffee Break	Coffee break	Coffee Break
16:25	<i>Reducing economic capital requirements on traded and non-traded books using most appropriate methodology under Basel II</i> <b>Edward Dumas</b> , Global Head of Market Risk Analytics, <b>FleetBoston</b>	<i>Establishing an effective internal ratings based approach through a work flow management system</i> <b>Gert-Jan Sikking</b> , Head of Research, <b>NIB Capital</b> & GARP Regional Director, The Netherlands	<b>LATEST OPERATIONAL RISK MEASUREMENT &amp; MANAGEMENT TECHNIQUES</b> <i>Assessing the feasibility and practicality of using market and credit risk measurement and management techniques and models for operational risk measurement and management.</i> <b>Frank Weidner</b> , Managing Director, Global Head of Operational Risk Management, <b>Dresdner Kleinwort Wasserstein</b>	<i>ALM in action – practical case study of a life insurer</i> <b>Peter Kandl</b> , Head of Risk Management <b>SwissLife</b> PhD, FRM &, GARP Regional Director, Zurich
17:00	Session tbc	<i>Managing exposure through effective measurement and hedging – overcoming the potential exposure gridlock</i> <b>Robert Scanlon</b> , Global Head of Credit Risk for Emerging Markets, <b>CSFB</b> & Member, GARP Board of Trustees	<b>17:00 Modeling, measuring and hedging operational risk.</b> <b>Marcelo Cruz</b> , CEO, RiskMaths & Member, GARP Board of Trustees	<b>17:00 Latest on actuarial ALM Initiatives</b> <b>Charles Gilbert</b> , Chair, <b>Society of Actuaries ALM Principal Task Force</b> & President, <b>Nexus Generations FSA, FCIA, CFA</b>
17:35	<i>Quantifying and managing prepayment risk within a book of UK residential mortgages</i> <b>Sharon Sasson</b> , Head of Analytics, <b>Barclays Bank</b>	<i>The impact of correlation risk on credit default</i> <b>Jahangir Sultan</b> , Founding Director, The Hughey Center for Financial Services, <b>Bentley College</b>	<b>17:35 Embedding operational risk management within the business</b> <b>Mike Constantinou</b> , Head, Group Operational Risk, <b>Barclays Bank</b>	
18:10	FRM Awards & Evening Reception	FRM Awards & Evening Reception	FRM Awards & Evening Reception	FRM Awards & Evening Reception

## PROGRAMME AT A GLANCE

## CONVENTION DAY TWO: WEDNESDAY, FEBRUARY 25, 2004

08:30	Delegate Registration			
08:50	Chairman's Opening Remarks			
08:40	<b>Keynote Address:</b> <b>The Honorable Susan Schmidt Bies</b> , Member, Board of Governors of the Federal Reserve System			
09:40	<b>Meeting the Challenge of Complexity</b> <b>Lesley Daniels Webster</b> , Executive Vice-President, Global Head of Market Risk & Head of Fiduciary Risk, <b>JPMorganChase</b>			
10:20	<b>Managing Financial Risk in a Global Enterprise</b> <b>James Colica</b> , Senior Vice President, Global Risk Management, <b>GE Capital</b>			
11:00	Morning Coffee			
11:30	<b>MARKET RISK</b> <i>Challenges and approaches to independent verification of prices: the TD experience</i> <b>Chak Raghunathan</b> , Managing Director, Global Head of Market Risk Control, <b>TD Bank Financial Group</b>	<b>NEW ADVANCES IN CREDIT LOAN PORTFOLIO MANAGEMENT</b> <i>Counterparty risk measurement and management – defining the level of exposure and calculating economic capital</i> <b>Evan Picoult</b> , Managing Director, Head of Risk Methodologies and Analytics, <b>Citigroup</b>	<b>OPERATIONAL RISK</b> <i>Using loss data to improve operational risk management – JPMC's experience in analysing internal losses, integrating external data into the effort, and an update on the ORX, the Operational Risk Data Exchange</i> <b>Joseph Sabatini</b> , Managing Director, Head of Corporate Operational Risk, <b>JPMorganChase</b>	<b>ALM TRACK</b> <i>Implication of fair value on asset allocation</i> <b>W. Paul McCrossan</b> , Vice-Chair, <b>International Actuarial Association Committee on Insurance Accounting &amp; Partner</b> , <b>Eckler Partner Ltd FCIA, FSA, HONFFA, HONFIA, MAAA</b>
12:10	<i>Performance measurement and evaluation of internal and external traders</i> <b>Steffen Orben</b> , Global Risk Manager Non-Franchise Trading GFX, <b>Deutsche Bank</b>	<i>Forward-looking measurements of credit portfolio risk: Bank of America's credit option adjusted spread model</i> <b>David Goldman</b> , Managing Director, Head of Debt Research, <b>Banc of America Securities</b>	<i>On deconstructing loss events: using external data as a framework for operational risk self assessment</i> <b>Penny Cagan</b> , Senior Vice President, <b>OpVantage</b>	<i>Fair value of liabilities</i> <b>Max Rudolph</b> , VP & Actuary, <b>Mutual of Omaha FSA, CFA, RHU, FLMI, MAAA</b>
12:50	Lunch	Lunch	Lunch	Lunch
14:00	Session tbc	<i>Using CDS to improve credit asset management</i> <b>Tim Backshall</b> , Director, Credit Markets Strategy, <b>Barra</b>	<b>OPERATIONAL RISK &amp; INTEGRATED RISK MANAGEMENT</b> <i>Implementing a practical and integrated operational risk strategy that uses both qualitative and quantitative approaches – a case study</i> <b>Ammy Seth</b> , Head of Group Operational Risk, <b>HBOS</b>	<i>Economic capitals fundamentals</i> <b>Kamran Quavi</b> , Director, Corporate Actuarial, <b>RBC Underwriting Mgmt Services FCIA, FSA</b> <b>Hubert Mueller</b> , Chair, Economic Capital Group of Risk Management Task Force, <b>Society of Actuaries &amp; Principal, Tillinghast-Towers Perrin FSA, MAAA</b>
14:40	<b>CREDIT DERIVATIVES &amp; THE LATEST SECURITIZATION TECHNIQUES</b> PANEL DISCUSSION – <i>Buffett vs. Greenspan – are derivatives 'an instrument of mass destruction'</i> <b>Jeffrey J. Zavattoni</b> , Senior Managing Director, Co-Head of New York Structured Credit Derivatives, <b>Bear, Stearns &amp; Co.</b> , <b>Joe Rizzi</b> , Managing Director, Head of Structured Products & Trade Finance Group, <b>ABN Amro</b> , <b>Brian Ranson</b> , Executive Managing Director, <b>BMO Money</b>	<i>Effective credit portfolio management – combining portfolio management with loan trading and research groups: Bank One case study</i> <b>James Baldino</b> , Managing Director, Head Credit Portfolio Management, <b>Bank One</b> <b>Kenneth Phelan</b> , Managing Director, Risk Strategy, <b>Bank One</b>	Session tbc	<i>Shadow portfolio construction – benchmarking of contingent liabilities</i> <b>Kenneth Mungan</b> , Principal, Financial Risk Management Practice, <b>Milliman USA FSA, MAAA</b>
15:20	<i>Creative uses of weapons of mass destruction</i> <b>Brian Ranson</b> , Executive Managing Director, <b>BMO Money</b>	<i>Combining the latest structural credit risk models and portfolio analytics</i> <b>Richard Martin</b> , Director, Portfolio Strategy Group, <b>CSFB</b>	<i>Implementing operational risk self-assessment firmwide – addressing cultural challenges, philosophy and attaching a monetary value to operational risk</i> <b>Brenda Boulwood</b> , Head of Market Risk & Head of Department, Operational Risk, <b>Bank One</b>	<i>Quantifying risk exposure of investment guarantees</i> <b>Simon Curtis</b> , VP & Deputy Appointed Actuary, <b>Manulife FCIA, FSA, MAAA</b>
16:00	Refreshment break	Refreshment break	Refreshment break	Refreshment break
16:30	<i>Using credit derivatives and CDOs to mitigate credit risk: risk management or risk?</i> <b>Joe Rizzi</b> , Managing Director, Head of Structured Products & Trade Finance Group, <b>ABN Amro</b>	<b>INTEGRATED RISK MANAGEMENT</b> <i>Integrated risk management – firmwide risk management and challenges to adapting infrastructure, culture and philosophy</i> <b>Kai D. Leifert</b> , FRM, Head of Risk Management, <b>Credit Suisse Asset Management &amp; GARP Regional Director, Germany</b>	<i>Developing and deploying technology to enable an integrated operational risk management framework – JPMC case study</i> <b>Frederick Spencer</b> , Chief Technology Officer, Corporate Operational Risk, <b>JPMorganChase</b>	<i>Calibrating equity return models</i> <b>Mary Hardy</b> , Associate Professor, <b>University of Waterloo FIA, FSA, PhD</b>
17:10	<i>CDOs – effective pricing, rating of tranches and mark-to-market techniques</i> <b>Rob Pomphrett</b> , Global Financial Markets, <b>WestLB AG</b>	<i>A pragmatic approach to the management of enterprise risk across the organisation</i> <b>Fred Bell</b> , Head of Enterprise Risk Assessment and Monitoring, <b>Royal Bank of Scotland Group plc</b>	<i>The lens of risk reporting - consistent, effective and actionable communication</i> <b>Mary Barrow Thomas</b> , Director of Risk Reporting, IT, eCommerce, & Operations Division, <b>Wachovia Corporation</b>	<i>Desirable properties of Risk Metrics</i> <b>Harry Panjer</b> , President, <b>Society of Actuaries; University of Waterloo FCIA, FSA, HONFIA, PhD</b>
	End of Convention	End of Convention	End of Convention	End of Convention

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# Institutional Investors and Their Agents

In the fifth article in a series relating to the lessons learned from experience in the management of the counterparty risk management process within the financial sector, **Hugh Finlay** discusses some of the challenges risk managers encounter when dealing with institutional investors.



The first article I wrote for the *GARP Risk Review* dealt with the topic of hedge funds. When *GRR* Editor Robert Sales advised me that the focus of this edition of the *Review* was to be on asset management, I decided to address the issues arising specifically with the institutional sector.

While definitions vary as to exactly what constitutes an institutional investor, I would classify them as pools of investment where the funds are obtained from the public via direct sales or a subscription scheme. These investment pools are subject to a high level of regulatory oversight. Within the United Kingdom, the institutional sector would include:

**Insurance Funds**  
**Investment Trusts**  
**Pension Funds**  
**Unit Trusts**

This list is obviously a personal choice – some would exclude investment trusts on the basis of their share capital nature and heavy direct retail investment. But I find it amusing that in certain circles such funds are referred to as “real money,” as though other investors are only risking

pretend money. Does that mean their losses are not real, either?

Most GARP members will come across such institutional entities, in a professional context, as clients of their firm. Typically, these clients are acting through a fund manager, seeking to execute transactions that will create or mitigate exposure to a particular security or asset.

When establishing a risk policy in dealing with institutional investors as clients, all the usual hurdles regarding documentation, relationship structure and financial analysis need to be undertaken, tempered with the clear understanding that the underlying source of the funds will ensure that there will be a different level of public response in the event of a problem.

The importance of following appropriate counterparty risk procedures, on the buy side, is probably best illustrated by well-known cases in which an institutional investor has been the recipient of a loss, including:

1. Maxwell Group (various)
2. Deutsche Morgan Grenfell (Peter Young transactions)
3. Merrill Lynch Investment Management (Unilever dispute)

In all the above cases, as far as I am aware, transactions were entered into in good faith, properly documented and executed – but the hue and cry arising from the losses taken by the ultimate investors (individuals) resulted in an unexpected (cost) outcome for the firms involved. While the latter two did not result in a counterparty risk, due to the relatively small size of the cost in relation to the size of their group, the disruption to the collateral process and associated legal position with the Maxwell Group did indeed result in some direct counterparty losses for firms. I expect that in the near future we will be able to add the Hammersmith and Fulham Pension Scheme to the aforementioned list.

Counterparty risk personnel should focus a large part of their attention on the activities of the client, simultaneously examining how that reflects the parameters under which the fund manager or investment controller is operating.

In the last issue of *GRR*, it was heartening to see that Neil Brown – the global head of risk management and product control at Credit Suisse Asset Management – had clearly identified this as a priority. However, the risk management function and its role varies from manager to manager, and the counterparty risk manager should have a clear understanding of how risk is assessed and managed within his client.

### Undisclosed Counterparties

Though I believe it is largely restricted to the UK and US, there is another issue unique to asset management companies: the concept of undisclosed counterparties. An undisclosed counterparty transaction takes place when an asset manager conducts business on behalf of an underlying investor or investors. This has been, and in some cases continues to be, a major source of frustration to risk managers. Having dutifully aggregated all the exposure to a particular entity, to then discover that there is an exposure, under the cloak of an undisclosed counterparty, would be seriously depressing – especially considering the fact that this usually happens under the worst possible circumstances.

Vast sums have been spent in recent years in the development of integrated risk management systems with sophisticated modelling of risk exposure and risk mitigation techniques, all of which are rendered valueless when confronted with ‘as agent.’

In the early and mid 1990’s, I was involved in trying to resolve this issue and there were working groups, regulator-led forums and everything else – short of a Royal Commission. However, the asset managers maintained that they needed to be able to work in this fashion, as a commercial necessity. Moreover, they asserted that if they actually had to disclose who their underlying counterparties were, these clients would remove their funds from the UK.

Over the last ten years there has been a reduction in the number of asset managers who refuse to provide any counterparty disclosure. However, the variation in the level of partial disclosure varies from a code number and a geographical location to full information, provided under confidentiality agreements to risk management personnel.

One incident, in particular, comes to mind in relation to this topic. This occurred when I was having a conversation with the COO of an asset management firm. He explained that of course there would be full counterparty disclosure, pause, in the event that the underlying client defaulted – because this would then be our problem.

An interesting sidebar to this issue is what happens from a money laundering/compliance viewpoint, with

regards to undisclosed clients. I have had this conversation with more than one compliance officer and been advised (with a straight face) that so long as the fund manager is regulated, they have no further responsibility. For some reason, that gives me no comfort at all.

A further complication arises where asset managers are managing funds belonging to groups of investors, including those who are genuinely professional and, in some cases, investors who receive the kind of public attention referred to above. This ‘Russian Doll’ scenario, requiring a level of due diligence above and beyond the norm, is more appropriate the more complex the transactions being undertaken. But even in less complex cases, risk managers should perform ongoing reviews of portfolios that incorporate structured transactions – to ensure that they are within the parameters the asset manager set.

### Reviewing Trustees

The final area that needs to be considered is whether there is a requirement to have a dialogue with the trustees or individuals who control the fund, in addition to the investment manager. In much the same way as corporate boards in recent years have undertaken transactions – or more usually authorised others to undertake them on their behalf and subsequently expressed the view that they were under-informed – pension fund trustees and others may be in the same position.

A legal opinion stating that a transaction was within the legal authority of the fund will carry little weight in the press against the outrage expressed at the loss of an individual’s financial security. In the past I have reviewed the marketing literature for some funds, to establish whether it makes the risk profile of the investment clear. And in the vast majority of cases, it does.

Without trying to legislate a matrix of transaction complexity versus type of investor – which by its nature would be difficult to maintain – I always seek to have a dynamic approach to the relationship with a client. I also strive to have in place the necessary systems to identify where the potential conflicts would arise. This requires a level of integration between the compliance, legal, trading and risk management systems, which is currently not often available but hopefully will be more common in the future.

The whole process is made much easier if the risk management and business unit personnel can agree on a strategy at the beginning with the client, and have a process in place to implement amendments. Complex transactions are not in themselves ‘wrong,’ but, like firearms, are dangerous when used inappropriately. ■

During the course of the last twenty years, **Hugh Finlay** has been employed primarily but not exclusively in counterparty risk management with a variety of financial institutions – including investment banks, proprietary options trading houses, a European securities firm and a user-owned industry utility. He is currently involved with RiskVisions, a risk management consultancy. Please send any comments to [hughfinlay@riskvision.co.uk](mailto:hughfinlay@riskvision.co.uk)

# Budgeting Risk: Views from a European Money Manager

Asset managers are increasingly leveraging risk-budgeting techniques to make more informed decisions about the composition of funds and portfolios. These techniques, which supplement traditional asset-allocation measures, have only recently been adopted in the buy-side community. Robeco Group's **Pim Poppe** and **Machiel Zwaneburg** explain their firm's approach to risk budgeting for *GRR*.

There is no one-size-fits-all definition of risk budgeting. But Robeco Group, a Dutch money management firm, defines this process as a "more or less formal approach to allocating risk in a way that produces maximum added value." This definition inherently means that the risk-budgeting concept is certainly not limited to the asset-management environment. Added value can be defined as outperformance, information ratio, absolute monetary amounts and Risk-Adjusted Return on Capital.

The objective behind risk budgeting is not to avoid risk, but to efficiently allocate it as a scarce resource. Risk budgeting is thus an optimization exercise. All else being equal, an investor who maximizes risk-adjusted performance will perform better than one who does not. Robeco applies risk budgeting in an effort to maximize the added value of active management of its investment portfolios. This is equivalent to maximizing the information ratio – i.e., the ratio of active return to tracking error of the portfolios.

In modern portfolio management, most investment managers are subject to a limit for the ex-ante tracking error, defined as the annualized standard deviation of the return differences between portfolio and benchmark. This limit quantifies the maximum budget permitted for active positions. A portfolio manager can use this potential for multiple investment decisions. The tracking error resulting from all investment decisions is the overall tracking error. The tracking error that results from an investment decision in isolation is known as a partial tracking error. Examples of such investment decisions are stock selection, duration allocation or country allocation.

The risk-budgeting approach adopted by Robeco is based on a tracking-error framework, where partial tracking errors are allocated to investment decisions in such a way that the expected information ratio of an actively managed portfolio is maximized. This tracking-error allocation framework is a three-step process: (1) Identifying the independent investment decisions. For example, asset

allocation, country allocation, stock selection and currency allocation in an equity portfolio; (2) Ranking the forecasting capabilities of these investment decisions and; (3) Calculating the optimum partial tracking errors given an overall tracking-error limit.

The key result is an understandable, transparent rule, which says that the target tracking error for each investment decision should be proportional to the corresponding expected information ratio.

The key result in Robeco's tracking error allocation framework is the following:

$$TE_i^* = \frac{IR_i}{\sqrt{\sum_{j=1}^n IR_j^2}} TE_{target}$$

where we define  $IR_i$  as the expected information ratio of investment decision  $i$  ( $i = 1, \dots, n$ ),  $TE_i$  as the partial tracking error corresponding to investment decision  $i$ .  $TE_{target}$  is defined as the target overall tracking error.

## Implementation

Although the concept itself is surprisingly simple, its practical implementation is far from insignificant. A tremendous amount of professional skill and disciplined implementation of systems is involved – and there are some steps that you should follow. First and foremost, all investment opportunities should be divided into separate, independent investment decisions. Although defining decisions seems easy in practice, effort is needed to reach mutual and genuine understanding between portfolio managers and risk managers, regarding the investment process.





“Risk allocation is only valuable when the risk-management and performance-attribution systems actually reflect the investment process”

From left to right: **Pim Poppe** (Group Risk Manager Robeco), **Gert-Jan Sikking** (Regional Director GARP Netherlands), **Celine van Asselt** (Board Member GARP Netherlands), **Bart Roelofs** (Board Member GARP Netherlands), **Bill Martin** (Global Head of Investment Risk Invesco & Chairman of GARP's Board of Trustees).

The second thing you need to do is to bear in mind that an optimum tracking-error allocation is partly based on subjective estimates – particularly with respect to expected information ratios. Keeping that in mind, we reevaluate these expected information ratios every year. The performance-attribution results of actual portfolios over the last 3 or 5 years, and simulated results, are the inputs for the evaluation. Normally we do not change our ideas about our long-term capabilities. In practice, the expected information ratios are updated no more than once every three years.

The last step a firm should take to implement a successful risk-budgeting program is to provide investment managers with access to systems that are able to measure risk and return along the lines of the investment process. In other words, risk allocation is only valuable when the risk-management and performance-attribution systems actually reflect the investment process.

Our experience has been that the investment process evolves over time. Therefore, the approach to performance attribution and risk decomposition has to be flexible and detailed. ■

**Machiel Zwanenburg** is a risk manager responsible for Regular Asset Management at Robeco. **Pim Poppe** is Robeco's Group Risk Manager, responsible for risk management, performance measurement and compliance. This story is an elaboration of a topic Pim Pope addressed during a recent presentation at a Dutch GARP chapter meeting.

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## REPUTATIONAL RISK

# The Reputation Web: Corporate Scandals and the Road to Recovery

By virtue of the crucial role they play in facilitating capital markets, banks are exposed to risks and opportunities within the asset management, insurance and underwriting businesses. **Jay Kantaria** discusses how governance, reputation and intangible value assessment in general have, in the past, not been given the necessary credence.

General stock market declines over the past few years, coupled with a sharp decline in the volume of M&A activity and IPOs, created a weak revenue environment for all investment banks, asset managers and custody businesses. Though there has been some uplift in the first nine months of 2003, outstanding sustainability issues include significant workforce reductions, branch closures that cause community disruption and declining customer service levels.

For banks, the most significant sustainability issues relate to the credit business within corporate and investment banking – particularly project finance lending, sub-prime lending and the misguided product sales. For insurers, the focus is on the property & casualty and re-insurance sub-sectors, as well as asset management. Failure to manage these issues proactively can lead to image problems and reduced sales, ultimately impacting long-term performance and shareholder value.

A case in point is excessive executive pay, particularly in circumstances where companies are underperforming. In August 2003, the NYSE board disclosed for the first time Chairman Richard Grasso's compensation. It announced an extension of Grasso's contract to 2007 and revealed the deal included nearly \$139.5 million in previously accumulated savings and benefits. In response, California's public pension funds, Calpers and Calstrs, led the chorus of investor protests that triggered his resignation. They were disgusted, stating the package bruised investors' confidence in the financial system, as Grasso made the money while the markets were being plagued by the string of corporate scandals.

In the UK, companies such as HSBC, Barclays & GlaxoSmithKline have also been in the spotlight, with a high percentage of shareholders abstaining or opposing the companies' remuneration reports. On June 3, the UK Department of Trade & Industry published 'Rewards for Failure,' its consultative document on directors' pay.

HSBC's management faced a shareholder revolt over plans to award William Aldinger – the bank's new head of US operations following the group's takeover of Household International – a \$37.5 million, three-year remuneration package. About 22% of shareholders abstained or opposed the bank's remuneration report, and 15% abstained or opposed the re-election of Mr. Aldinger. Investors felt that the US-style remuneration packages were setting a dangerous precedent in the UK.

## Rancid Reputations

The recent history of poor business standards has damaged the reputation of many leading financial institutions. Arguably some of the worst financial scandals in decades have been unveiled as a result of the SEC's renewed vigor to tackle fraud and enhance corporate governance structures at companies following the collapse of Enron and Worldcom in 2001. Not a week passes by without a bank or financial organization being fined or reprimanded for its role in some scandal. And US banks have the dubious honor of being most prominent to face the scrutiny.

Most recently, in September 2003, mutual funds' trading practices fell under the microscope when New York Attorney General Eliot Spitzer revealed that certain mutual funds had helped a hedge fund to, in effect, cheat the market. Shares in mutual fund companies are priced at the end of each trading day. Placing an order after the market closes would allow an investor to take advantage of events that affect the price of underlying shares before the shares are re-priced the next day. The company in question, Canary Capital Partners LLC, was allowed to make quick trades and book profits or avoid losses through 'market timing' – a procedure that was not available to ordinary investors. Other companies that are currently under investigation include Bank of America, Bank One, Janus and Strong. Initially, the Bank of America team would fill in a ticket order, time stamp it ahead of the market close, and



“The most significant issue to have embroiled the US banking sector in the past 12 months is the conflicts of interest scandal. Several firms were found guilty of providing research that was misleading and deliberately over-optimistic, in order to retain existing – and gain new – investment banking business”

Jay Kantaria : encouraging greater transparency

then allow Canary traders to either confirm or cancel the order two-and-a-half hours later than was legal. The accusations have spurred a rash of investor lawsuits.

The most significant issue to have embroiled the US banking sector in the past 12 months is the conflicts of interest scandal. Several firms were found guilty of providing research that was misleading and deliberately over-optimistic, in order to retain existing – and gain new – investment banking business. The reputational fallout from the resulting \$1.4 billion Spitzer/Wall Street research settlement continues. While the settlement costs may now be priced into the market, the decline in revenues from cutting the link between stock research and investment banking is pending.

Companies have been barred from seeking insurance payments for penalties amounting to \$487.5 million; and with inevitable lawsuits, initial estimates indicated that these penalties could ultimately cost the industry billions. Citigroup, CSFB and JPMorgan Chase were identified as being especially exposed. However, the likelihood of further “tainted research” suits being launched against banks has subsided as cases against Merrill Lynch, Goldman Sachs, CSFB and Morgan Stanley were dropped in July 2003 in US courts. A senior US district judge ruled in favor of Merrill Lynch, and against investors who had filed a class-action suit after losing more than \$1 billion total in the Global Technology Fund. The judge ruled the Merrill fund as a separate entity from the Merrill brokerage and investment banking arms. This alleviates downward pressure on these firms’ ratings.

Nevertheless, Citigroup has also found itself in the media spotlight for the wrong reasons. On July 10, the Financial Times reported that Citigroup’s former head of equity research, John Hoffman, could become the highest-ranking Wall Street executive to face charges following the SEC’s conflicts of interest crackdown. Civil charges could include failure to supervise analysts such as Jack Grubman. A further blemish to the group’s tainted image

was self-imposed, when Tom Jones, head of Citigroup’s global investment banking business, stated in an interview with the FT that he did not consider himself a ‘do gooder,’ is not interested in shareholder activism and has higher priorities.

#### Signs of Progress

In spite of the aforementioned scandals, some progress has been made. In June 2003, Citigroup also announced radical internal eco-efficiency measures at all its US offices, adopting 30% post-consumer recycled copy paper. This development is clearly positive, and shows a significant attempt by the group to clean up its image.

Similarly, JPMorgan Chase looks to be reaching a conclusion to its awkward yet significant involvement in the Enron saga. The firm is close to reaching two settlements with US regulators to resolve allegations that it helped Enron hide debt and improve the appearance of its financial statements in late 2001. At \$175 million, the settlement is significant; the bank has agreed with the Manhattan District Attorney to pay \$25 million and to change some aspects of business practice. It is also in talks with the SEC to settle for between \$100 million and \$150 million. As a result, JPMorgan Chase will avoid criminal charges. JPMorgan Chase had received a low Innovest rating, due to limited disclosure and weak internal standards.

Freddie Mac is another large US corporation that has been through turmoil due to corporate governance weaknesses. Its shares plunged significantly in Q2 2003 after auditors found that the company had altered documents related to a restatement of financial results. As a result, the second largest mortgage finance provider in the US dismissed its CEO, CFO and COO. Freddie Mac and Fannie Mae own or guarantee 42% of the \$7 trillion US mortgage market, and that alone is worrisome.

The regulatory structure that covers Fannie and Freddie is absolutely obsolete and inadequate, and these events are proof. One of the big fears is the way these

## REPUTATIONAL RISK

mortgage companies value their derivatives and other financial contracts. Sometimes, in fact, the big mortgage players restate their earnings to account for changes in the way they value the aforementioned contracts. On July 23, an independent report by Baker Botts, the law firm, found that former executives at Freddie Mac deliberately massaged earnings and misled the board, but it absolved its new chief executive of wrongdoing. As a result, the board re-assessed Freddie Mac's internal accounting practices and corporate culture, and undertook 'a remediation process.'

## Auditor Imbroglia

The independence of auditors, and audit versus non-audit fees, is another hot issue that the SEC is determined to clamp down on. For Wall Street, any hint of accounting problems is enough to send investors running and share prices tumbling amid fears of lax governance. In June 2003, the SEC launched an informal inquiry into the business relationship between Wachovia and its independent auditor, KPMG LLP. The inquiry focuses on whether the bank's customer referrals to KPMG violated SEC auditor-independence rules. In 2002, Wachovia paid the accounting firm \$5.9 million to audit its books and \$18.3 million for other services, including tax work. At present, Wachovia stands by its argument on KPMG's independence. But some regulators and US shareholder activist groups have asked companies to limit the amount of money auditors can receive from companies for non-audit services.

European banks, like their US counterparts, have also faced increasing scrutiny – particularly regarding fraud and money laundering. Germany's WestLB had to set aside \$520 million to cover cases of fraud, which accounts for a quarter of the total risk provisions the state-owned German bank has made on its lending business for the year ending December 2002. This significant provision increase suggests the bank is bracing itself for various misdeeds. In stark contrast, illustrating its drive to being more transparent, Société Générale publicly disclosed a key figure regarding its efforts to tackle money laundering. On June 4 & 5 in Paris, SG announced that it had passed on 235 suspect cases to the French specialist cell Tracfin in 2002. Around 10% of those cases ended up with official criminal inquiries.

Despite industry's previously-mentioned woes, there is some hope. The Sarbanes-Oxley-Act has forced US corporations to tighten up their governance procedures. And for the banking sector, the advent of Basel II and the capital adequacy rules implies stronger risk management practices. The London Principles, the UNEP Finance Initiative and the FORGE guidelines are just some of the industry-

specific efforts to address sustainability issues. Other industry-specific programs to develop collective social and environmental performance indicators, such as the EPI-Finance and SPI-Finance projects, are also encouraging. These projects highlight areas banks can focus on to mitigate risks, capitalize on opportunities and generally improve their reputation.

Another major positive step for the banking sector was the signing of the Equator Principles in June 2003. A quartet of banks – ABN Amro, Citigroup, Barclays and WestLB – was primarily responsible for creating the principles, which attempt to categorize risks in relation to project finance. Other initial signatories of The Principles include Credit Lyonnais, Credit Suisse First Boston, HVB Group, Rabobank, Royal Bank of Scotland and Westpac. Since their launch, Royal Bank of Canada and the ING Group have adopted The Principles. The commitments made by firms that have adopted The Principles could potentially prove very significant, because last year they collectively underwrote \$14.5 billion of project loans – or a third of the global project loan syndication market.

By adopting these Principles, each bank undertakes to lend money only to projects whose sponsors can demonstrate compliance with comprehensive processes developed 'in a socially responsible manner and according to sound environmental management practices.' This will apply to all projects with a capital cost of at least \$50 million – or 97% of the market. The banks, which recoup their investment from revenues earned by dams, power plants and other big projects after they are built, will use a common screening process to decide whether a project has high, medium or low social and environmental risks – using a comprehensive assessment methods developed by the International Finance Corporation.

This represents significant progress on behalf of such companies to address less traditional risk, but has not been without criticism from certain quarters. Non-governmental organizations (NGOs) have criticized this initiative as insufficient, because it does not require transparency, the protection of human rights, or the conservation of endangered ecosystems like rainforests. Moreover, banks can continue to lend with impunity via letters of credit, as they have significantly fewer restrictions or reporting requirements. The NGOs propose that banks adopt a more stringent initiative, dubbed the 'Collechio Declaration,' which outlines the steps they see as necessary to promote environmental and social protection.

In the US, Citigroup and Royal Bank of Canada have demonstrated leadership, taking the first step towards greater transparency by adopting the Equator Principles. The challenge now is to encourage others to follow suit. ■

Jay Kantaria is Senior Banking Analyst at Innovest Strategic Value Advisors. For more information on Innovest's latest North American banking sector report, please contact [jkantaria@innovestgroup.com](mailto:jkantaria@innovestgroup.com).



# Innovation Fuels Growth in Credit Derivatives

The credit derivatives market is not only one of the fastest growing financial markets in the world, but also one of the most innovative. Greater standardization in single-name credit default swaps – the most heavily-traded credit derivatives – is attracting business from more mainstream asset managers. Meanwhile, the more sophisticated interbank market continues to develop, and investors already comfortable using credit derivatives are demanding a greater range of products. **Emily Saunderson** investigates these trends.

The total notional outstanding amount of credit derivatives grew by 25% in the first six months of this year to \$2.69 trillion, according to the 2003 mid-year market survey by the International Swaps and Derivatives Association (Isda). Robert Pickel, chief executive of Isda, says this growth underlines the desire by more firms around the world to manage their credit risk exposures more effectively. But the use of credit derivatives is certainly not confined to risk management.

A greater variety of traditional credit end-users, such as mutual funds and insurance companies, are entering the markets to hedge their credit exposures. But a substantial part of the credit market volume still comes from active trading by banks and hedge funds – firms that are finding increasingly creative ways to exploit correlation and arbitrage opportunities.

Traders report rapid growth in the market for notes based on credit default swap (CDS) indices, and this is spawning interest in standardized tranches of CDS notes and options. But they also say there is a continuing interest in collateralized debt obligations (CDOs) and synthetic CDOs, which are made up of credit default swaps rather than more traditional forms of debt. Moreover, there is increasing business in options on single-name CDS.

Arbitrage opportunities are also encouraging new entrants, such as structured investment vehicles (SIVs), to try credit derivatives. SIVs are highly-rated traditional credit-trading vehicles which make money from pricing anomalies between long and short-term assets. With around \$100 billion of assets under management, SIV involvement can only help the credit-derivatives market develop further.

## Trac-X

The fastest growing product in a fast growing market is widely agreed to be notes based on credit default swap

(CDS) indices, which offer users more diverse exposure to the credit markets than swaps based on single names. The most widely-traded notes are a range of products called Trac-x, produced by JPMorgan Chase and Morgan Stanley. But a group of banks including ABN Amro, Barclays Capital, Citigroup, Deutsche Bank, Dresdner Kleinwort Wasserstein and Société Générale also offer a range of notes based on CDS indices that are derived from cash indices produced by iBoxx – a venture between the Deutsche Börse and seven investment banks.

“Interest in products based on cash and credit default swap indices really started about a year-and-a-half ago, but trading in credit default swap index products has definitely taken off recently. We are seeing more and more demand each month, although single-name volume still overwhelms our index business,” says Eric Oberg, managing director of credit derivatives at Goldman Sachs in New York.

Not only do index products provide exposure to a broader range of credits, they are often more competitively priced than single name credit default swaps if you want to trade in size, explains Marcus Schüler, head of flow credit-derivatives marketing in Europe at JPMorgan Chase in London. For example, previously, if you wanted to take a \$83.5 million credit derivatives position on a single name in anticipation of a small market move of say five basis points, you could expect at least a five basis point bid-offer spread, which would negate any profit you might make on the deal, he says. “But with eight market makers for Trac-x Europe, bid-offer spreads are much tighter (two basis points or less), so you can put on large trades at close to zero cost, allowing you to profit more from small changes in credit spreads,” Schüler says.

The horrendous credit market conditions and numerous corporate defaults in 2002 also piqued investors interest in more diversified products. “We have certainly seen

## CREDIT DERIVATIVES



“Interest in products based on cash and credit default swap indices really started about a year-and-a-half ago, but trading in credit default swap index products has definitely taken off recently”

Goldman Sachs' Eric Oberg

more interest in index and sector-style products since credit spreads contracted, but the liquidity and diversification they offer are also important factors,” says Tarun Jotwani, head of international credit markets at Lehman Brothers in London.

Index products are also contributing to growth in single-name CDS business. “Index-based business is not supplanting single-name volume but creating its own space and even enabling more single-name business,” says Oberg. For example, you can take a view of the credit quality of specific companies by buying the index and shorting individual credits. “The growth in credit derivatives index products will absolutely continue because there is a need for instruments (that) allow (investors) to get in and out of the markets quickly,” he adds.

Trac-x products currently dominate the market. Trac-x CDS index notes were introduced in April 2003. There are now Trac-x products covering the European, US, Japanese and emerging markets, and Asian and Australian products should be introduced before the end of the year. The names included in the indices on which Trac-x notes are based are selected from the most liquid names in single-name CDS turnover at JPMorgan Chase and Morgan Stanley, over the six months before a particular index is created.

#### iBoxx

Meanwhile, the names included in the iBoxx-derived CDS indices are selected from iBoxx's bond indices. “The idea with the iBoxx products is to make them as transparent and liquid as possible, so we use a non-discretionary rules-based approach to select the names included in the indices,” says Tets Ishikawa, who is responsible for portfolio composition in the structured credit department at ABN Amro in London. So far, iBoxx CDS products cover only the European market, but there are plans to develop more products for other regions.

Additionally, Lehman Brothers in July 2003 began to publish US, Euro, Japanese and global credit-default swap indices. Joseph Nehorai, director of the European index group at Lehman, says the initial aim of the indices was to provide its existing client base with a framework in which they could analyse and understand the credit-default swap market. “We really saw the indices as a research tool, but there is already interest from our clients to use it as a benchmarking tool as they set up dedicated credit-default swap funds, which is happening much more quickly than we predicted,” he says. The Lehman indices differ from the Trac-x and iBoxx products because they are not tradable. “These are pure performance benchmarks,” explains Nehorai.

Tradable CDS index notes are also inspiring other initiatives such as standardized horizontal tranches of these notes. Schüler at JPMorgan Chase says his firm started to offer standardized horizontal tranches of Trac-x products earlier this year, allowing traders to invest in first loss, mezzanine or senior tranches of the Trac-x portfolios. These are basically a standardized version of the tranches in a CDO, but Schüler says they allow investors to move in and out of the market more quickly than they might with a traditional CDO, because of the liquidity in the CDS index products.

“We are finding that trading in the standardized tranches is not cannibalizing the traditional CDO business, because people will always need tailored CDO products to match their specific exposures. Quite the contrary, I am convinced that a standardized, liquid tranched product will actually increase turnover in traditional CDOs, as it enables market participants to manage these exposures quickly when needed,” he says.

#### Eyeing Options

While there is agreement among market participants about growth in CDS index note business, reports of



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JPMorgan Chase's Marcus Schüler

activity in options on credit derivatives are less consistent. However, everyone agrees that the development of an options market would make the market more complete.

Schüler at JPMorgan Chase says he has seen trades in options on the Trac-x products by hedge funds and fund managers, as well as bank proprietary trading desks. Activity in index-related options could help kick-start a market for options on single name credit default swaps, he adds.

Jotwani at Lehman Brothers agrees that the market for options on single-name CDS is underdeveloped. “It will really take more liquidity in the underlying CDS market before activity in related options begins to increase,” he says.

But some banks are more active than others. “We do a surprising number of credit default swap options given the relative lack of development in this area,” says Oberg at Goldman Sachs. One of the main obstacles to growth in options business is that it is currently a seller's market.

“Buying credit risk involves selling the issuer the right to default, so it's already basically an option. This means people who have taken on credit risk typically wouldn't mind owning some optionality themselves,” Oberg explains. “Given this imbalance between buyers and sellers, options are generally priced in a way that makes sense to the seller, and that often makes them seem fairly expensive.” But he predicts a gradual increase in options business as spreads tighten and the market becomes less volatile, because traders will then consider selling options to boost the income on their credit portfolios.

#### Innovation Spurs Growth

Innovation in the credit derivatives market will be sustainable even without sufficient liquidity, partly because the involvement of new players will provide a further boost to the market's growth. SIVs are touted as the next major group of market entrants. Though SIV activity has thus

far been muted, bankers say the involvement of SIVs could inject more liquidity into the CDS and structured credit note business.

SIVs began to appear in the 1980s. They are limited-purpose companies set up by banks or independent managers to undertake credit arbitrage. They buy generally highly-rated medium and long-term fixed-income assets and sell cheaper, short-term highly rated commercial paper (CP) and medium-term notes (MTNs) – taking advantage of pricing anomalies between long and short-term debt. SIVs are highly leveraged, but they are market neutral, focusing purely on the credit quality of the assets they buy and sell. They also need to be highly rated to ensure they can fund themselves effectively, and they must stick to strict investment guidelines to maintain their high credit ratings.

“Credit derivatives are the next logical step for SIVs, because their traditional credit arbitrage strategy can be applied equally well to products such as synthetic CDOs and credit default swaps,” says Perry Inglis, credit analyst at ratings agency Standard & Poor's.

“One of the major attractions of the credit-derivatives market for SIVs is the potential reduction in treasury activity that credit derivatives could engender. For example, the SIV does not need to fund the provision of protection in a credit default swap,” says Henry Tabe, senior analyst at Moody's Investor Services. “However, increased liquidity requirements are necessary in order to address scenarios where the vehicle is called upon to make protection payments, if the SIV were the protection seller, or payments of premia, if the SIV were the protection buyer. These additional liquidity requirements can be met through a combination of committed liquidity and asset-based liquidity.”

SIVs have also been working with technology developers to produce systems which will allow them to trade credit derivatives while also handling their very strict risk

## CREDIT DERIVATIVES

**Top 25 Reference Entities\***

	Reference Entity	Debt Outstandings (USDbn)
1	France Telecom	52
2	Daimler Chrysler	55
3	Ford Motor Corp./Ford Motor Credit Co.	121
4	General Motors/GMAC	114
5	General Electric/GECC	187
6	Citigroup	116
7	Deutsche Telekom	50
8	Japan	1,168
9	Philip Morris	10
10	ABN Amro	44
11	Deutsche Bank	105
12	Household Finance	101
13	Amgen	4
14	AOL Time Warner	23
15	Bank of America	53
16	BNP Paribas	37
17	Greece	93
18	Italy	971
19	JPMorgan Chase	57
20	Verizon	39
21	Vodafone Group	21
22	Walt Disney	12
23	Freddie Mac	524
24	Merrill Lynch	65
25	Portugal	201

\* Commonly quoted reference entities, based on frequency of occurrence.  
Source: Fitch, Bloomberg

**Top 25 Counterparties\***

	Counterparty	Rating	Outlook
1	JP Morgan Chase	A+	Stable
2	Merrill Lynch	AA-	Negative
3	Deutsche Bank	AA-	Stable
4	Morgan Stanley	AA-	Stable
5	Credit Suisse First Boston	AA-	Negative
6	Goldman Sachs	AA-	Stable
7	UBS	AA+	Stable
8	Lehman Brothers	A+	Stable
9	Citigroup	AA+	Stable
10	Commerzbank	A-	Stable
11	Toronto Dominion	AA-	Negative
12	BNP Paribas	AA	Stable
13	Bank of America	AA-	Positive
14	Bear Stearns	A+	Stable
15	Societe Generale	AA-	Stable
16	Royal Bank of Canada	AA	Stable
17	Barclays	AA+	Stable
18	Dresdner	A-	Stable
19	Royal Bank of Scotland	AA	Stable
20	ABN AMRO	AA-	Stable
21	CIBC	AA-	Stable
22	Rabobank	AA+	Stable
23	WestLB	AAA	Stable
24	HVB	A	Stable
25	AIG	AAA	Negative

\* Commonly quoted counterparties, based on frequency of occurrence.  
Source: Fitch

“SIVs certainly face more challenges trading credit derivatives than hedge funds, for example, because SIVs need to be very careful about the way they allocate capital to maintain their AAA ratings”

management needs. “We have been working with a number of SIVs for the last year or so,” says Gary Kennedy, senior quantitative analyst at Sungard Trading and Risk Systems. “We had already designed frameworks for deal capture, valuation and risk management of structured MTN products, including products with embedded options on default swaps, for some of our banking clients. And we were able to adapt those to meet the needs of the SIVs.”

While the SIVs seem to be a little hesitant to enter the market, other players have been keen to emulate the SIV model for trading credit risk. Spotting a lucrative trading opportunity, hedge funds and investment banks have begun to employ SIV technology and trading methodologies to exploit the pricing anomalies and credit arbitrage opportunities in credit derivatives. Several banks have set up so-called ‘SIV-lites,’ which do not have to maintain the same high ratings as traditional SIVs and can consequently trade in a less strictly regulated way.

“SIVs certainly face more challenges trading credit derivatives than hedge funds, for example, because SIVs need to be very careful about the way they allocate capital to maintain their AAA ratings,” says Douglas Long, head of quantitative research and development, Europe, at Principia Partners, a US-headquartered software vendor. “Hedge funds by their nature can take more risks and they do not have the strict operating and rating controls that SIVs need to observe.”

Although credit-derivatives trading from SIVs has so far been scarce, their potential involvement is already generating new trading ideas. “We have also seen people looking to establish synthetic SIVs, which would use credit-default swaps to get the same sort of asset exposure ordinary SIVs would achieve using cash instruments, for example,” says Long. “But it will probably take more activity from existing SIVs before this happens.” ■





# CDO Evolution Creates New World of Risk

The CDO market has grown rapidly in recent times. In a wide-ranging, analytical story, **Janet Tavakoli** explores the rise of synthetic CDOs and explains the challenges tied to cashflow economics. Along the way, she also provides tips for CDO investors and examines risks taken by CDO structuring banks.

Credit derivatives technology has propelled recent rapid growth in the Collateralized Debt Obligation ('CDO') market. In 1997, the \$64 billion rated CDO market consisted chiefly of securitizations of cash assets. By the end of September 2003, in contrast, outstanding global CDO visible issuance, year-to-date, was estimated at around \$370 billion – 37% higher than the total issuance in 2002. Furthermore, the majority of CDO collateral consisted of derivatives, not cash assets. Synthetic CDOs – or securitizations incorporating credit derivatives technology to transfer asset risks and cashflows – now make up more than 75% of the global CDO market.

In the CDO market, there is an inherent conflict of interest between CDO structurers – protection buyers who hedge by selling protection in the market – and CDO investors – protection sellers. The conflict is centered on the negotiation of credit default swap language, and can only be cured with full disclosure and investor education about the potential language risks.

In several instances, structurers have taken advantage of the 'cheapest to deliver option' by buying protection from synthetic CDO investors, using the broadest possible language for allowable deliverables in the event of default. Meanwhile, they hedge their position by selling protection using the narrowest possible language. They book the value of the 'cheapest to deliver' option as profit. The investor receives none of the reward, but takes the extra risk. Investors should therefore negotiate for the narrowest possible definitions of a credit event, as well as the narrowest possible language for the discount and maturity of deliverable obligations.

## Cashflow Challenges

Cashflow economics present other challenges for investors. *There is no such thing as a CDO arbitrage.* An arbitrage is a money pump. A true arbitrage guarantees a positive payoff in some scenario, with no possibility of a negative payoff and with no net investment. The opportu-

nity to borrow and lend, at no cost and at two different fixed rates of interest, is an arbitrage. The ability to simultaneously buy and sell the same security in different marketplaces, and earn a profit at no cost and with no risk, is another example of an arbitrage.

Financial institutions that structure CDOs come closest to approaching an arbitrage when they buy the collateral, tranche the exact risk represented by the collateral, and sell every tranche of the collateral through their distribution network. Time elapses between the accumulation of collateral, especially in a cash asset-based deal, and the closing of the transaction. There is further delay before the deal is entirely 'sold.' Financial institutions make a secondary market in the CDO tranches, and occasionally have portions of CDOs in inventory that must be hedged. Still, most of the risk of the transaction has been distributed, and reserves are held as a cushion for the residual risk of ongoing trading and risk management. The financial institutions that use this business model have the cleanest type of transaction management from the arbitrage point of view, but it is still not strictly an arbitrage. Within this model there is room for passing on inappropriate risk to investors or for taking inappropriate risk in the trading book, depending on the deal structure.

## Equity Structures

All equity tranches are not created equal. Besides portfolio selection, the largest variability among deals stems from the structure of the equity cashflows. Portfolios can be either actively managed, have limited right of substitution, or be completely static. Equity can be either rated or unrated. The investment in equity can be either funded or unfunded. There is also a wide variety of ways that cashflow is made available to the equity investor and to the senior tranches.

Losses are allocated first to the equity investor. That isn't the whole story, however. CDOs vary in terms of how much of the stream of residual cashflow the equity investor

## CDO RISK

can claim. Another key issue is the amount of loss that can be allocated to the residual cashflow stream above and beyond the initial equity investment. The equity investor determines whether or not he is getting the best deal possible for the risk he takes, based on these structural features. The more cashflow the equity investor gets, the less someone else gets.

### Misleading Promises

Most of the initial static synthetic CDOs promised to pay a fixed coupon on the remaining equity balance. The equity was unrated. As losses occurred, the equity investor's balance amortized down and fixed income was paid only on the lower remaining balance. Usually equity investors expect to have a claim on excess cashflows, unless they are captured in a reserve account. But in this structure, any cashflows in excess of the amount needed to make the liability payments for the CDO benefit only the bank arranger.

The cashflows, as constructed above, didn't give the equity investor the best possible deal. Most equity investors were unaware of this fact, because the equity was often combined with a zero coupon instrument in a principal protected structure.

The cure is to look at the performance of the equity cashflows in isolation. Often a simple and straightforward technique serves us best. It's very effective to look at the survival rate of tranches for a given number of discrete defaults, not fractional defaults expressed by rating agency annual default-rate data. Reference obligors don't default in fractions; they either default or they don't.

The chart below shows the effect of losses on the

remaining equity balance for a Euro 500 million deal in which the equity makes up 4% of the deal for two assumed recovery rates: 50% and 40%.

In the context of actual recoveries experienced in the period from 1999–2002, a recovery rate of 50% seems ridiculously high. Even 40% was too high for many obligors. Simple tables like this show the sensitivity of any assumed recovery rate to any assumed number of discrete defaults. Further IRR calculations can now be done based on these results.

### Conflict of Interest

If a deal manager has a claim on the equity cashflows, there may be a conflict of interest between the manager and senior noteholders. Investors should be particularly wary of deals in which four structural conditions are met, which can tempt managers to behave against the interest of the noteholders. The first condition is that losses are allocated in reverse order of seniority, and losses deductions are limited to the initial investment of each tranche investor. The second condition is that excess spread does not accrue to the benefit of any of the noteholders and is not available to absorb losses. The third condition is that the manager does not have adequate restraints on his ability to cause a deterioration in the quality of the underlying portfolio. And the fourth condition is that the manager has a claim on the excess spread.

Once the equity is gone, the next most senior noteholder bears additional losses. When losses exceed the initial equity investment, all of the residual cashflows are diverted to the benefit of the manager. The manager now has an incentive to trade out of good credits into credits on nega-

## Effect of Default Rate on Equity

Recovery Rate is 50%; Equity Tranche is 4%

Euro 500 Million Portfolio. Each Obligor is Euro 10 million.

Class	Subordination (%)	Defaults to experience first EUR loss (50% Recovery)		Defaults to experience full principal loss (50% Recovery)	
		# Defaults	Cum. Default Rate	# Defaults	Cum. Default Rate
SS	16%	16	32%	50	100%
A1	11%	11	22%	16	32%
A2	8%	8	16%	11	22%
B1	4%	4	8%	8	16%
E	NA	NA	NA	4	8%

This CDO is structured so that the equity investor earns a stated coupon on the remaining initial investment less accumulated losses, if any. Accumulated losses for this calculation cannot exceed the amount of the initial equity investment.

## Effect of Default Rate on Equity

Recovery Rate is 40%; Equity Tranche is 4%

Euro 500 Million Portfolio. Each Obligor is Euro 10 million.

Class	Subordination (%)	Defaults to experience first EUR loss (40% Recovery)		Defaults to experience full principal loss (40% Recovery)	
		# Defaults	Cum. Default Rate	# Defaults	Cum. Default Rate
SS	16%	13.3	26.6%	50	100.0%
A1	11%	9.2	18.3%	13.3	26.6%
A2	8%	6.7	13.3%	9.2	18.3%
B1	4%	3.3	6.7%	6.7	13.3%
E	NA	NA	NA	3.3	6.7%

This CDO is structured so that the equity investor earns a stated coupon on the remaining initial investment less accumulated losses, if any. Accumulated losses for this calculation cannot exceed the amount of the initial equity investment.

tive credit watch, or even into lower rated, higher-spread credits – if there are no constraints prohibiting this.

This recently happened in a cash CDO deal in which even the integrity of the single A tranche of the CDO was compromised. The portfolio was originally investment grade, but due to aggressive trading to create excess spread, the portfolio ended up with a *junk* rating. The single A investor threatened litigation, and the manager reached a settlement agreement with the investor.

### Unfunded Equity Investments

Equity risk can be transferred synthetically, just like any other risk. Who are the investors in unfunded equity? As you might imagine, the investors are usually hedge funds or the offshore subsidiary of a reinsurance company. Saying an investor is “an offshore subsidiary of a reinsurance company” sounds good to bank management and bank credit officers, because subsidiaries that sell unfunded first-loss protection are essentially *hedge funds*. Since these are off-balance sheet transactions, the investors usually don't want to disclose how much of this risk they have taken on. They also usually don't want to disclose the exact deals with the exact reference portfolios in which they've invested.

These investors want leverage. The bank sponsor funds the losses. If the portfolio experiences a loss, the CDO bank arranger makes the required payment to the CDO's SPE. The CDO bank arranger must have an open credit line to the subsidiary of the insurance company or to the hedge fund, and allows this to be drawn in the event of a

default. The sponsoring bank is usually asked to charge only LIBOR + 25 for this funding.

The problem with this scenario is that most of the CDOs for which this has been done are synthetic CDOs with 5-year maturities. The liabilities will all come due about the same time. In five years, the investors will have to come up with a big chunk of cash, and these are the investors that didn't want to put up cash in the first place. Of course, they don't have a five-year track record with this type of investment, and are reluctant to disclose the degree of leverage they already have. They may have a solid investment-grade rating, but rating agencies cannot keep up with the activities of these entities.

For every strategy, there is a counter-strategy, however. Let's say you want to do one of these deals, but you also want to survive a competent internal deal review. If you are dealing with the subsidiary of a reinsurance company, it may be possible to buy credit default protection on the subsidiary. In five years time, when payment for the losses comes due, and if they begin defaulting on obligations, you are covered. The premium for the CDS should be folded into the deal economics.

This story has been a short introduction into the risks and remedies posed by synthetic technology. Models for synthetic risk can't be standardized, because the structural risks are non-standard. In addition to the challenges of creating reasonable models and gathering relevant data, risk managers must assess the risk to their institutions due to deal cashflow structures and the risks imbedded in documentation. ■

**Janet Tavakoli**, a well-known derivatives author, is the founder and president of Tavakoli Structured Finance, a financial consulting firm. Her most recent book, *Collateralized Debt Obligations and Structured Finance*, was published by John Wiley & Sons Inc. in 2003.

## COUNTRY FOCUS



## Italian Derivatives Growth Fuels Risk Enhancements, but also Provides Challenges for Smaller Banks

Many financial firms across Italy are leveraging derivatives to hedge their risk, manage their debt and improve their returns. But the complex nature of derivatives is proving troublesome for some smaller banks. **Emily Saunderson** reports.

The Italian derivatives market is undergoing a renaissance. Derivatives traders say that everyone from corporations to asset managers to local authorities are enthusiastically seizing opportunities to manage their exposures, and enhance their returns, by using derivatives and structured products. What's more, increased derivatives activity at Italian banks has also attracted the attention of international players.

Lehman Brothers, for example, moved its Italian fixed income operation to Milan from London in mid-2002, and began to further expand its Italian derivatives coverage. The firm now estimates that derivatives account for at least 60% of its Italian revenues.

But some market participants suggest the strong increase in derivatives use, particularly by corporates, may present problems for smaller companies that do not understand the products they are buying. "Many of the larger, more financially sophisticated companies are using derivatives purely to hedge their risks, but some of the smaller firms are using derivatives without clearly identifying the risk exposures they have – let alone understanding how to hedge them," says Francesco Gagliardi, senior manager in the business advisory service at KPMG on Milan. "Some firms are using derivatives just to leverage their profits, often using highly-structured products they do not understand."

While banks may be reaping the financial rewards of selling growing numbers of highly-structured products to small- and medium-sized firms, interest in derivatives could be short-lived, as firms realize that stricter reporting requirements may make derivatives a less attractive proposition. International Accounting Standard 39 (IAS 39) – a reporting standard that calls for the derivatives positions of financial firms to be marked-to-market in a company's financial reports by 2005 – is one such requirement.

Nevertheless, over the last couple of years, Italian corporate clients have been among the most enthusiastic users of derivatives. Traders say Italian export companies are increasingly using derivatives as part of their hedging strategies, but companies across the board have also been using derivatives to lower their costs of funding, and generally manage their debt.

"As the financial climate deteriorated and it became harder to make money in the international derivatives markets, the focus of some of the larger Italian banks shifted and they began to provide more services for the local markets," says Christian Pelanconi, general manager, South Europe, at SunGard Trading and Risk Systems. As a result, sales of structured products from the larger Italian banks to smaller regional banks increased significantly, and this allowed the regional banks to market derivatives solutions to their corporate clients to help them lower their cost of funding. "Some fairly small regional banks are now using surprisingly complex derivatives structures," he adds.

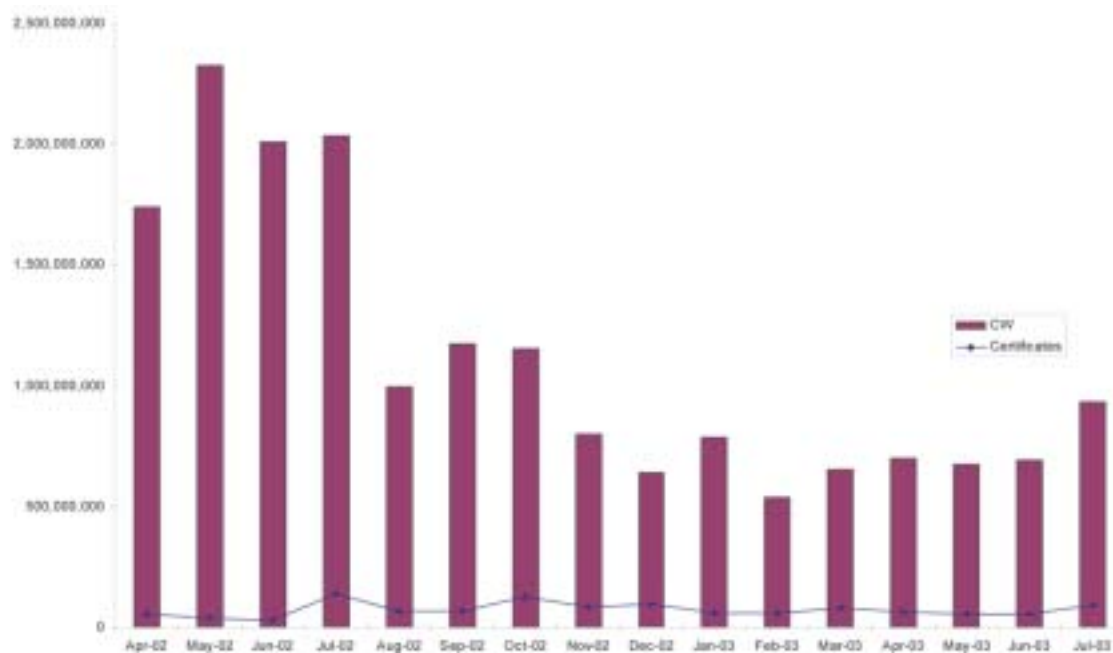
Traders and other market participants agree the sale of derivatives-based solutions by banks is not confined to large firms with existing financial trading operations. "The interest rate and foreign exchange risk run by a small export company can be proportionally the same as that run by a larger firm," says Giulio Sartirana, head of corporate derivatives sales at Intesa Caboto, the investment banking arm of Banca Intesa. "While foreign-exchange rate risk has historically been better understood by corporates than other risks, the awareness companies have of their wider exposures is increasing and they are increasingly looking to manage their interest rate risk."

### Failing to Identify Risk?

Some market participants, however, say there is more to the burgeoning use of derivatives by companies than their



## Monthly Volumes of both Equity Certificates and Covered Warrants on Borsa Italiano



Source: ABN Amro

desire to manage risk. KPMG's Gagliardi says that medium and small companies which are not accustomed to derivatives tend to appoint consultants, often from banks, to advise them on the best way to manage their risks – and they can consequently end up buying extremely complex products.

“Small companies often just want to know whether they will receive a pay out if interest rates rise or fall, and they are not interested in the way the product works,” he says. This means they can end up with complex products, such as synthetic foreign-exchange forwards and combinations of call and put options, or products with embedded digital options and interest-rate swaps. “These sorts of products can generate several basis points a year for a bank in terms of fees,” says Gagliardi.

But Banca Intesa's Sartirana says banks have a responsibility to ensure that they do not sell unnecessarily complex derivatives solutions to medium and small companies that do not understand them. “Some corporates do not have a strong understanding of derivatives, so it is up to the bank to give them a choice of appropriate solutions for their hedging needs and explain what is involved in each contract,” he says. “We clearly have a greater responsibility to our small- and medium-sized corporate clients in this respect and there is a strong correlation between the complexity of the products we sell and the size of the client. We do not sell complex products to small firms.”

Banks can generate additional income by encouraging firms to unwind trades early or change the deal parameters, says Gagliardi. Sartirana says that 99% of the time, small- and medium-sized companies restructure positions on the advice of the bank. But he maintains that such restructuring is always in the interest of the client.

“Positions may have originally been based on the client's view of the market and that may have changed over time, or interest rates may change, making a deal seem more expensive to the client than it was originally. So restructuring makes sense,” Sartirana explains.

But Gagliardi says that firms which rewrite transactions are clearly bent on making profits. “If these were genuine hedges, they would not need to be restructured,” he says. He believes small- and medium-sized firms using these products will not fully understand the risks they are taking until their auditors begin to mark their positions to market due to IAS 39 requirements.

#### Active Authorities

While some corporates may be on a steep learning curve when it comes to derivatives, local authorities are exercising more caution. Two years ago, the Italian law changed to enable local authorities to use derivatives to manage their cost of funding. “Since the law changed, we have seen a slow build up in the use of plain vanilla fixed-income products by these authorities, and over the next few years, this trend will spread to the smaller authorities and municipalities,” says Stefano Fassone, head of fixed income and derivatives sales at Banca IMI.

Meanwhile, more experienced institutional investors are looking to the markets for enhanced returns on their investments. “As interest rates have fallen, we have seen plenty of interest from asset managers in structured notes, with embedded options which allow investors to leverage any changes in rates,” says Fassone.

“We have seen interest in callable notes from insurance companies and other types of asset managers. These give the issuer the right to retire the issue early if rates change

## COUNTRY FOCUS



“As the financial climate deteriorated and it became harder to make money in the international derivatives markets, the focus of some of the larger Italian banks shifted and they began to provide more services for the local markets”

SunGard's Christian Pelanconi

unfavorably. In this case a holder loses some of the note's market value, but if (the notes) are not called, investors can enjoy relatively high returns,” says Andreas Potsios, head of the Italian fixed-income division at Lehman Brothers in Milan.

Yield-hungry investors have also turned to the credit derivatives markets. Paolo Gribaudo, head of structured credit products at Banca Intesa in Milan, says banks and money managers look to credit derivatives more for investment opportunities than to lay off credit risk. Credit-linked notes, including synthetic collateralized debt obligations (CDOs), are particularly popular. These instruments allow investors to buy notes with different credit ratings, based on credit default swaps. “Synthetic CDOs are a common instrument in the Italian credit derivatives market because investors are looking for liquid instruments and a range of differently rated investment opportunities,” he says.

Regulations introduced in June 2003 have banned insurers from investing in CDOs, so business has recently suffered a slight downturn. However, Gribaudo remains confident the market will continue its upward trend. “There is plenty of investor appetite for structured products and securitisation in Italy. This year we completed the first securitisation of small consumer loans in Europe, and this summer we did the first synthetic securitisation of a single loan commercial real estate exposure in Europe. And in May 2001 we did the first ever synthetic securitisation based on aircraft leases. So while there are funds, banks and corporates looking to invest money, there will be demand for innovative securitised products,” he says.

#### Equity Derivatives: Growth Spurt Expected

While business in fixed income and credit derivatives has increased significantly over the last few years, equity-derivatives trade suffered as global stock markets tumbled. But the equity-derivatives market could experience an upswing in the near future, thanks in part to Italian

regulations requiring Italian banking foundations to dispose of significant proportions of the large stakes they own in the country's largest banks.

The foundations have until 2005 to offload the majority of their bank holdings, tax-free. “We have been working with banking foundations to package derivatives, allowing them to dispose of their assets over a specific period of time in a fiscally optimal way and at the best exit price achievable,” says Luca Morello, head of structured products marketing for institutional investors and corporates at ABN Amro in Italy. “This has had the added bonus of increasing liquidity in equity options on names where there was previously little liquidity, which in turn has encouraged more business.”

But the focus of activity in the equity-derivatives business has been in the retail markets. Equity certificates were listed by Borsa Italiana, the Italian stock exchange, in June 2002, immediately attracting interest from retail investors. These certificates are listed on the same segment of the exchange as covered warrants – the listed equity options. The 100 equity certificates currently listed generate a monthly turnover of around Euro 100 million, or 20% of the business on this exchange segment, with the 2,000 covered warrants accounting for the remaining 80%.

ABN Amro was the first bank to sponsor Italian equity certificates, and it hoped to build on the successful launch of these products a year before in the German market. But even ABN has been surprised by the enthusiasm with which the Italian market embraced the certificates.

Overall, the Italian derivatives markets are presenting increasing opportunities for product developers and traders, as corporates become more aware of their risk exposures and investors go in search of higher yields. And although the implementation of IAS 39 in 2005 may stifle the use of derivatives by listed companies, traders are confident that investor demand will continue to drive product innovation. ■

*Infectious Greed* By Frank Partnoy

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# A Pitch for Derivatives Regulation

Frank Partnoy is not against the use of derivatives in and of themselves.

Rather, he is against regulatory arbitrage and the use of derivatives where there is no economic sense in using them – other than to sidestep regulation. Moreover, he believes derivatives should be regulated, in a bid to stop off-balance sheet transactions from spiralling out of control. To this end, in his new book dubbed “Infectious Greed,” Partnoy slams the US Congress, the Securities and Exchange Commission and the powerful lobbying skills of the International Swaps and Derivatives Association.

For anyone who has been involved in the rise and fall of financial markets over the last 15 years, there are few surprising revelations in the book – but there are plenty of enjoyable nuggets for everyone. Partnoy, for example, has much to add to the well-documented cases of Enron, Global Crossing and WorldCom. He makes a key distinction: unlike the other two, Enron was a profitable derivatives trading company that should have survived. WorldCom’s accounting fraud, in contrast, was so simplistic that the only way Partnoy can explain to himself the fact that all the watchdogs had come to miss such a basic multimillion dollar accounting mistake was to theorize that they perhaps never imagined WorldCom executives would attempt such a simple scheme.

Even more interesting are the lesser-known cases that Partnoy describes.

For example, in July 2001, two months before Jeff Skilling resigned from Enron, American Express announced it would take an \$826 million pre-tax charge to write down the value of investments in high-yield bonds and collateralized debt obligations. At the time it was assumed the losses were due to the complex workings within the company and that someone within Amex knew what was going on. But Partnoy says that quite the opposite was true. “There was (a) stunning public admission by the chairman of American Express, Kenneth Charnault, that his firm ‘did not comprehend the risk’ of these investments. What?” he writes.

Likewise, Partnoy points to the incident when a member of the board of General Electric (GE) told a journalist that GE had never had a full board discussion about derivatives – despite the fact GE had made (and lost) huge amounts of money on new financial instruments.

Partnoy also notes that the computer models used to calculate the value of Amex’s junk bond holding were no better or no worse than the systems that had led Bankers Trust and Salomon Brothers into trouble in the decade before – and also fueled the downfall of Long Term Capital Management (LTCM) in 1998.

“The traders [at LTCM] decided to reduce their one-day exposure, based on their VAR models, from \$45 million to \$35 million, just to be safe. However, when they sold off some of their less attractive positions, and rechecked the models, the VAR had gone up, to over \$100 million,” Partnoy writes.

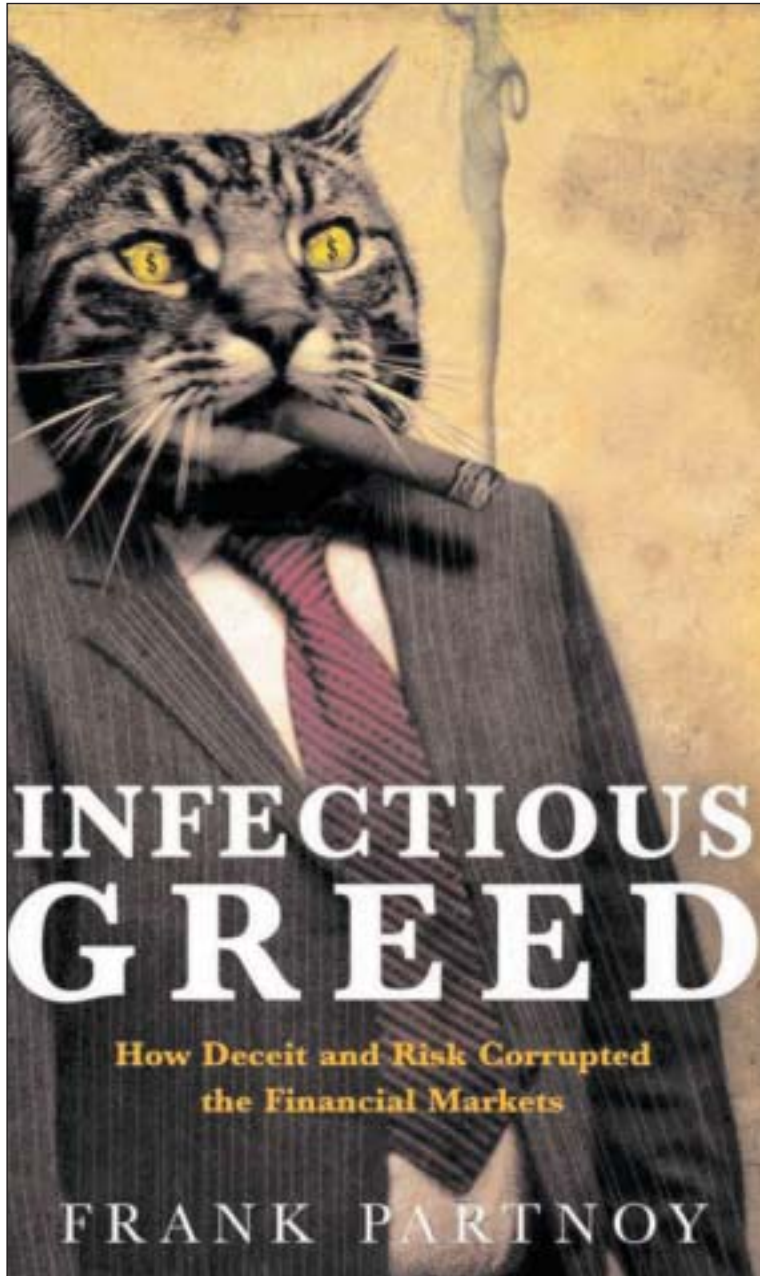
He also notes that the complex structures that grew out of the derivatives powerhouses, such as Bankers Trust and Credit Suisse First Boston, had moved further and further away from financial reality – and were being bred simply to avoid accounting rules. Unfortunately, US accounting rules are too specific, too clear and too easily sidestepped by abiding to the letter, not the spirit, of the law, according to Partnoy.

## Credit-Rating Critique

Partnoy also slams the role of credit-rating agencies in the financial markets, and blasts weak US-Congress-led attempts to reform them. Throughout the book, Partnoy cites examples of how the agencies failed to pick up on glaring accountancy frauds within the companies whose bonds they rate. He also provides examples of conflicts of interest between fees and ratings, and criticizes the fact that ratings rarely dropped until just days before companies filed for bankruptcy.

“No matter how poor the credit-rating agencies are at predicting defaults, companies still will pay them for ratings because legal rules effectively require them to do so,”

## REVIEW



“In the long run, says Partnoy, credit derivatives could be a disaster waiting to happen.”

he writes. In his epilogue, Partnoy argues that either the rules should be changed or the market for credit ratings should be opened up by using other criteria for rating bonds – such as the spread between the yield of a bond and a similar US Treasury bond.

The only downside to *Infectious Greed* perhaps is the fact that it's thin on non-US derivatives cases. The collapse of Barings Bank and antics of Sumitomo's rogue trader, Yasuo Hamanaka, are dismissed in a handful of pages. Even worse, the derivatives losses of German conglomerate Metallgesellschaft in 1993 are covered in just two pages, and the reader is given no real insight into these events.

Perhaps Partnoy's most pressing concern for the future is where the birth of credit derivatives will lead. The “hot potato” of credit risk, he notes, is no longer housed with banks. Rather, he says, it is being passed to insurance companies and pension funds – and even into the hands of high-net-worth individuals.

In the long run, says Partnoy, credit derivatives could be a disaster waiting to happen. In a speech in April 2002, he notes, Alan Greenspan said credit derivatives “appear to have effectively spread the losses from recent defaults.” But Partnoy remains skeptical. “The hundreds of billions of dollars of losses didn't disappear merely because the banks had reduced their risks. Instead, someone else bore the losses. The question was: who?” he asks. ■

Reviewed by Frances Maguire

IF YOU WOULD LIKE TO RECOMMEND SOMEONE FOR THE REGIONAL DIRECTOR ROLE IN YOUR LOCAL MARKET AND/OR HELP THE CURRENT ONE DEVELOP A PRESENTATION ON YOUR AREA OF SPECIALIZATION THEN PLEASE CONTACT **Kim DiBlasi** at [kimberly.diblas@garp.com](mailto:kimberly.diblas@garp.com)