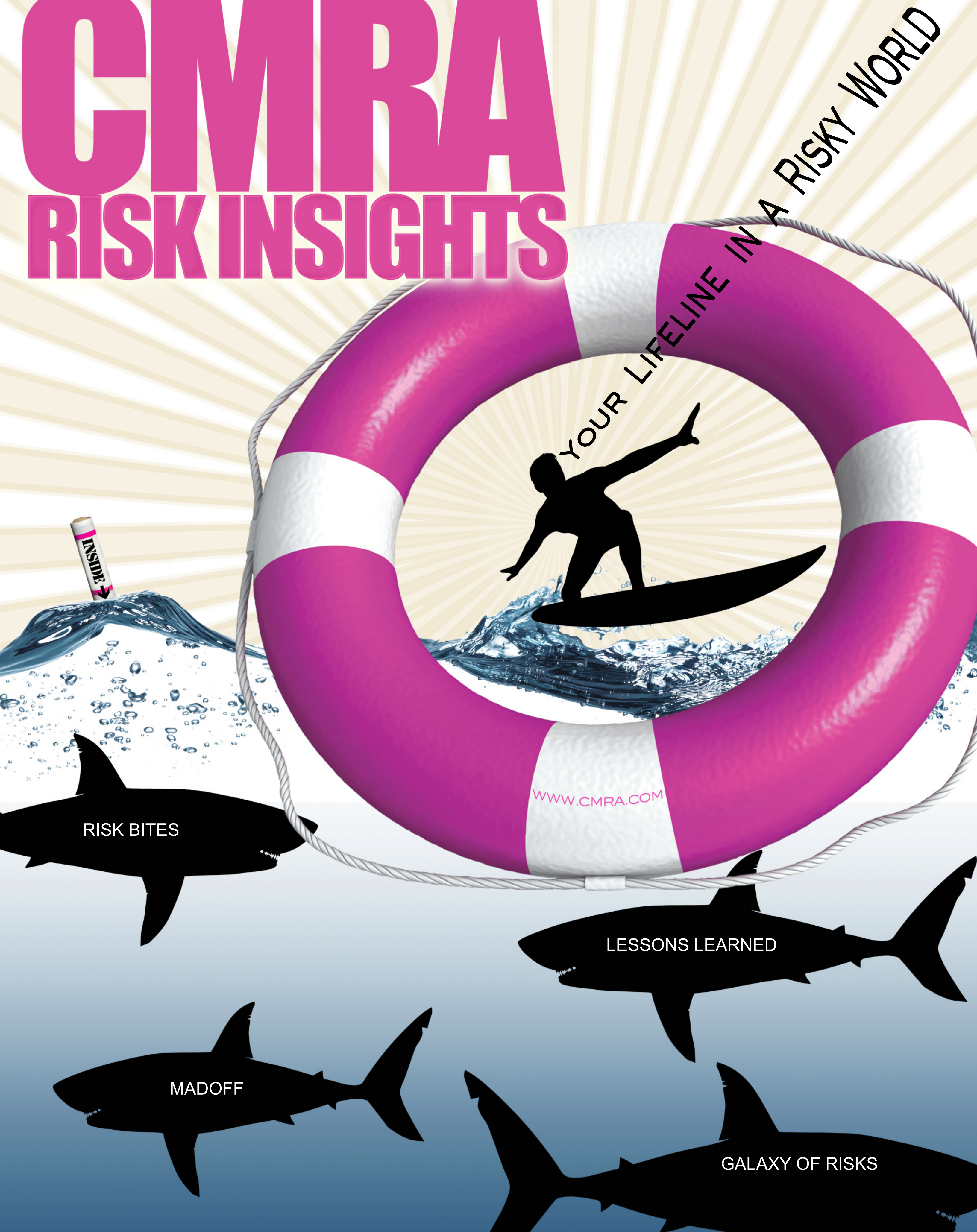
CMRA RISK INSIGHTS

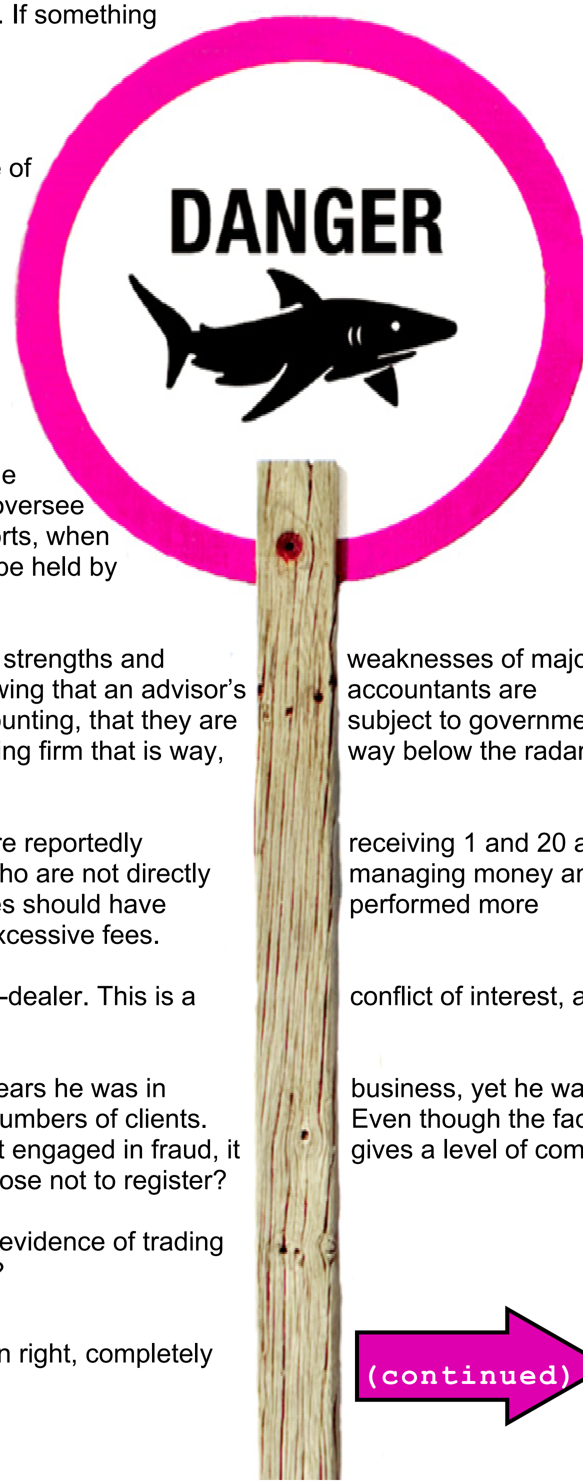


MADOFF AND THE LESSONS LEARNED FOR FINANCIAL INTERMEDIARIES

Of the many questions raised by the long-running Madoff fraud, the one we find most disturbing is how so many sophisticated people could have been fooled for so long. Where were the intermediaries—the banks, the funds of funds, the hedge funds and feeder funds, the people who collected fees to manage their clients' investments? These people were themselves fiduciaries. They owed their clients the highest degree of care. How did they miss the signs? Though fraud can be hard to discern, for those who bothered to look, the flashing red lights were extensive. They included all of the following:

❶ Madoff disclosed next to nothing. What about all that secrecy? While many legitimate managers object to providing full position level transparency, they're willing to discuss their strategies in depth with current and potential investors. If a manager won't tell investors what he plans to do with their money, why should they entrust it to him?

❷ His returns were uncannily steady. He never had a down quarter. If something sounds too good to be true, it virtually always is.



❸ Had one bothered to check returns based on purported holdings disclosed in investor reports, the fraud would have been clearly apparent. The numbers didn't add up. Moreover, the percentage of open interest Madoff would have had to control of the options contracts he purportedly traded would have been excessive, had one done the math.

❹ Where were the normal controls – segregation of functions between a front office and back office, trade reconciliation processes, organizational checks and balances? Didn't one ask the right questions?

❺ What about independent service providers? Madoff used no prime brokers or administrators to verify positions and cash balances, oversee valuations or validate fee computations. According to press reports, when potential investors in managed accounts asked that their assets be held by their custodians, they were turned away from the firm.

❻ His accounting firm was unqualified. Say what you like about the strengths and weaknesses of major accounting firms, there's a significant measure of comfort in knowing that an advisor's accountants are familiar with accounting and valuation issues raised by fund accounting, that they are subject to government oversight, that they follow professional standards. A tiny accounting firm that is way, way below the radar screen is not a source of such comfort.

❼ Intermediaries whose clients' money was placed with Madoff were reportedly receiving 1 and 20 as compensation. This is unusually high compensation for people who are not directly managing money and should have raised many questions. At a minimum, intermediaries should have performed more conscientiously rather than less conscientiously in light of their excessive fees.

❽ To the extent Madoff actually traded, he used an affiliated broker-dealer. This is a conflict of interest, and generally recognized as being far removed from best practice.

❾ Madoff was not a registered investment adviser for most of the years he was in business, yet he was clearly holding himself out as an advisor and dealing with large numbers of clients. Even though the fact that a firm is regulated is not in and of itself a guaranty that it isn't engaged in fraud, it gives a level of comfort that laws are being respected. Didn't anyone ask why Madoff chose not to register?

❿ Visitors to Madoff's advisory offices reported that they didn't see evidence of trading activity, or business of any kind. Doesn't that seem very strange?

Why then did so many financial intermediaries, fiduciaries in their own right, completely ignore those red lights and what can we learn from their failure?

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One reason, we suspect, is the unusual compensation at least some intermediaries received. If a fund of funds or feeder fund could collect 1% of assets under management and 20% of the upside virtually without lifting a finger, as compared with a more typical 1-2% of assets under management most funds of funds managers receive (theoretically in exchange for work), the temptation must have been strong simply to take the money. This no doubt was also a factor in the unusually large allocations made by intermediaries to Madoff. Instead of diversified holdings, clients of these intermediaries often wound up with many or most of their eggs in one basket – a foolish position to be in. Another reason, in our opinion, is the impression some funds of funds and other intermediaries seemed to have that the service they were providing was not to prudently allocate investor assets nor to prudently oversee their investments but rather to provide access to coveted funds or advisors. And, although we suppose that there may be investors who would be willing to pay for access, in good times at least, we are skeptical whether investors who invested in Madoff through various intermediaries were aware that those intermediaries were charging them merely for access. Presumably they believed they were also getting some measure of due diligence and oversight.

So what are the lessons we can take from this debacle?

First, all investors, including intermediaries, need to place heavy emphasis on **comprehensive** due diligence, both at the beginning of a relationship and periodically thereafter. Comprehensive due diligence includes not only diligence on investment strategies and performance history but also scrutiny of firm checks and balances, such as properly segregated front and back office functions and other operational controls, risk governance, risk monitoring and risk management, adequate systems, a strong regulatory compliance program and culture of compliance and a host of other issues. Due diligence can't be adequately performed by inexperienced people who tick items off on a check list. Onsite visits are key. Without them it's almost impossible to get a clear sense of firm culture, to see if things don't look 'right.'

Second, the absence of independent third party service providers is troublesome. A fund without a prime broker or administrator is a fund that has some explaining to do. Similarly, a fund without competent, knowledgeable auditors and lawyers is a fund to be avoided.

Third, disclosure needs to be sufficient to enable investors and their representatives to assess the investments being offered, and how they perform over time. Is enough information provided to assess the risks undertaken, detect a change in style, understand liquidity issues, the use of excess liquidity, how concentrations are handled. While full transparency isn't a necessity, an excessive focus on secrecy is a sign that something's not right.

Fourth, information received from an advisor needs to make sense. Returns need to be compared to returns generated by other managers trading similar products and strategies. Are they better or worse than their peers? What do they say about risk? Are they too good to be true? If so, they probably are.

Fifth, how about compensation? Are the interests of investors, intermediaries and managers aligned? Is an intermediary receiving unusually high compensation that will bias him toward a particular manager? What services are being provided in exchange for that compensation?

Sixth, regulation serves an importance purpose, but it isn't a guaranty that all is right with the world. Investors and their representatives need to take responsibility for overseeing their investments. Managers need to hold themselves to the highest professional standards.

Seventh, conflicts of interest **matter**. The use of an affiliated broker-dealer is one warning sign that a manager isn't as concerned about his investors as perhaps he should be. There are many other disturbing signs with respect to related transactions, allocation of investment opportunities, rules on personal trading – to name some perennial issues. Investors need to think about conflicts and what they say about managers and how they take care of their clients.

Are there many more Madoffs out there? No doubt there are other frauds, but by learning from this experience, investors and intermediaries can substantially decrease their chances of getting caught in their grasp.

RISK BITES

Navigating Troubled Waters: Incorporating Complexity, Transparency, Leverage & Liquidity into Risk Measurement

Suddenly, the world as we thought we knew it is gone. Could this have been predicted?

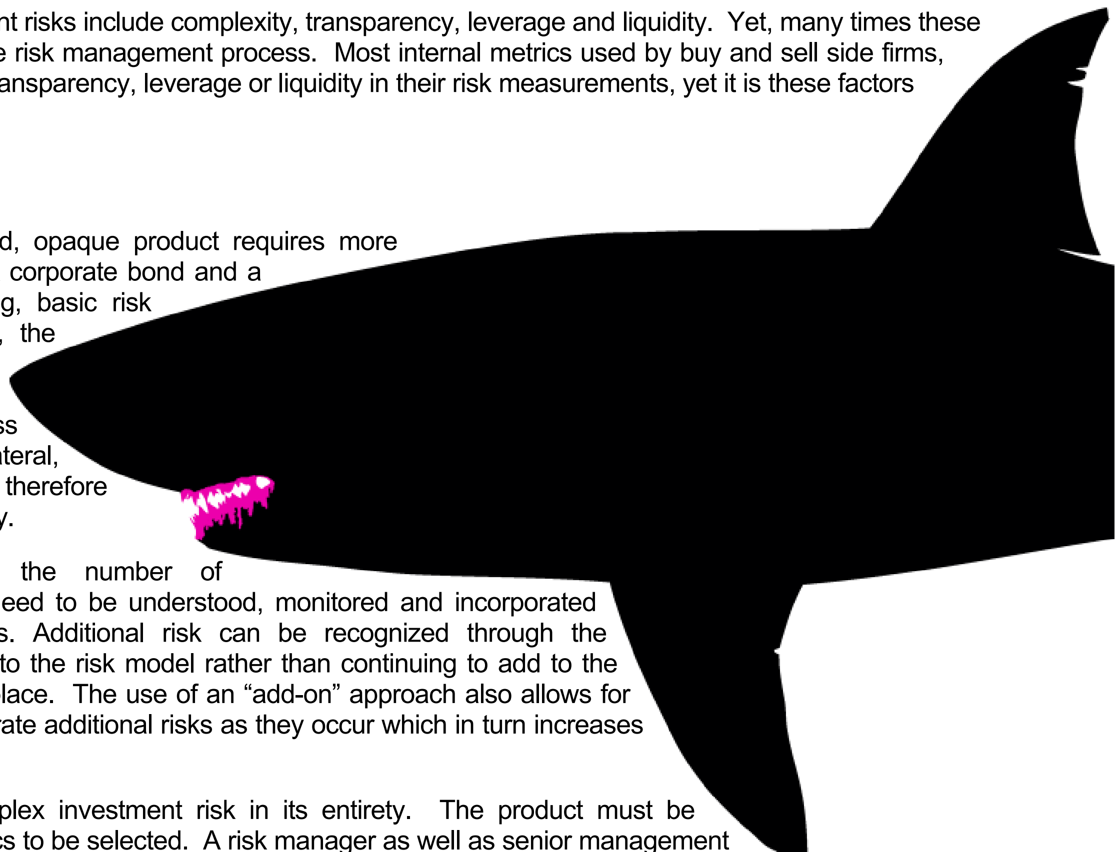
Clearly the magnitude and velocity of recent events were unprecedented and hopefully will never be repeated. But on some level, should we have known what was coming?

Looking back, the terms “irrational exuberance” or “unfounded optimism” or just plain “greed” come to mind.

Many people are asking, “what happened to risk management and control?”

Some of the overall goals of risk control are to know your risks and define your tolerances. There are many components of sound risk measurement that impact overall performance and that need to be incorporated in the risk management and control process. These components, if monitored adequately, may provide early indications of a possible shift in markets that would have an impact on selected holdings and/or the portfolio.

Some of the more subtle but important risks include complexity, transparency, leverage and liquidity. Yet, many times these risks are not fully incorporated in the risk management process. Most internal metrics used by buy and sell side firms, do not fully incorporate complexity, transparency, leverage or liquidity in their risk measurements, yet it is these factors that roiled the markets.



COMPLEXITY RISK

Quite simply, a complex, less liquid, opaque product requires more intense risk management. If a AAA corporate bond and a AAA CDO are run through existing, basic risk models to determine a risk score, the result is generally the same. However, the CDO is a more highly structured product with less visibility to the base underlying collateral, in a generally less liquid market, and therefore carries more risk due to its complexity.

This complexity also increases the number of parameters and assumptions that need to be understood, monitored and incorporated into the risk management process. Additional risk can be recognized through the development of separate “add-ons” to the risk model rather than continuing to add to the complexity of the model already in place. The use of an “add-on” approach also allows for flexibility and the capacity to incorporate additional risks as they occur which in turn increases the efficiency of business response.

No one statistic can describe complex investment risk in its entirety. The product must be understood for the appropriate metrics to be selected. A risk manager as well as senior management and the Board looking at a single metric or inappropriate metrics can get a distorted picture of risk. Even if the correct metrics are selected, focusing on the wrong assumptions or inputs can also give an inaccurate depiction of the risk.

Dependencies, causes and effects, and the extent of correlations also increase as complexity increases. The recent collapse in structured finance vehicles created cascades through the markets that were not foreshadowed by the risk models.

As complexity increases, risk management and control must become more sophisticated and nuanced. We strongly recommend stress testing the <u>assumptions</u> that underpin the valuations and risk assessments of such products.

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TRANSPARENCY RISK

Transparency is sometimes viewed as the holy grail of investing and holdings, valuation, processes, etc. Meanwhile, the actual utility, and purpose of full position transparency (as opposed to risk transparency) are still being debated. In the absence of position-level transparency and/or the tools to analyze the positions, what really matters from a risk management perspective?

For structured products, recent experience has shown that not only is it critical to understand who the issuer and guarantor are; it is equally important to know what the collateral is composed of, how often collateral positions are marked, and where and how they are held.

In addition, merely knowing today's value is not sufficient for a complex structured product. Without transparency, the holder's ability to stress test or generate other risk metrics is severely limited. And, if you do hold opaque products in your portfolio, the "risk" calculation you use (whatever it is) should be grossed up.

The comfort level with the degree of transparency varies for each market participant, but some things should be clear—if you don't understand it, don't buy it—if it sounds too good to be true, it probably is.

LEVERAGE RISK

The concept of leverage—in particular being over-leveraged—has taken much of the blame for the escalation of the market events during the past year. And, the importance of incorporating leverage risk into any risk management and control process has finally become very apparent.

The most commonly used definitions of leverage involve borrowed money. However, instruments such as options have 'embedded leverage' and instruments such as futures create leverage due to the way they are margined. CDS create leverage and CDS with monolines where collateral is not exchanged create even more leverage. All forms of leverage must be recognized and tracked.

The rules for borrowing, margin requirements, haircuts, and availability of financing can change abruptly in a stressed market. Incorporating leverage risk and variability of haircuts in stress testing is extremely important.

LIQUIDITY RISK

Liquidity does matter and can be elusive. Liquidity and the lack thereof is probably the risk that has traditionally received the least focus and yet has inflicted the greatest damage.

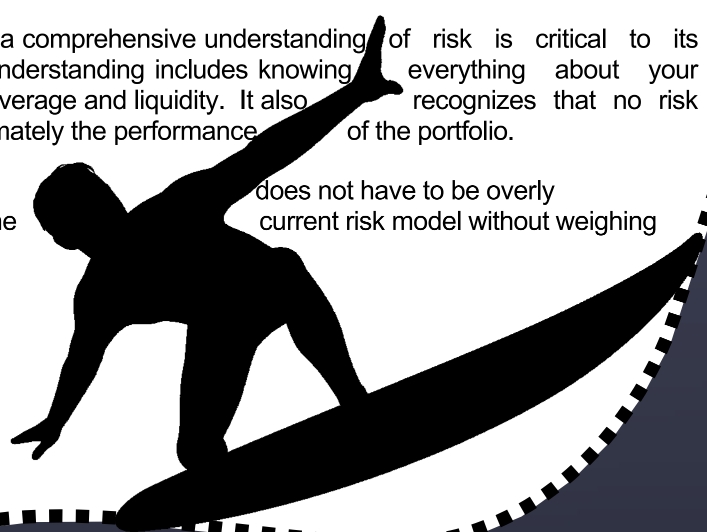
There are two essential types of liquidity risk: the liquidity pertaining to individual instruments, counterparties, and markets and the liquidity provided by funds, structured vehicles and/or fund of funds to their investors and the potential for liquidity mismatches.

What happens when a normally liquid product suddenly becomes illiquid? What happens when traditional sources of credit are no longer available? These are questions that could have been asked before now. Understanding the liquidity of a portfolio in both normal and stressed times is a critical component of effective risk management.

CONCLUSION

If recent events have taught us anything, it's that a comprehensive understanding of risk is critical to its effective management. And a comprehensive understanding includes knowing everything about your portfolio, including its complexity, transparency, leverage and liquidity. It also recognizes that no risk exists as an island: each affects another, and ultimately the performance of the portfolio.

Also, incorporating metrics relating to these risks does not have to be overly complicated. Using an add-on model optimizes the current risk model without weighing it down in complexity.



While it has 4 letters, "risk" is not a dirty word. You can't make money without taking risk. But it is important to remember that the risks in your portfolio should not come as surprises. Know your risk, manage it, control it and monitor it. And then you will not have to worry about it biting you in the end.

REFLECTING ON 2008

WHAT WE HAVE LEARNED …AGAIN

Based on a long view of history, there is only a 1% chance that the S&P will lose more than 2.8% in a day and only a 1/64,000 probability that the S&P could lose more than 5% on any given day. Yet the S&P lost more than 5% on 7 days in the second half of 2008 and on 1 day lost 9.5%—which was supposedly a 1 in 820,000,000,000,000 event!

- **History does not necessarily repeat itself, and relying solely on historical data can be misleading.**
  - Risk measurements need to be forward-looking and rear-view mirror.
  - Assumptions need to include the unprecedented and unthinkable.

- **Once-in-a-lifetime events can occur every few days!**
  - Survival of the fittest…or, the most flexible in adapting to constantly changing norms.
  - Risk management needs to provide the "warning signals" in time to steer away from the cliff.

- **Liquidity can change on a dime.**
  - Liquidity needs to be an integral part of assessing risk.
  - Risk management needs to include "what if" scenarios for liquidity stress.

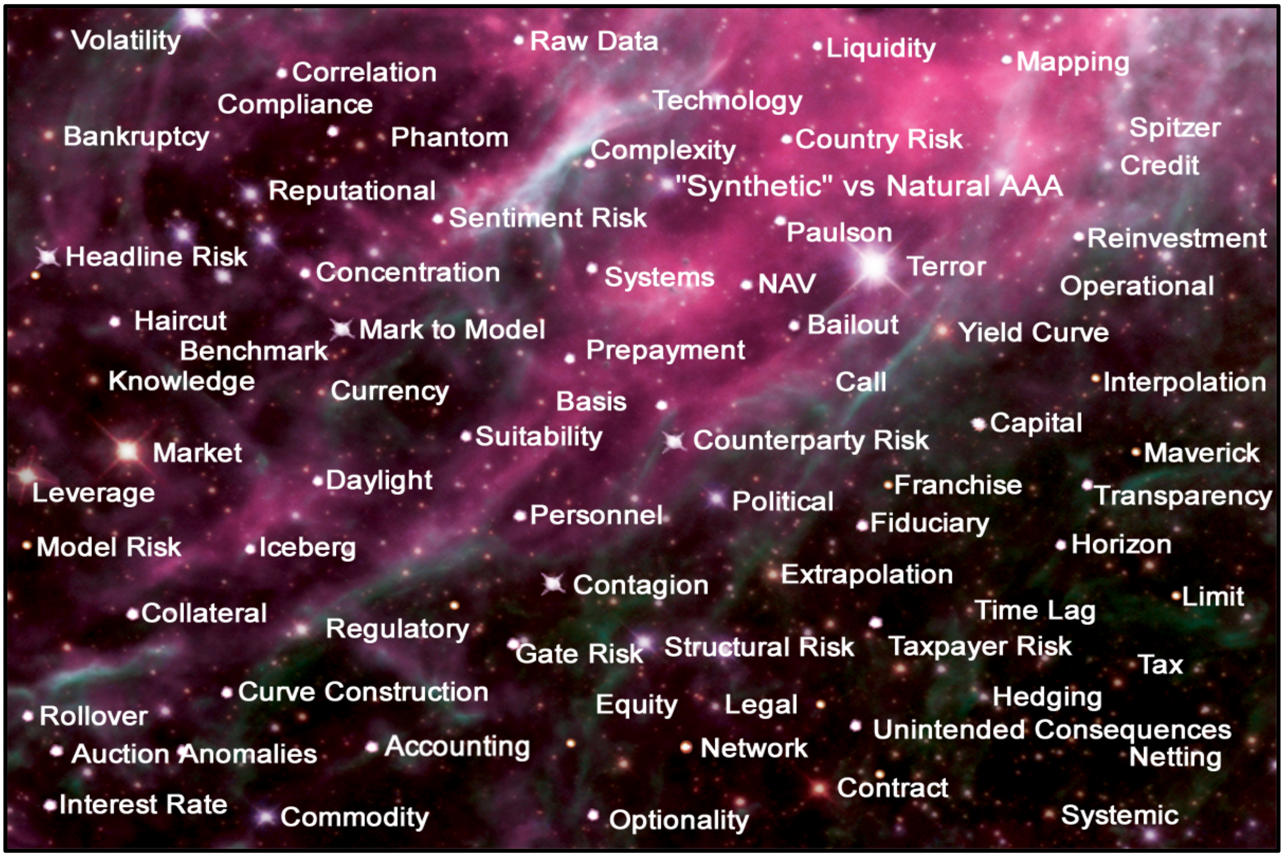
- **Counterparty risk matters and needs to be viewed in the aggregate.**
  - Not only current exposures but potential future exposures based on macro-market shifts.

- **All AAA's are not created equal.**
  - Understand the complexity of the structure and the assumptions behind the ratings.

- **Fundamentals are important.**

- **Process matters.**

GALAXY OF RISKS



RECENTLY ADDED RISKS: ✷ SENTIMENT RISK ✷ PAULSON RISK ✷ GATE RISK

Capital Market Risk Advisors (CMRA) is the preeminent risk management firm providing both consulting and litigation support services to US and international financial services companies and institutional investors. CMRA's predecessor firm was founded in 1991 by Leslie Rahl who has 35 years experience in the financial markets. Ms. Rahl was previously co-head of Citibank's Derivatives Group and served as a director of ISDA for 5 years. Ms. Rahl and her partner, Barbara Lucas, are capital market veterans with over seventy years of combined experience and extensive expertise with respect to all types of derivatives, mortgage-backs, collateralized debt obligations and other complex and structured securities and transactions.

Clients include banks, broker dealers, hedge funds, fund of funds, mutual funds, insurance companies, pension funds and other financial market participants. As true "experts" whose practice is balanced between clients who are trying to avoid/solve problems and those who are litigating/investigating problems, CMRA is uniquely positioned to provide both pro-active and re-active services and was called the "Red Adair" of financial engineering by Grant's Interest Rate Observer.

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01.22.09: MANAGING RISK IN CHALLENGING TIMES
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