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THE CDS BIG BANG

By Otis Casey

Otis Casey, VP credit products at Markit, explains the changes to the Global CDS contract and North American conventions.

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April 8 2009 saw a "Big Bang" in the market for credit default swap (CDS) contracts and the way in which they are traded. While the changes to the CDS contract were global, there were also a few convention changes that only apply to North American CDS. However, Europe is expected to follow these moves as well.

Both contract and convention changes were implemented simultaneously. These changes were designed to make CDS more standardised to help support efforts for central clearing of CDS trades, make strides towards T+0 trade processing and facilitate operational efficiency.

Of all the reasons driving the changes, the most salient has been that of central clearing of CDS. How do these contract and convention changes support central clearing? The short answer is standardisation, specifically:

1) Event determination committee—a central decision point and trigger for credit and succession events prevents differing conclusions or triggers for different contracts on the same entity.
2) Hardwiring of auction—supports a binding and standard cash settlement price when there is a credit event.
3) Rolling event effective date—every open position has the same effective date regardless of when the original trade took place.
4) Fewer restructuring clauses—having fewer of these available helps reduce the complexity of centrally clearing many more contracts.

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Marc N. Altschull

While we have all been grappling with the effects of the financial crisis, your Investment Section Council has remained focused on the objectives we set at the beginning of this year. Concentrating on improving communications and networking, we proudly announced the reconstruction of the Investment Section Listserv. As you may have been aware, there has been a listserv available on the Section's Web site; however, it had not been utilized in over three years! We decided to clean out that list of e-mail addresses and start anew.

If you have not already done so, I invite you to join the listserv, since its success will depend on the participation of our membership. After registering, you will be able to do all of the following and more:

• Distribute items of interest to the other members;
• Post questions on topics to seek information from other members; and
• Keep informed on upcoming investment related meetings and webinars.

Speaking of successful efforts that depended on the participation of our members, I would like to highlight the publication of "Risk Management: The Current Financial Crisis, Lessons Learned and Future Implications." This compilation of essays is the combined effort of the Joint Risk Management Section and the Investment Section and relied on the submissions of actuaries expressing their opinions on the causes and possible solutions for the financial crisis. We have further capitalized upon this opportunity to promote the actuarial profession by featuring some of the authors in interviews and presentations.

Upon further reflection of the first half of this year, I was particularly impressed by the turn-out for the Investment Symposium, as nearly 200 people took time away from the markets to learn about how others in the profession were coping with the financial crisis. The section is especially grateful for Nicola Barrett who continues to contribute even after her term on the council ended last year. You truly are an exemplary friend of the council as demonstrated by your efforts in chairing the symposium committee, and we will be looking forward to seeing how you are able to make next year's symposium even better.

As I head into my final months as the chairperson of the Investment Section Council, I cannot help but reflect back on my three years on the section council. We have submitted a list of candidates to join the section council, and shortly you will be electing the next three fortunate leaders. Whether participating on the section council, posting messages to the listserv, speaking at conference sessions, or even writing articles for this publication, I invite all section members to get involved. As I have tried to express throughout this message, the success of the Investment Section and the SOA depends critically on the participation of everyone. After all, this is *our* organization!

Thank you all for your support and participation this past year. In closing I would especially like to thank all of this year's section council members for participating in our lively conference calls, cooperating in the preparation of our conference sessions, and committing to improving each of the areas that had been identified in last year's survey. Your dedication truly made my job easy this year and particularly enjoyable. ♦

Equity-Based Insurance Guarantees Conference

October 12-13, 2009
Boston, MA

This seminar is designed to give professionals with limited-to-moderate experience an understanding of how to better quantify, monitor and manage the risks underlying the VA and EIA products.

For professionals well versed in intricacies associated with managing such risks, the seminar provides an overview on what is being done by other experts in the field via case studies, the current state of affairs in the industry and how the market is expected to change in the future. Additionally, participants can expect to meet fellow professionals in this area so as to network and exchange ideas.

This seminar has been nearly sold out in every North American venue for the past four years.

Learn more at www.soa.org.

> ## "THE MOST SALIENT REASON DRIVING THE CHANGES HAS BEEN CENTRAL CLEARING."

5) Fixed coupons—makes payment amounts standardised thereby making it easier to offset contracts.

6) Standardisation of accruals—makes the timing and amount (along with fixed coupons) of payments uniform in the first premium period (and throughout the duration of the contract) across all trades (same reference entity, seniority, currency, restructuring clause, and maturity), thereby making it easier to offset contracts.

The goals of reducing outstanding trades by trillions of notional dollars, restructuring the way trades are processed so that trades can be matched in the same day and the creation of a central counterparty mechanism are ambitious. The interaction of these changes and their interdependency makes these proposals stronger and more coherent than simple one-off changes.

GLOBAL CONTRACT CHANGES

There were three global changes to the CDS contract. First, the effective date for all CDS contracts was changed to the current day less 60 days for credit events and the current day less 90 days for succession events. Second, determination committees make binding determinations of whether credit and succession events have occurred as well as the terms of any auction. Third,

the contract hardwired the auction mechanism for CDS following a credit event.

EFFECTIVE DATE FOR CREDIT EVENT AND SUCCESSION EVENT PURPOSES

Under the old CDS contract, protection against a credit event began on the business day following the trade date. As such, two trades buying and selling CDS on the same reference entity for the same notional amount but on different days were not truly offsetting.

The new contract will split the effective date for accrual and coupon payment purposes from the protection effective date. Accruals and coupon payments are addressed later in this article. This change ensures fungibility as far as protection is concerned. A CDS trade with the same characteristics done under the new contract will have the same effective date as a trade done one week later. This allows for the trades to be netted easily and avoid residual stub risk between trades with the same entity/maturity/currency/restructuring done on different dates.

DETERMINATION COMMITTEES – CREDIT EVENTS AND SUCCESSION EVENTS

Credit derivatives determination committees (DC) were implemented through a supplement to the 2003 ISDA Credit Definitions. There is one DC per region with the regions defined as: the Americas, Asia ex-Japan, Australia-New Zealand, EMEA (Europe, Middle East and Africa) and Japan. Having a common and binding result is critical for standardisation.

RESPONSIBILITIES

Each DC has several responsibilities for its region. First and foremost, the DC decides whether a credit event has occurred, its type and date. The DC then determines whether to hold an auction and the specific terms of the auction (we go into this in more detail under "Hardwiring of the Auction Mechanism").

Standardisation goals

		Goals		
		Trade Compression	T+0 Trade Processing	Central Clearing
Contract & Convention Changes	Event Determination Committee			✓
	Hardwiring of Auction			✓
	Rolling Event Effective Date	✓		✓
	Fewer Restructuring Clauses	✓	✓	✓
	100/500 Fixed Coupons	✓	✓	✓
	Full Coupon	✓	✓	✓

Source: Markit

Current Contract: Offsetting Does Not Truly Offset!

Sell Protection

Credit Event Protection Effective,
Succession Event Effective

….until maturity

Jan 08, 2009	Jan 09, 2009	Jan 15, 2009	Jan 16, 2009

T   T+1   T   T+1

…...

Buy Protection

Credit Event Protection Effective,
Succession Event Effective

….until maturity

Residual Stub Risk
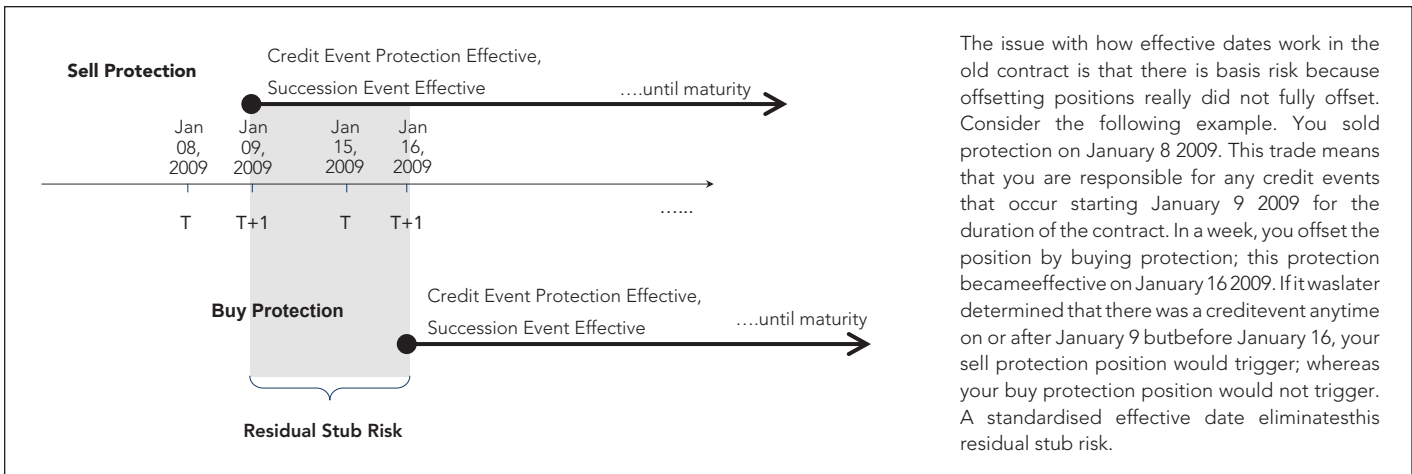
The issue with how effective dates work in the old contract is that there is basis risk because offsetting positions really did not fully offset. Consider the following example. You sold protection on January 8 2009. This trade means that you are responsible for any credit events that occur starting January 9 2009 for the duration of the contract. In a week, you offset the position by buying protection; this protection becameeffective on January 16 2009. If it waslater determined that there was a creditevent anytime on or after January 9 butbefore January 16, your sell protection position would trigger; whereas your buy protection position would not trigger. A standardised effective date eliminatesthis residual stub risk.

Source:Markit

CDS Trading Timelines

Credit Event Protection Effective,
Succession Event Effective

….until maturity

Dec 20, 2008	Jan 08, 2009	Jan 09, 2009	Mar 20, 2009

Coupon Payment Date   T   T+1   Coupon Payment Date

…...

New CDS Trade Timeline

Oct 08, 2009	Nov 08, 2009

….until maturity

For SE   For CE

Every open position on any given day, simply has an effective date of TODAY minus 60 calendar days for Credit Events, TODAY minus 90 calendar days for Succession Events

Rolling Effective Dates: (effective date rolls each day for all positions such that they match the effective dates of new trades)

The effective dates for credit events and succession dates in the new contract would be separate and feature "lookbacks". The effective date for credit events would be today-60 calendar days. For succession events the effective date is today-90 calendar days. Each day, the effective period for each "rolls" forward until the position is terminated. The no longer be relevant for determining the effective period.

Source:Markit

The DC also makes determinations on the acceptable deliverable obligations and any substitute reference obligations, if applicable. Last, the DC makes determinations regarding succession events.

COMPOSITION

The structure and composition of each DC is consistent across regions and consists of the following: eight global dealers, two regional dealers for each region, five buy-side members, two non-voting dealers, one non-voting buy-side member and the International Swaps & Derivatives Association (ISDA) as a non-voting secretary. The composition includes sell-side and buy-side representations on the DC with 15 voting members and three non-voting members at any one time (the DC secretary is the fourth non-voting member).
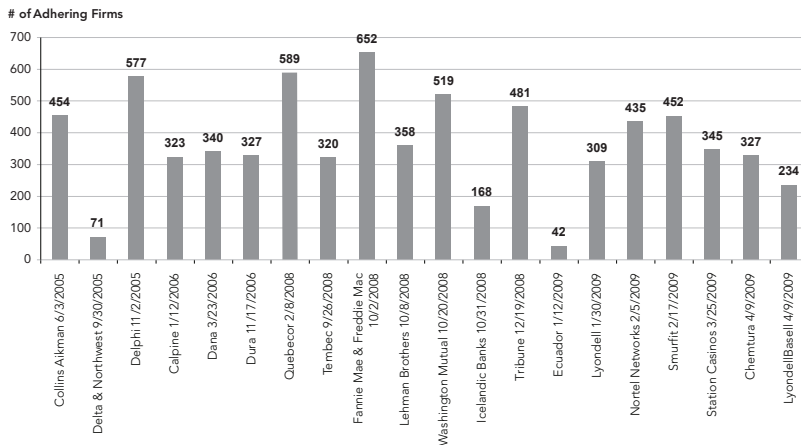
MECHANICS

In order for a DC to consider whether or not a credit event or succession event has occurred, an ISDA member must bring forth the issue for consideration with the sponsorship of a DC member. The issue must be raised when the "lookback" period (60 days for credit events, 90 days for succession events) is still applicable.

Note, once the issue is formally raised, the time taken for the committee to deliberate the necessary questions is not taken into consideration for purposes of the rolling effective date provisions. In other words, if an ISDA member (along with a DC sponsor) requests that a DC consider a credit event for a specific credit believed to have occurred 45 days ago, buyers of protection would not "lose" the credit event simply because a committee takes longer than 15 days to deliberate.

If an event is deemed to have occurred, deliverable obligations must be specified and a decision must be made as to whether an auction is necessary. If an auction is necessary, the auction terms must be determined. An 80 per cent super majority is required to determine a credit or succession event.

Historical CDS Auction Protocols: Adhering Parties & Protocol Dates[1]

of Adhering Firms

Reference Entity	# of Adhering Firms
Collins Aikman 6/3/2005	454
Delta & Northwest 9/30/2005	71
Delphi 11/2/2005	577
Calpine 1/12/2006	323
Dana 3/23/2006	340
Dura 11/17/2006	327
Quebecor 2/8/2008	589
Tembec 9/26/2008	320
Fannie Mae & Freddie Mac 10/2/2008	652
Lehman Brothers 10/8/2008	358
Washington Mutual 10/20/2008	519
Icelandic Banks 10/31/2008	168
Tribune 12/19/2008	481
Ecuador 1/12/2009	42
Lyondell 1/30/2009	309
Nortel Networks 2/5/2009	435
Smurfit 2/17/2009	452
Station Casinos 3/25/2009	345
Chemtura 4/9/2009	327
LyondellBasell 4/9/2009	234

Source: Markit, ISDA[1]

While adherence to an auction is voluntary and precise participation rates are not available, most investors with positions in the relevant reference entity have agreed to the auctions. High participation rates have been consistent. The low numbers of participants on the Ecuador auction, for example, is a function of the relatively few investors with open positions in Ecuador at the time of that credit event as opposed to a low participation rate in the protocol.

Historical participation rates by institutions are not known precisely but according to DTCC, the Quebecor auction (the first one they processed) saw institutional participation accounting for 85 per cent of the open positions in the DTCC Trade Information Warehouse.
Since then, this participation coverage figure has steadily increased and has been consistently over 90 per cent in recent auctions. Furthermore, all dealers have adhered to these protocols and significant buy-side institutions

"THE CREDIT EVENT AUCTION MECHANISM IS A TRANSPARENT AND EFFICIENT PROCESS."

If an 80 per cent supermajority is not achieved on any question before the DC, the issue automatically goes before an external review panel. An external review panel starts with the presumption that the simple majority decision of the DC is correct. Depending on the strength of the original vote, two out of three or three out of three external reviewers may be required to overturn the original vote.

HARDWIRING OF THE AUCTION MECHANISM

The old CDS contract only addressed the physical settlement of trades. Since 2005, an auction process has been instituted and most market participants sign to protocols (a legal document amending all previous trades) for an auction to take place to determine the final recovery rate of a defaulted entity. The process initially began because there were concerns that the size of outstanding CDS notional amounts relative to the amount of deliverable bonds could set off a scramble by CDS investors to acquire bonds to deliver, artificially driving up the price.

The process has worked well. However, tracking down all CDS investors every time there is a credit event and determining whether or not they want to adhere to the protocol is inefficient. To date, there have been more than 50 auctions jointly administered by Markit and Creditex. The precedent for hardwiring the auction mechanism was set with the creation of leveraged loan CDS.

The credit event auction mechanism is a transparent and efficient process to determine a final price post credit event, and settle trades physically or with cash. All inputs into the auction process are made freely available at www.creditfixings.com. For a description of the credit event auction methodology, please see "Credit Event Auction Primer" jointly published by Markit and Creditex. This document can be found at www. markit.com/cds.

The auction settlement terms are attributes best left settled based on the specifics for each particular credit. It is conceivable that there may not be a credit event auction if the outstanding volume of trades is so small as not to merit one.

Auction-specific terms will be set by a majority vote of the determination committee and published prior to the auction. These terms include the following: 1) auction date; 2) initial bidding information publication time; 3) subsequent bidding information publication time; 4) inside market quotation amount; 5) maximum inside market bid-offer spread; and 6) minimum number of valid inside market submissions.

CONVENTION CHANGES TO NORTH AMERICAN CDS

The changes to the North American CDS market outlined in this section, including a move to trading with a fixed coupon, did not require a contract change. In many cases, these conventions were already being applied. For example, heavily distressed credits traded with points upfront and a fixed coupon of 500 basis points. North American high-yield credits typically traded with "no restructuring."

Perhaps more importantly, the timing of these changes or broader adoption of existing conventions were brought about to coincide with the new contract changes. As many of these proposals are interrelated in bringing about desired changes in standardising CDS contracts, increasing operational efficiencies, driving towards T+0 trade matching and supporting central clearing, it made sense to address these changes all at once.

Just as Markit CDS indices currently trade globally, single-name CDS in North America now trade with a fixed coupon. The coupon is either 100 or 500 basis points and upfront payments will be exchanged. Contracts that trade with a 100 fixed coupon will generally be quoted in dealer runs as a conventional spread and contracts that trade with a 500 fixed coupon will generally be quoted in dealer runs in points upfront.

There will be instances where participants will see 100 fixed coupons quoted in points upfront and 500 fixed coupons quoted in conventional spreads. The Markit CDS Converter translates the conventional spread into the required upfront payment and helps investors convert between quoting conventions. It is available for free at www.markit.com/cds.

" ... THE NEW TRADING CONVENTION INCLUDES A FIXED COUPON OF EITHER 100 OR 500 BASIS POINTS. "

Regardless of when new trades are made, the buyer will have to make a full coupon payment on the first payment date. As such, the seller of CDS protection will make any needed accrual rebate payment to the protection buyer at the time of the trade.

FIXED COUPON

In the past, most single names were quoted using a par spread (the spread that would cause the present value of a CDS trade to be zero for both the buyer and seller at the outset of the trade). Historically, only the high-yield end of the single-name CDS market traded with a fixed coupon and upfront payment. However, the universe of names quoted upfront increased as more names became stressed. For North American CDS, the new trading convention includes a fixed coupon of either 100 or 500 basis points. It is expected that investment-grade entities will trade with a 100 basis points coupon while high-yield will use a 500 basis points coupon, but dealers may make markets for either strike for a given name.

Why 100 and 500 basis point fixed strikes? Why not 200 and 600 or all at a single strike of 500? First, a 500 strike is already used with many high-yield names and thus is a logical starting place for at least one fixed strike. To the extent that investors prefer trading CDS with a small upfront payment, it was beneficial to allow for an additional fixed coupon strike.

However, an excessive number of coupon options would detract from the standardisation that the market seeks. The expectation is that a 100 basis points strike is properly parameterised for high-grade and non-stressed names.

Although the standardisation of coupons is irrelevant from a present value perspective, the benefits to the CDS mar-ket from an operational perspective are significant. Specifically, when combined with other changes in the CDS market outlined in this report, the standardisation of coupons allows for more simplified processing of trades as well as the netting of offsetting CDS positions.

The Widget Corporation %Y CDS: Present Value Indifference Curve
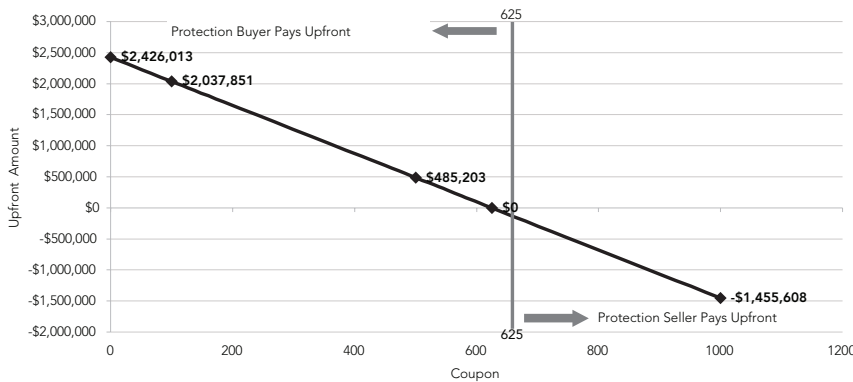
While participants in the CDS market often prefer to minimise upfront payments, it is important to note that from a present value perspective investors should be indifferent. Assessing a theoretical trade on The Widget Corporation2, an investor should be indifferent between buying protection with:
- 625 basis points annual coupon and no upfront payment
- 500 basis points annual coupon and a $485K upfront payment
- 100 basis points annual coupon and a $2m upfront payment
- No annual coupon and paying a $2.4m upfront payment
- 1,000 basis points annual coupon and receiving a $1.4m upfront payment.

Source: Markit

LIQUIDITY IN 100 OR 500

Now that credits can trade with either a 100 or 500 basis points fixed coupon convention, it is expected that liquidity will tend toward one or another on a name by name basis and could move from one convention to another depending on the view of their creditworthiness. Names are generally expected to trade with the same convention across all tenors but this is not explicitly required.

TRADING WITH A FULL COUPON
THE OLD CONVENTION:

Under the old convention, whether a protection buyer pays a coupon on the first coupon or International Monetary Market (IMM) date depends on when the trade occurred. IMM dates are the chosen termination dates for CDS contracts: March 20, June 20, September 20 and December 20 for any given year. (These dates loosely correspond to the IMM dates used in the euro money market—the third Wednesday of March, June, September and December.)

If the trade date fell before 30 days before the first coupon date, the accrual was due on the first coupon date for the number of days of effective protection during the period. This was called a "short stub" period. If the trade date was within 30 days before the first coupon date, there was a "long stub period."

No accrual of premium was paid on this first IMM coupon date, rather the long stub was paid on the following coupon date. That payment would include the portion of premium owed for protection in the first period plus the full premium for the second period.

This added a level of complexity in setting up coupon payments. About 5 per cent of the trades in the Trade Information Warehouse had not made a "first period" coupon. These trades were "long stub" (see diagram above). As such, these positions could not be initially included in trade compression, the process used to net single-name CDS positions to reduce gross notional outstanding.


Accruals: Current vs Proposed

Current CDS Accrual Timeline
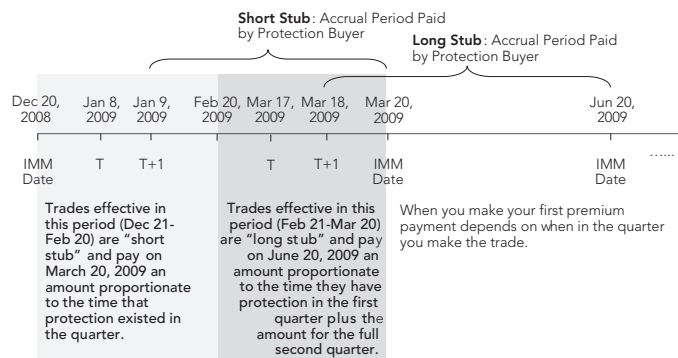
For the same credit and same maturity, the timing of the first premium payment depends on when in the quarter the trade is done. Under the new standard, full premium payments would always occur on the IMM payment date. Any "overpayment" by the protection buyer for the time in the period for which they did not hold the position would be paid by the protection seller at the time of the trade.

This practice makes the CDS a bit more like a bond in the sense of how bonds treat accrued interest. That is, payments are dealt within the same period instead of shifting to the next period and the payment amounts are adjusted for the time in which the position is held during the first payment period. The comparison ends there though, as a CDS premium payment and a bond accrued interest payment are not alike.
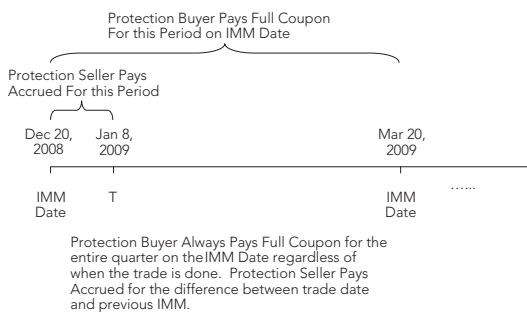
NEW CONVENTION:

The new contract will mimic the way the Markit CDS indices operate. Regardless of when the trade was executed during the coupon period, the protection buyer will pay the full quarterly coupon on the coupon payment date. This means that as the trade is executed, the protection seller has to rebate the accrued

up to the trade date to the protection buyer. Standardising to a full coupon regardless of when the trade was initiated would thus recapture approximately 5 per cent of the trades in the DTCC Trade Information Warehouse and make them immediately available for inclusion in trade compression.

RESTRUCTURING CLAUSE CONVENTION
In addition to bankruptcy and failure to pay, restructuring of the reference entity is a defined credit event in the 2003 Credit Derivatives Definitions. CDS can trade with or without restructuring and if the trade is made with restructuring, the restructuring provisions define what characteristics deliverable obligations can have.

Under the 2003 ISDA Credit Definitions, there are four types of restructuring clauses: Old Restructuring (Old R), Modified Restructuring (Mod R), Modified-Modified Restructuring (Mod-Mod R), and No Restructuring (No R). The differences between them (at least for those including restructuring) largely focus on the maturity of the deliverable obligations and transferability of deliverable obligations.

Over time, certain credits have come to trade on a market-defined convention. For example, Europe's CDS contracts typically trade with a Mod-Mod R convention, North American

investment-grade names trade with a "Modified" restructuring convention, and North American high-yield names trade without restructuring. In Europe, "Modified-Modified" restructuring is common because the bankruptcy laws make it difficult for borrowers to file in many jurisdictions. For North American investment-grade credits, "Modified" restructuring addressed the needs historically of hedgers of bank loan portfolios.

With the growth of the CDS market, hedgers of bank loan portfolios have become a smaller percentage of the overall CDS market. As such, the industry has considered dropping restructuring as a North American convention for some years. Some dealers even took this step unilaterally.

There is an economic difference between contracts that trade with and without restructuring. Trades with restructuring demand more premium for protection as they give the protection buyer coverage for more possibilities of different types of credit events than trades without restructuring.

QUOTING CONVENTION
Dealer runs are simply electronic messages containing a dealer's bid/offer markets on the credits in which they make a market or desire to provide a price indication. Par spread runs for the CDS market look something like that below:

North American CDS: Breakdown of Restructuring Clause Conventions

27.1%

4.3%

0.2%

68.5%

Modified Restructuring   Mod Mod Restructuring   Old Restructuring   No Restructuring
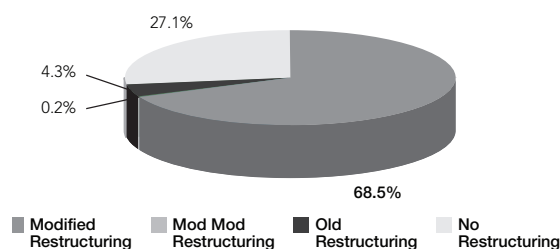
Looking at the curve conventions for each North American issuer in Markit's daily pricing file, a little over 25 per cent trade as "No Restructuring" currently. As the vast amount of names fall in the investment-grade category, we see that 68.5 per cent trade as "Modified Restructuring".

Source: Markit

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-TECHNOLOGY-                -TECHNOLOGY-
ARW   210-220   +12         CSCO 140-150
AVT   285-295   +20         ORCL 145-155
CSC   135-145   +10         DELL 225-235
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This is an example of a dealer run quoting a par spread. A par spread is the spread that would cause the present value of a CDS trade to be zero for both the buyer and seller at the outset of the trade. Here a recovery rate is not provided nor is it particularly relevant for the quotation. For CSCO, a protection buyer is paying 150 basis points annual premium regardless of the dealer's opinion on recovery.

This run contains the ticker (or some other indication of the credit that is being quoted) along with the bid/offer for the spread. Change from the prior day is also included in this example. Unless otherwise stated or a full curve is provided, the quotes are for five-year protection, the most liquid tenor. In this example, it would cost 150 basis points or $150,000 per year to buy protection from a credit event on $10m worth of bonds for Cisco Systems (CSCO). Par spreads are expected to ultimately be excluded from dealer runs.

CONVENTIONAL SPREADS

As the CDS market in North America transitions to using conventional spreads (also known as quoted spreads) in dealer runs (for 100 fixed coupon quotes), it is important that investors can adequately compare spreads provided by different dealers and that the change in quoting convention does not cause trades to break.

It is also important to note that the conventional spread that will be in dealer runs for investment-grade names do not represent either the annual coupon that would be paid for protection or the amount of upfront payment made at the time of the trade. The conventional spread represents a translation of the 100 fixed coupon and upfront payment into a single number that can be used to compare across dealers. In order to make an

accurate comparison across dealers as well as to assure there is no confusion about size of the upfront payment that will be made, it is critical that industry participants use a standard model with standard inputs. The standard model that major CDS dealers have agreed to use is the ISDA CDS Standard Model which is administered by Markit.

ISDA CDS STANDARD MODEL

On January 29 2009 JPMorgan announced that it had transferred its CDS analytical engine to ISDA as part of an initiative to make the code for valuing CDS positions open source. Under the direction of ISDA, Markit has been hosting, since autumn 2008, a working group focused on creating and releasing an industry standard code for valuing CDS.

On February 26 2009 ISDA and Markit announced the availability of the ISDA CDS Standard Model Code with Markit as the administrator of the code. In this role, Markit provides support for the maintenance and further development of the code following open source principles.

To be clear, Markit does not provide support for the implementation of the code. The code is available through an open source licence at www.cdsmodel.com. Additionally, the standardised inputs to be used with the code including a daily yield curve as well as recovery assumptions for different seniorities of debt can be found on the same website.

MARKIT CDS CONVERTER

Currently the most standardised products in the CDS market are the Markit CDS indices. As mentioned earlier, the CDS contract and convention changes described in this report will make single-name CDS more similar to the Markit CDS indices. The single largest cause of trade breaks with Markit CDS indices is a disagreement surrounding the upfront payment due from one counterparty to another.

As the trading convention for North American CDS changes to a fixed coupon with an upfront payment, it is critical that trades

Historical CDS Auction Protocols: Adhering Parties & Protocol Dates[1]

AET	188 - 198
DD	142 - 150
RCCC	237 - 249
TE	262 - 272

This is a hypothetical example of a dealer run that contains conventional spreads. Were this a traditional dealer run with par spreads, the dealer would be communicating a willingness to sell protection on AET for 198 basis points. In this hypothetical dealer run with conventional spreads, the dealer is communicating a willingness to sell protection on AET for a 100 basis point fixed coupon and an upfront payment. In order to know the amount of upfront payment that the dealer would expect, you need to translate the conventional spread of 198 basis points to the optional payment. The Markit CDS Converter available free at www.markit.com/cds was built for this purpose. In this example, the dealer that was quoting a 198 basis point conventional spread offer would be expecting a $414,212.79 upfront payment for $10m notional protection with a 100 basis points running coupon.

F	45 - 47
GM	84 - 86
IP	211 1/4 – 12 1/4
SLMA	33 1/2 – 35 1/2

Source: Markit

Points upfront convention:

This is a hypothetical example of a run using a points upfront convention (convention for 500 basis points fixed coupon). The particular dealer determines where it wants to make a market based on its assessment of the credit's probability of default, recovery and other factors. Based on this, the dealer then determines the appropriate all-running spread. This all-running spread is then divided into two portions: the fixed coupon of 500 basis points and the points upfront.

do not break because of disagreements on the upfront payment that is due. This is a particular concern for entities that trade with a 100 basis points fixed coupon as dealer runs for these credits will display a conventional spread and not the upfront payment. At the urging of CDS participants, Markit has created the Markit CDS Converter. This is a free tool available at www.markit.com/cds and was created to drive agreement on the upfront payment due for specific CDS trades. The converter allows for easy translation between the conventional spread that will be found in dealer runs for investment-grade reference entities to the required upfront payment.

While this article outlines the expected quoting conventions, these are merely conventions. Dealers are not restricted in how they quote credits in their runs.

CONCLUSION

The CDS Big Bang entailed fundamental changes to the operational, trading and legal frameworks of the CDS market. However, in many ways, these changes were not dramatic.
For the North American convention changes, one can see instances where these practices already occurred in the market. High-yield credits and indices already trade with a fixed coupon and settle on upfronts.

The new quoting convention has similarities to the quoting conventions for the Markit CDX IG and HY indices. The treatment of accruals and the payment of full coupons on IMM payment dates are standard for the indices. In terms of restructuring provisions, North American high-yield credits typically trade with "no restructuring" by convention. The Markit CDX indices for the most part also trade "no restructuring."

For the global contract changes, many of these practices were already in place. Hardwiring of the auction mechanism was implemented in loan CDS and simply streamlined a process that had already received broad acceptance. Rather than requesting participants subscribe to protocols as each credit event occurs, hardwiring will have the process applicable for all trades.

Determination committees replicate much of the work already done by industry committees. Standardisation of event-effective dates already exists for the Markit CDS indices. In total, the proposed changes provide a means to guarantee greater unanimity of results across positions and add more openness and transparency to the process.

Please note that opinions, estimates and projections in this article constitute the current judgement of the author at the time of writing. They do not necessarily reflect the opinions of Markit. 💰

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[1] Note, the chart excludes auctions for LCDS and some auctions are included under the same protocol (e.g., Icelandic Banks Protocol had three separate reference entities/auctions).

[2] Assuming that the par spread of The Widget Corporation is 625 basis points, the present value of all five options would be zero. At the initiation of the trade, the value of the cash flows paid by the protection buyer would equal the value of the cash flows made by the protection seller following a potential credit event.

Otis Casey, vp credit products at Markit, explains the changes to the Global CDS contract and North American conventions. He can be contacted at otis.casey@markit.com.

BACK-DATING OPTIONS: HOW BIG A SIN WAS IT?

By Cicero I. Limberea

Analyzing the materiality of equity options backdating received as part of a compensation or retirement award in last year's markets.

I t's interesting to note that, given the past year's reversal of fortunes in the stock markets, all the media rap about heated inquiries around back-dating options has stopped.

This is not surprising since most of the short-dated call options which were granted out-of-the money by 20 percent or more have turned worthless in the market downturn.

Looking at the VIX stock-market volatility graph for the past year, we note that the mean reversion principle applies over quarterly horizons, the mean over the full year being at 23.7 percent, but moderate dispersion exists in the swings. (see Graph 1)
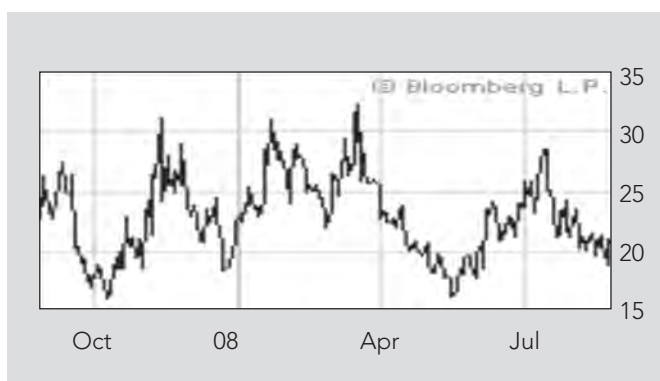
Graph 1: Y-O-Y VIX index August 2007- August 2008, Source Bloomberg.

FAS 123 R and 157 require for public entities that every options, including those granted as part of compensation plans, be marked to model at fair value starting in 2006. Fair value is determined using an option-pricing model that takes into account the stock price at the grant date, the exercise price, the expected life of the option, the volatility of the underlying stock and the expected dividends on it, and the risk-free interest rate over the expected life of the option. The previous state- ment required compensation expense recognition only when the option got intrinsic value, namely when the market price exceeded the strike price; thus backdating options in the previ- ous context would generate no accounting entries as regularly on the grant date the options are out-of-money.

Under the new rules, as the stock price at the grant date is an input in the model, backdating options could in theory cause swings in the option value, misstating the expense booked. However, under the new rules the option greek theta gains prominence; thus the passage of time to the expiration has accounting relevance, since an extra day to maturity gives the underlying the opportunity to have an extra day of swings within quarterly volatility bounds, but on a random path. Based on the past year volatility chart, backdating by a quarter would have not changed the volatility assumptions, since, as seen on the graph, mean reversion occurs quarterly, and the model's implied volatility is based on a one year data, therefore an out- lying rough quarter in which the volatility would have doubled or halved—which actually did not happen—would only change the volatility assumption by 23.7/4/23.7=25 percent up or down, not a whole lot. Since in last year's market environment, the time value impact was subdued to the volatility impact (the absolute value of theta is in cases when volatility is higher than 20 percent, usually smaller than the absolute value of vega for short-dated options), backdating by a month or so within the same quarter would not be material to the value of the option since the volatility is quite high at nearly 25 percent, and nearly constant.

To illustrate that equity options keep a fairly constant fair mar- ket value under same high implied volatility if the equity price evolves over time within the same volatility environment, we will run different assumptions through a Black-Scholes stan- dard model and attempt to backdate, in order to evaluate the expense misstatement magnitude.

> **IN LAST YEAR'S MARKET ENVIRONMENT,** THE **TIME VALUE** IMPACT WAS SUBDUED TO THE **VOLATILITY** IMPACT. "

To ensure that the equity price evolves over time within the same volatility assumption and also to not negate the lognormal distribution assumption for asset prices, we assume that the stock price evolves based on a Black-Scholes model as:

$$dS = \mu S dt + \sigma S dW_t$$

One run is set at the 25 percent volatility assumption, and then we set a second run by increasing the volatility by 25 percent, then a final third run by decreasing the initial assumption by 25 percent. Thus the different prices used at different times lie on the same path and volatility surface. We then backtest the random prices to make sure that there were actually securities on the market with the same price ranges at the respective times, and that those securities have had historically high betas.

Thus we will form option valuation vectors with the same fields: [underlying price, exercise price, days until expiration, dividend yield, volatility, rounding]. The equals sign between them means that the call options expiring on the same dates at the same price have the same model value. Here is an example of equivalent vectors:

[89,100,30,5,1,25,3]=[76,100,120,5,1,25,3]=[68,100,210,5,1,25,3]=[60.5, 100, 210, 5,1,32,3]=[73,100,270,5,1,18,3]

I keep on file 250 more simulations, which I can provide upon request, together with the respective securities' names, which I did not include for obvious space-saving reasons.

Of them, 48 have fallen to zero model value due to the fall in the markets.

Indeed we based these assumptions on the respective stock having a high beta. If the volatility high VIX ranges of the market would not hold for the respective stock, the mean reversion of those stocks' individual volatility may not have occurred at the same pace with the market, thus the backdating of compensation award options for the stocks with a low beta may have produced a more significant impact.

But since a majority of the stocks have a high beta, in last year's markets, the backdating tax understatement, which has been deemed to occur, is likely to have been not that material. 💰

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A BLACK SWAN TEST

By David Ingram

Many commentators have suggested that firms need to do stress tests to examine their vulnerability to adverse situations that are not within the data set used to parameterize their risk models. We suggest the adoption of a terminology to describe stress tests and also a methodology that can be adopted by any risk model user to test and communicate a test of the stability of model results. This method can be called a Black Swan test. The terminology would be to set one Black Swan equal to the most adverse data point. A one Black Swan stress test would be a test of a repeat of the worst event in the data set. A two Black Swan stress test would be a test of experience twice as adverse as the worst data point. So for credit losses for a certain class of bonds, if the historical period worst loss was 2 percent, then a 1BLS stress test would be a 2 percent loss, a 4 percent loss a 2BLS stress test, etc. A company could report the results of their stress tests as:

Tests show that the company can withstand a 3.5BLS stress test for credit and a 4.2BLS for equity risk and a simultaneous 1.7BLS credit and equity stress.

Similar terminology could be used to describe a test of model stability. A 1BLS model stability test would be performed by adding a single additional point to the data used to parameterize the model. So a 1BLS model stability test would involve adding a single data point equal to the worst point in the data set. A 2BLS test would be adding a data point that is twice as bad as the worst point.

For the model stability test, the model with the alternate parameterization would then be used to re-determine the risk metrics that are the primary purpose of the model.

This methodology and terminology gives a way that firms can consistently test and communicate tests to the management, board and maybe someday to those with a real need for the information, the shareholders.

The power of the idea is the complete simplicity of it and hopefully the clarity with which it can be communicated to various audiences.

So now for an example: first the most simple example, looking at the risk of a holding of an S&P 500 index equity position of $100 million. If we use the history from the past 25 years we find that the worst year was 2002 when a loss of 22.1 percent occurred. For simplicity, we will also use the simple assumption of normally distributed returns (just for the illustration—I am not recommending that this is a completely valid assumption), then we get the following:

	Column 1 Historical (1983 - 2007)	Column 2 1BLS Test	Column 3 2BLS Test	Column 4 Historical (1984 - 2008)
Average	13.8%	12.4%	11.6%	11.4%
Std Dev	15.6%	16.8%	19.0%	18.5%
Worst Year	-22.1%	N/A	N/A	-37.0%
VaR @				
5.0%	-11.8%	-15.2%	-19.7%	-18.9%
2.0%	-18.1%	-22.1%	-27.5%	-26.5%
1.0%	-22.4%	-26.6%	-32.7%	-31.5%
0.5%	-26.3%	-30.8%	-37.4%	-36.1%
0.4%	-27.4%	-32.1%	-38.9%	-37.5%
0.2%	-31.0%	-35.9%	-43.2%	-41.7%

Column 1 shows the extension of the historical data using the assumption of a normal distribution of returns for the mean of 13.8 percent and standard deviation of 15.6 percent that were determined from the historical data. Columns 2 and 3 show the 1BLS and 2BLS model stability tests, respectively. For comparison, Column 4 shows the same thing as Column 1, but for the period starting and ending one year later.

In this case, the 1BLS stress test would be the 22.1 percent loss of 2002. That makes the 2BLS stress test a 44.2 percent loss. The actual 25-year results including 2008 brings in the 37.0

percent loss of 2008 and drops off the 22.6 percent gain of 1983 that was included in the 1983 to 2007 historical series.

So the actual results of 2008 turned out to be a 1.67 BLS event. My suggestion is also that we should substitute that way of characterizing a new adverse event instead of the commonly used reference to the implied probability of the prior risk models, which would have said that 2008 was a 1/1800-year event.

Using this terminology, firms could report their resiliency in terms of what multiple of a 22.1 percent loss (1BLS) they could withstand. So a firm that consisted of just that $100 million equity position, a fixed liability of equal size and capital of $30 million could be said to be able to withstand a 136 percent Black Swan stress.

While regulators and creditors might be interested in company failure, investors generally have a much lower threshold for pain. This terminology could also be used to communicate volatility to the market. This could be done with what I would call the one-quarter Black Swan tests results. With a one-quarter Black Swan stress test, firms would report what multiple of 1BLS would result in a 25 percent drop in profits or a 25 percent drop in surplus. This would replace the current reporting of purely random stress tests. So in the case of the equity position, let's assume that the liability was guaranteed 3 percent, resulting in an expected profit of 10.8 percent. A 25 percent drop in profit would occur if S&P 500 return was at 11.1 percent positive return. This is, of course, much less than 0BLS and would be reported as such. A 25 percent drop in surplus would result from an S&P return of -4.5 percent, which would be reported as a 0.2BLS stress.

The advantage of using the Black Swan terminology in this case is that there is some implied probability to the discussion. Nothing specific, but saying that something is just 45 percent as bad as the worst experienced, or 0.45BLS, implies a pretty high degree of likelihood, while a 10 percent drop just presents a puzzle to the reader.

It would be quite easy for some party to determine a reasonable value for a 1BLS test for each major risk where firms are exposed based upon total market or total industry type statistics. Companies could use those benchmark type Black Swan tests and they could additionally show their own Black Swan test calibrated to their own results. The standardized Black Swan tests could also help with the issue that arises when firms develop their own distributions of losses using a process that drops out their actual worst experience because of an assumption that the circumstances that led to that historical data point will never, ever be repeated. The Black Swan test does not imply that we know how the next "once in a lifetime" loss will be but that we do know that it will likely be at least as large as the largest we have previously experienced. ⬛

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GAINING THE BENEFITS OF GLOBAL TACTICAL ASSET ALLOCATION IN A HOSTILE ENVIRONMENT

By Emiel van den Heiligenberg

On March 31 and April 1, 2009, Emiel van den Heiligenberg, Chief Investment Officer, Asset Allocation & Balanced Solutions with Fortis Investments, spoke at seminars in Montreal and Toronto on the benefits of global tactical asset allocation.

Global tactical asset allocation (GTAA) is an investment approach that seeks to exploit short-term market inefficiencies to generate uncorrelated absolute returns by taking positions in various asset classes, regions, styles and currencies. Due to its low correlation with traditional asset classes, GTAA can diversify an existing portfolio without making material changes to the portfolio's overall risk characteristics.

THE CONCEPT OF GLOBAL TACTICAL ASSET ALLOCATION

GTAA uses a far wider scope of opportunities than traditional asset allocation, taking long/short positions in liquid exchange-traded futures and foreign exchange forward contracts. As a result, the alpha from GTAA is completely portable and can be overlaid on top of an existing portfolio:
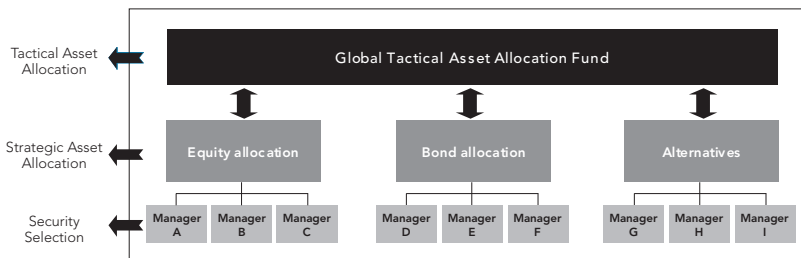
As an overlay, the GTAA portfolio does not interfere with the underlying portfolio. This provides a number of strong benefits:

- GTAA allows for tactical shifts in the effective asset class exposures of the total portfolio without causing large capital movements. This limits any market impact of the tactical moves and also reduces transaction costs.

- GTAA enables a true separation between the asset allocation decision and the security selection decision.

- GTAA requires only a limited cash allocation to affect significant exposures for the portfolio.

- GTAA is completely scalable to the client's risk tolerance.

In addition, because GTAA utilizes liquid exchange-traded futures and similar instruments, it permits a further reduction in transaction costs compared to buying and selling securities in the physical or cash markets.

COMPARISON WITH TRADITIONAL ASSET ALLOCATION

In the past, balanced mandates would practice traditional tactical asset allocation in an attempt to add value through market timing, a practice that has been shown to be generally unsuccessful.

GTAA overcomes the weakness of traditional asset allocation in the following ways:

- By greatly expanding the investment universe:
  Under Grinold and Kahn's famous "fundamental law of active management," the potential information ratio for an investment approach increases when the number of possible independent decisions involved is increased. Where the traditional approach may require allocation decisions across a few simple asset classes (equities, bonds, cash) and regions (Canada, the United States, EAFE), GTAA vastly increases the number of possible allocation decisions, as shown in the example below:

Opportunity Set	Traditional TAA	GTAA
Asset classes	5	5
Equity Regions	4	4
Equity Countries	-	20
Bonds	-	8
Currencies	-	15
Commodities	-	10
Equity sectors	-	15
Total	**9**	**77**

In this example, Grinold and Kahn's law would suggest the potential information ratio for the GTAA manager would be about three times that of the traditional balanced manager simply from this source alone.

- By reducing trading costs:
  Futures contracts are 1,000 times the size of an average stock, while the commission on trading liquid futures is less than 10 percent of the equity trading commission. Furthermore, the bid/ask spread is lower on futures, and so is the market impact of the trades. This means that the total cost of trading in liquid futures is generally about 25 percent of the cost of equivalent trading in the physical markets.

- By using a focused, non-consensus approach:
  Traditional asset allocation is often performed by a committee with representatives of the various asset class teams. Decisions are based on consensus and compromise, and rarely reflect a strong alpha focus. In GTAA, by contrast, the manager usually is fully dedicated and focused on the research and decision making process necessary to run a GTAA portfolio. While most dedicated GTAA managers do use the research of other asset classes, they do so only for idea generation and to challenge their own views, rather than allowing (say) the Japanese equity manager to influence the tactical view on the Japanese equity market. Most successful GTAA managers use multiple independent sources of return, either via independent teams, independent quantitative models or independent risk takers or trade owners. There is little compromise toward a consensus approach or interference from the other teams. The overall portfolio is built by assigning risk sub-budgets to each specialist group in a systematic manner, depending on their investment skills and the de-correlation of the different alpha generators.

BENEFITING FROM MARKET INEFFICIENCIES

GTAA differs from many traditional investment approaches in that it seeks to derive outperformance from macro or top-down decisions. GTAA managers are not looking for inefficiencies between individual securities within a given market, but rather inefficiencies between whole markets or regions.

Most academic studies of market efficiency focus on the internal dynamics of a single, integrated market. These studies often conclude that large liquid markets, such as U.S. equities or bonds, are relatively internally efficient. As a result, in such markets it can be difficult for active security selection to produce sustainable risk-adjusted outperformance.

By contrast, many studies have shown that relatively easily observed variables have the ability to predict broad market returns and market anomalies (like momentum or seasonality of returns) are significant and persistent. In other words, inefficiencies do exist in the macro or cross-market environment. Thus, perhaps counter-intuitively, asset classes are often more inefficiently priced than the individual equities and bonds within them.

Where do these inefficiencies come from? In fact, there are systematic losers in the asset allocation markets. At the institutional level, committee structures and consensus approaches lead to misallocations at times. In addition, some institutional investors are forced sellers in bear markets (and forced buyers in bull markets) due to their solvency requirements. At the retail level, investors tend to drive their decisions while looking in the rear-view mirror, i.e., buying the funds that have done well in the past.

These factors create opportunities for the GTAA manager as he or she is active in a market with attractive alpha potential. This is confirmed by our internal data. Based on our own internal competitor data, the five-year median information ratio for GTAA is substantially positive.

Furthermore, GTAA portfolios should not have intrinsic directional market risk, so one would expect their returns to be quite uncorrelated from market returns. This is borne out by the study summarized in the table on page 20, showing the correlation of the Fortis Investments GTAA composite with various standard market indices.
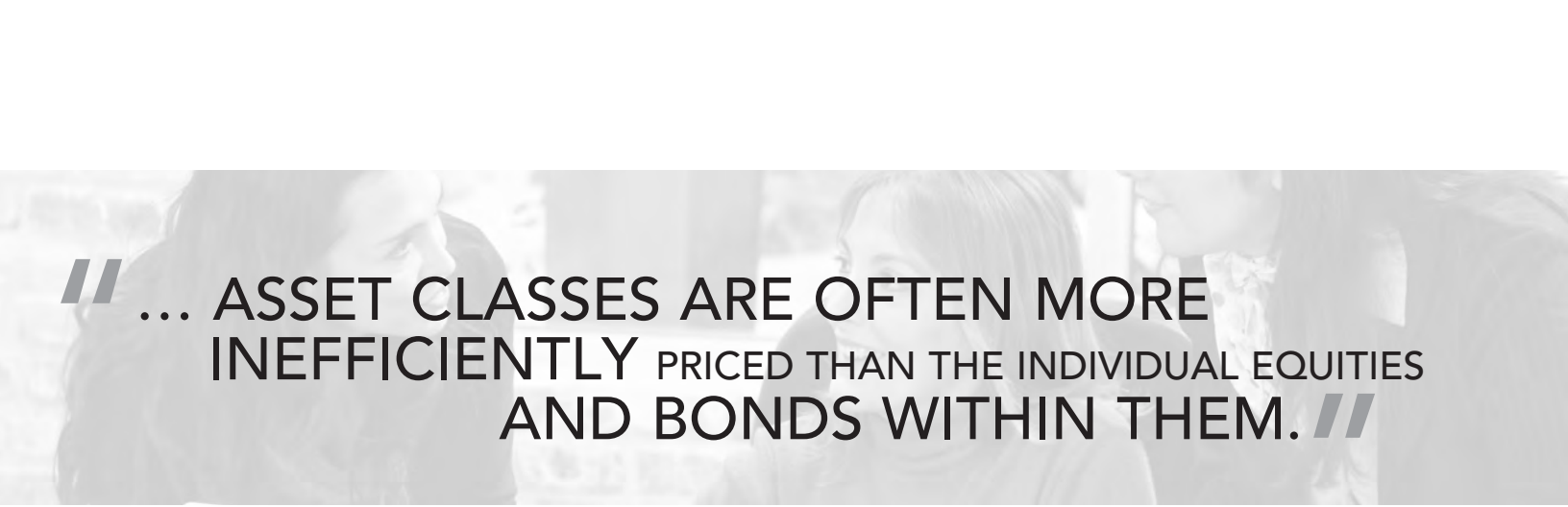
	GTAA	MSCI World	Citigroup EMU GBI All Maturities	Citigroup WGBI All Maturities	GPR 250	S&P 500	DK Euro STOXX 50	Credit Suisse Tremont Hedge Fund
GTTA	1.00							
MSCI World	0.09	1.00						
Citigroup EMU GBI All Maturities	-0.05	-0.29	1.00					
Citigroup WGBI All Maturities	0.06	-0.28	0.53	1.00				
GPR 250	0.04	0.52	0.16	0.03	1.00			
S&P 500	0.07	0.97	-0.32	-0.23	0.43	1.00		
DJ EURO STOXX 50	0.08	0.87	-0.41	-0.10	0.25	0.88	1.00	
Credit Suisse Tremont Hedge Fund	-0.09	0.05	-0.03	0.01	0.15	-0.02	-0.05	1.00

Source: Fortis Investments and Bloomberg
Correlations between different assest classes July 2002 - December 2008
Monthly, all indices in local currencies (unhedged). GTTA Returns are the returns of the Fortis Investments GTAA composite.

The very low correlation of GTAA returns with traditional asset classes suggests that GTAA would be a diversifier when added to a balanced portfolio, reducing risk and/or increasing returns. We examined what would have happened if GTAA had been added to a typical Canadian pension fund portfolio for the three years ending Dec. 31, 2008, and found that adding GTAA would indeed have both reduced risk and increased returns, even with a relatively modest risk budget allocation to GTAA (compare the white and black diamonds):

Please note that the above-mentioned correlations are all based on longer-term data. This is no guarantee that GTAA managers will deliver positive returns. It did transpire that last year's realized information ratio of the GTAA universe, based on internal data, was in fact slightly above zero. Investors that specifically desire some degree of crisis protection should be sure to look in their due diligence for a diversified approach,

Annualised Asset Class Return v Risk
(from last 3 years data)

> **" ... ASSET CLASSES ARE OFTEN MORE INEFFICIENTLY PRICED THAN THE INDIVIDUAL EQUITIES AND BONDS WITHIN THEM. "**

with multiple independent risk sources. Past performance track records from crisis periods may be less useful, as there are not enough data points to draw proper conclusions.

TYPES OF GTAA MANAGEMENT

There are substantial differences between GTAA managers and thus also substantial dispersion in their performance. Specifically, there are two main approaches to managing GTAA overlays: model-driven and judgmental.

The model-driven approach, as the name implies, relies on quantitative models to discern opportunities. This approach has the benefit that it removes the human factor in uncertain markets.

On the other hand, the judgmental approach is able to identify and even anticipate changes earlier than the model-driven approach, and can incorporate variables that cannot be modeled. In the judgmental approach, professional asset managers combine various types of research with their own judgment to assess the relative attractiveness of asset classes and to devise an appropriate strategy to benefit.

Blended GTAA managers combine model-driven and judgmental approaches, thus potentially building in the benefits of both approaches, possibly even with low or negative correlation to each other, and in this way improving the risk-adjusted return.

In addition, GTAA managers also differ in the universe of strategies and methods they use. Some managers might concentrate on just a part of the universe (e.g., currency overlay management). Others might include intra-asset class strategies (e.g., equity long/short strategies). Some may use many small bets, while others may concentrate on a few macro bets. Some may use only one model, while others may use several.

In our view, investors should look for managers using multiple alpha sources and a diversified investment approach in order to get the maximum potential benefit from GTAA. As indicated

before, the fundamental law of active management means that it requires less skill to add alpha if one has the opportunity to take many small bets than when one can only take a few large bets.

ACCESSING GTAA MANAGEMENT

A GTAA strategy can be implemented via a pure segregated overlay account or by investing in a GTAA pooled fund.

The segregated overlay structure has the advantage of full flexibility to be customized to the client's requirements, as well as the fact that little cash is needed, but it also requires significantly more involvement and oversight from the client. The client's custodian has to be familiar with collateral management and derivative administration, and has to be able to accommodate a high frequency of trades at reasonable cost to the client. In addition, the client itself will have to enter into ISDAs with a number of counterparties, as the GTAA manager will be trading explicitly on the client's behalf.

The GTAA fund approach is less customized, although it is still completely scalable to the client's risk preference. It requires that actual cash be invested in the GTAA fund, and this involves taking the cash from some other asset class which could affect the overall strategic beta allocation of the client's portfolio. However, this can easily be solved using standard portable alpha techniques to replicate the missing portion of the asset class the cash came from. Other than this, investing in a GTAA fund requires no more ongoing involvement of the client than investing in any other pooled fund. As a result, most GTAA investors invest in a GTAA fund rather than using a segregated overlay.

CONCLUSION

GTAA seeks to generate uncorrelated alpha by exploiting short-term inefficiencies in the global investment markets, taking positions in various asset classes, regions, styles and currencies. There is solid evidence that alpha can indeed be generated in this way. It is portable and scalable, and overcomes the shortcomings of traditional asset allocation by greatly expand-

ing the investment universe, by decreasing trading costs and by using a focused non-consensus approach.

Thus, adding GTAA can potentially reduce risk and/or increase returns in a diversified portfolio such as a pension or endowment fund. This should especially be the case for GTAA managers using a diversified process and multiple alpha sources.

GTAA can be readily accessed in pooled fund form, or through a segregated overlay, making it available to a wide range of institutional investors. Given the benefits it can provide and the ease with which it can be utilized, GTAA is an interesting proposition for many portfolios. 💰

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PRODUCT RISKS AND PRODUCT REWARDS: A TALE OF TWO RATIOS

By Simpa Baiye

T he advent of stochastic modeling of life and annuity products, principle-based capital and principle-based reserves has shed more light on the risks and rewards of these products. Annuities and their guarantees are now modeled over thousands of market scenarios in order to evaluate capital markets' costs, understand capital and reserve implications in tail scenarios, and determine expected product profitability. Expected product profitability on a statutory basis typically involves calculating an average of modified internal rates of return (MIRR), which are obtained from market scenario runs.

Product rewards are evaluated relative to hurdles that are set across the enterprise or vary by profit center. They can also be subject to other criteria such as minimum annual returns. Such criteria attempt to factor downside product risks in the decision-making process. Products that do not meet the return criteria are redesigned, optimized to improve capital efficiency, or rejected.

The capital allocation process involves maximizing returns on capital by assigning capital to products that meet established return criteria and have growth opportunities. Product decisions can thus be viewed as investment opportunities from a shareholder perspective. The capital allocation process is thus simply a way of maximizing rewards for a desired level of risk, subject to other reward constraints such as the cost of capital.

Rewards and risks are evaluated on a standalone and corporate basis. The corporate view can provide insight into potential diversification benefits, which can further enhance or diminish the attractiveness of product lines that may be initially attractive on a standalone basis.

Investments in securities are traditionally evaluated on a standalone basis by using ratios that summarize the relationship between anticipated risks and rewards. These ratios could also be used to better quantify the relationship between the standalone risks and rewards of life and annuity products and thus enhance the capital allocation process. These ratios will be discussed and critiqued.

SHARPE RATIO

The Sharpe ratio is defined as:

$$\frac{E[R-rf]}{\sqrt{Var[R-rf]}}$$

where
R represents the return on an investment of \$1;
rf is the benchmark return such as risk-free rate of interest applicable for the period.

Simply put, the Sharpe ratio is the expected excess of returns over the benchmark rate in terms of the standard deviation of returns in excess of the benchmark rate. If the benchmark return is assumed to be constant throughout the evaluation period, then the expression can be reduced to the more recognizable version below:

$$\frac{E[R]-rf}{\sqrt{Var[R]}}$$

The numerator represents the expected risk premium from an investor perspective, while the denominator represents the risk premium volatility. For a given set of expected returns, the investment with the highest Sharpe ratio maximizes the expected risk premium per unit of risk.

To apply the Sharpe ratio in evaluating insurance product returns, we reformulate the Sharpe ratio as follows:

$$\frac{E[MIRR]-rf}{\sqrt{Var[MIRR]}}$$

The numerator represents the excess of the expected modified internal rate of return (MIRR) over the risk-free rate, while the denominator represents the standard deviation of the MIRR.

The adapted Sharpe ratio can be used in comparing expected profitability across product lines, as it adjusts for the skew inherent in viewing profitability solely in respect of averages. To illustrate this, we review two products in table 1. It is assumed that the benchmark rate is the risk free rate of 5 percent and that the firm's hurdle rate is 10 percent. All product opportunities meet the hurdle rate on an expected basis, but the variable annuity provides the greater expected return potential. However, the variable annuity also presents the greater risk. The Sharpe ratio adjusts for this by expressing the expected reward in terms of the associated risk.

Table 1: Sample Product Rewards and Risks			
Product	Expected IRR (%)	Standard Deviation of IRR (%)	Sharpe Ratio
Variable deferred Annuity with Death Benefit	15	8	1.25
Fixed deferred Annuity	12	4	1.75

The Sharpe ratio indicates that the lower expected MIRR for the fixed deferred annuity relative to the variable annuity is in line with the lower volatility associated with fixed annuity returns.

The Sharpe ratio does not provide an absolute target return for a given product. It simply provides a relative return target, subject to an acceptable reward-to-risk tradeoff that may already be in place. If the reward to risk tradeoff involves meeting or exceeding expected return on a market index such as the S&P 500 subject to matching the projected Sharpe ratio of the S&P 500 Index, then product returns that meet the criteria would be acceptable from both a reward and risk standpoint. Expected product returns in excess of those implied by the Sharpe ratio could then be viewed as alpha returns that can be generated due to other economic factors such as patents or relationship between supply and demand.

The Sharpe ratio does not come without its set of limitations. It assumes that the volatility of returns can be reasonably quantified on a retrospective basis (using historical data) or on a prospective basis (using stochastic models calibrated to actual data). It assumes that investors regard downside volatility in the same way that upside return volatility is viewed. Reality suggests that investors such as pension funds and insurance companies penalize downside volatility to a greater degree than upside volatility. This reality calls for the review of other compensatory ratios such as the Sortino.

SORTINO RATIO

The Sortino ratio is defined as:

$$\frac{E[R]-T}{TD}$$

where
R represents the expected return on the investment
T represents the minimum acceptable return or hurdle rate
TD represents the semi-deviation from the minimum return. In its discrete form, it can be defined as

$$\sqrt{\sum_{R_i<T} \frac{(R_i-T)^2}{j}}$$

where j represents the number of return observations that are less T.

One benefit in using the Sortino ratio is that it allows for the measurement risk/reward relationships based on a minimum acceptable rate of return. It thus allows for the direct inclusion of corporate benchmark returns in assessing product line risks and rewards.

To apply the Sortino ratio in evaluating insurance product returns, we reformulate the Sortino ratio as follows:

$$\frac{E[MIRR]-WACC}{TD}$$

where

E[MIRR]   is the expected modified internal rate of return

WACC   is the weighted average cost of capital

TD   is the deviation of internal rates-of-return that are less the WACC.

The numerator represents the excess of the expected modified internal rate of return (MIRR) over the cost of capital, while the denominator measures downside risk.

BRINGING IT ALL TOGETHER

The adjusted Sortino and Sharpe ratios can help tie modeled product risks to modeled rewards. They can serve as the guiding light for decisions that are typically made based on expected long-term average returns. Both ratios depend on unbiased, thorough stochastic modeling that may not be available for all product risks.

The risk-reward ratios could improve the analysis of the impact of a potential product line on the existing risk-reward profile of a firm. It could work this way: product lines that enhance or do not change the reward-to-risk ratio of a combination of the new product and existing business, relative to the reward-to-risk ratio of the existing business, should pass the corporate financial review process.

Finally, one cannot overstate that the utility of reward-to-risk ratios depends on the quality of the modeling and judgment that drive their inputs. The ratios are no remedy for poor or biased judgment of product risks that often arise in the field of financial intermediation. When properly determined, these ratios can enhance the management process for new and existing product lines. 💰

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STABLE VALUE RE-EXAMINED

By Paul J. Donahue[1]

In a 2006 law journal article,[2] I argued based on quantitative analysis that stable value was superior to money market as the "income producing, low risk, liquid fund" required for participant-directed plans.[3] In this article, I review how that conclusion has held up through the period of market turbulence that has overall so adversely affected the value of participants' defined contribution (DC) account values.

According to a survey reported in the *Los Angeles Times*, participant 401(k) balances declined by 27.5 percent during 2008.[4] In 2008, the return on a stable value fund was 4.2 percent,[5] while that for the average retail money market mutual fund was 2.0 percent.[6] Participants with DC assets invested in stable value have every reason to be grateful to their employers for making it available. Obviously, returns during a single year of economic crisis are not a sound basis on which to draw conclusions about an asset class intended for use for retirement savings. However, I believe for many reasons that such a year provides a good reason first of all to revisit the comparison between stable value and money market, and secondly to discuss dispersion among stable value managers compared to that among other fixed-income managers.

OVERVIEW OF STABLE VALUE

Stable value must be considered a triumph of financial engineering. Stable value has been designed to offer DC plan participants the greatest yield consistent with protection of principal possible in the benefit plan environment. A DC pension plan is intended to accumulate funds for retirement over a long period. In an employee benefit plan, there will not usually be any other principal protected option in which a participant can invest. Plan provisions will restrict a participant's access to funds. Even when a plan permits a withdrawal, there may be tax disincentives to withdrawal that are significant. Taken together, these features mean that a stable value manager can plan on retaining the assets longer, and can invest the funds with an expectation that demands for cash will be less, and less volatile, than one would expect for a money market fund. A stable value wrap contract, required as a core element of all stable value offerings, assures that whatever liquidity is needed will be available.

These features mean that stable value returns will normally exceed those for money market funds. Unlike money market funds, which are governed by regulations meant to allow them to meet demands for cash that can arise for any reason, unconstrained by the restrictions of a pension plan or tax considerations, stable value shapes its investment policy to recognize the liquidity restraints imposed on DC plan participants by plan design and tax law. Simply put, money market may provide

2   PAUL J DONAHUE, *Plan Sponsor Fiduciary Duty for the Selection of Options in Participant-Directed Defined Contribution Plans and the Choice between Stable Value and Money Market,* 39:1 AKRON L. REV. 9 (2006) [hereinafter "SV and MM"].

3   *Ibid.,* at 18.

4   *http://latimesblogs.latimes.com/money_co/2009/01/401k-wall-stree.html*

5   All calculations based on returns for Stable Value are derived from monthly return data from the Hueler Analytics Stable Value Pooled Fund Index. I am very grateful for the willingness of Heuler Companies, especially to Kelly Hueler and Kathleen Schillo, to provide me with, and allow me to use for my work on this article, Hueler Index data. The returns are net 40 bps annually as an estimate of fees. In general, pooled funds are used more by smaller plans and have higher expenses than the Stable Value options of larger plans, so that that returns for all Stable Value plans are likely higher than the Pooled Fund Index returns. This means that the statistics displayed are conservative as illustrations for Stable Value in the aggregate .

6   All calculations based on returns for money market are derived from monthly return data from an Imoneynet return series for retail mutual funds.

7   I discuss this topic in more detail in SV and MM, at 23-27.

Quantitative Comparisons between Stable Value and Money Market				
	Annualized Returns		Return SV/MM Ratio	Accumulations of $100/month SV/MM ratio
	SV	MM		
15 Years	5.2%	3.6%	142.7%	112.2%
10 Years	4.7%	2.9%	161.5%	110.3%
5 Years	4.1%	2.9%	141.8%	103.1%

more liquidity than a DC plan will normally need, resulting in a significant yield penalty relative to stable value products.[7]

QUANTITATIVE COMPARISONS BETWEEN STABLE VALUE AND MONEY MARKET[8]

The table above presents comparisons between stable value returns and the resulting accumulations and those for money market.

The differences with respect to retirement income between stable value and money market accumulations are significant. A payment of $250 per month made from a 15-year stable value accumulation that continues to pay interest at the 15-year stable value return would not be exhausted until the 152nd month. A payment of $250 per month made from a 15-year money market accumulation that continues to pay interest at the 15-year money market return would be exhausted in the 119th month.[9]

STABLE VALUE MANAGERS COMPARED TO FIXED INCOME MANAGERS GENERALLY

The table on page 28 presents comparisons of the percentile performance of stable value, intermediate and core fixed income managers. The returns are not strictly comparable, because the stable value returns are crediting rate returns, which, as noted in the table on page 28, reflect market value gains and losses over time in the credited rates, not market value total returns, while the returns for intermediate and core managers are current market value total returns.

The operation of the crediting rate formula smoothes stable value returns and will also smooth out year-to-year variations in manager performance. The one year numbers therefore say very little in fact about comparative dispersion, though they say a great deal about why participant satisfaction with stable value is currently so great!

8   See note 5 above.

9   Some might consider the case of the Lehman Brothers Stable Value Fund a counterexample. The speed of the demise of Lehman Brothers gave some of Lehman's Brothers Stable Value wrap providers a contractual basis to give notice that they would not provide wrap protection for certain categories of withdrawals. Under the accounting guidance for Stable Value, AAG INV-1, this required the write down to market of the assets covered by those contracts, which resulted in write-down for the whole fund of 1.7%. *See http://www.pionline.com/article/20090511/REG/905119993.* Even in this extreme case, the 2008 return for the Lehman Stable Value Fund was 2.0%, equal to the average retail money market fund return for 2008.

Manager Dispersion Comparisons								
	1 Year			5 Years			10 Years		
	Stable Value	Intermediate	Core	Stable Value	Intermediate	Core	Stable Value	Intermediate	Core
10th Percentile	5.00	4.00	4.50	5.01	4.49	4.73	5.63	5.83	6.20
25th Percentile	4.86	3.16	2.85	4.83	4.21	4.51	5.35	5.64	5.94
Median	4.60	2.49	-0.23	4.57	4.02	3.39	5.25	5.53	5.58
75th Percentile	4.32	-0.35	-2.22	4.38	3.31	2.78	5.07	5.25	4.89
90th Percentile	3.99	-1.50	-6.74	4.32	2.66	1.52	5.02	5.03	4.28
Members	40	28	40	39	28	40	32	28	39
Change from 25th to 75th	0.54	3.51	5.07	0.45	1.66	2.99	0.28	0.39	1.05
Change from 10 to 90th	1.01	5.5	11.24	0.69	3.21	5.42	0.61	0.8	1.92

However, much lower dispersion for stable value persists at five years, a period longer than the duration of almost all stable value funds, and even at 10 years. Stable value all-in management fees are generally lower than for other fixed-income managers, estimated by one manager of both stable value and total return fixed income assets at approximately 15 bps.[10] Looking at the 10 year numbers, stable value participants have received a return roughly equivalent to those for intermediate and core bond funds, with less dispersion among stable value managers than among intermediate managers and significantly less dispersion than among core managers.

Equivalent returns also means that stable value participants received point-to-point protection of principal with no sacrifice of return compared to intermediate and core fund investors.

CONCLUSION

Stable value has indeed proven its value over the period of recent turbulence and beyond. Its superiority as a plan's safe option has passed the test of last year's market turbulence. Indeed, given the effects of last year on other fixed income manager performance, stable value investors have received returns comparable to those of other fixed income funds, with less dispersion, and with point-to-point principal protection. 💰

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10 This includes total asset management fees for GICs, separate account GICs, the underlying assets of synthetic GICs and the synthetic wraps. The fee differential has its origin in the days when Stable Value management consisted largely of evaluating and purchasing GICs, but has persisted despite the migration of Stable Value asset management to include active management differing in objective but not in method from the active management deployed in other fixed income mandates.. Thus, some plan sponsors purchase active management within Stable Value at a much lower cost than they would be able to get it in an unwrapped bond fund. I am grateful to my former INVESCO colleague Stephen L. LeLaurin for the fee differential estimate. INVESCO is a leading Stable Value manager and also manages

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THE GREAT TECH BUBBLE: 10 YEARS LATER

By Steve Scoles

In December of 1999, a Gallup survey showed that investors expected to earn, on average, a 19 percent annual return on stocks over the next 10 years. So far, stock investors have not done quite as well as expected. From December 1, 1999 to May 1, 2009, the S&P 500, assuming reinvestment of dividends, has actually given investors an annualized return of negative 3 percent.

Putting that disparity of expectations and achievement into dollar terms, for $100,000 invested, instead of an expected value of $570,000, an investor would have $74,000 – only about one-eighth of what they expected.

The epitome of the high investor expectations of late 1999, was the Great Tech Bubble. While the general market had an incredible run with the S&P 500 increasing by a factor of four in the '90s, the tech-laden NASDAQ composite index increased 16-fold from 1991 until the time of its peak in March of 2000.

Taking a moment to look back at those heady times is a great way to remind ourselves of the madness of which financial markets are capable. As much as we like to think we're getting smarter about finance, these bubbles and busts just keep happening.

PREPARING THE LAUNCH PAD

The right context to understand the tech bubble of the '90s is to see that it was the final dramatic peak of a broader stock market rise from the early '80s.

The bull market that started in 1982 was very unexpected at that time. The previous decade and a half had not been a great time for stock market investors. The Dow Jones Average hit 1,000 in 1966. In mid-1982, some 16 years later, the index was around the 800 level – a 20 percent decline … before inflation. After accounting for inflation, investors lost a large percentage of their wealth holding stocks. This was not a time that people made money selling books about "stocks for the long run." For typical stock market investors back then, a long-term hold was considered nine months!

In August of 1982, the stock market started one the greatest advances of all time with the Dow Jones quickly advancing by 350 percent over the next five years. Then, on October 19,

1987, the Dow Jones collapsed 23 percent in a single day. Many people saw this crash as a harbinger of further massive declines similar to the Great Crash of 1929.

However, a funny thing then happened. Instead of the market going down, it gradually went up. By the early '90s, the markets were making new highs. The great "lesson" of the '87 crash was whatever decline in the stock market happens, no matter how mysterious, it's a great buying opportunity–no need to fear declines, just buy!
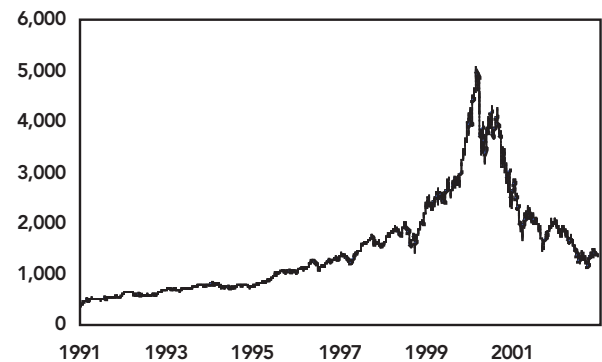
Nasdaq Composite Index 1991-2002

By the mid-90s, a few tech companies like Microsoft, Cisco, and Dell had made their early investors multi-millionaires, which started to create the possibility in the public's mind of great wealth through technology investments. The launch pad for the tech bubble was now ready.

THE TECH BUBBLE TAKES OFF

The touch point of the bubble was the emergence and phenomenal growth of the Internet. My first sight of the Internet was visiting the only non-IT person in my company who had Internet access. As the software finished loading, a number of co-workers gathered around in amazement, perhaps not unlike those people who gathered around their first radio in the '20s or their first TV in the '50s.

The Internet was certainly not immediately embraced by everyone. I also distinctly remember some high school-aged siblings of a friend making fun of a classmate who had their own home-page. The Internet was very uncool initially. Popular sites such as MySpace or facebook were unimaginable back then. Nonetheless, the excitement was building.

"THIS WAS NOT A MOMENTARY BLIP
OF MADNESS. …"

Liftoff of the tech bubble can likely be dated to August of 1995 when the Web browser company Netscape went public. Its stock price, already doubled at the last minute prior to the IPO, increased almost 200 percent on its first day of trading. Over the next five years, the words "Tech IPO" became to be synonymous with massive riches.

What follows is just a small sampling of the bubble's great 'achievements':

• Dellionaires: With an almost 1000-fold increase in its stock price, most early employees (from secretaries to the shipping docks workers) had become millionaires due to their stock purchases and options. They came to be called Dellionaires.

• Irrational Exuberance: In December of 1996, more than three years before the peak of the bubble, Federal Reserve Chairman Alan Greenspan questioned if stock prices were being affect-ed by irrational exuberance. However, within six months, Greenspan had changed his tune and suggested the boom was due to the productivity improvements from technology.

• e-Commerce: A small local mail order company, K-tel, saw it's stock price increase 10-fold in early 1998 when it announced it was going to–get this–sell records over the internet. The company ultimately went bankrupt.

• Price-to-earnings ratios were considered old-school and were often replaced with Price-to-revenues ratios–which often reached into the multiple 100s for some dotcom companies. (By the way, the NASDAQ composite's PE ratio hit 190 at its peak.)

• CNBC: Tech mutual fund managers paraded on CNBC regularly touting their one-year 300 percent returns. I recall watching CNBC almost right at the peak with one mutual fund manager exhorting loudly that Internet stocks "were not overvalued because people just could not realize how big the Internet was going to be."

• Yahoo! purchased Mark Cuban's Broadcast.com for $5.7 billion. Broadcast.com provided–wait for it–radio over the Internet. Broadcast.com now no longer exists.

• The New Economy: many economists talked about how tech-nology improvement had eliminated economic fluctuations and ushered in a new era of economic prosperity.

• Accounting Chicanery: Because market share growth was viewed as critical to a company's future prospects, many companies accounted for their massive marketing expenses as an investment and deferred and amortized them over several years–often many years longer than the company had even been in existence.

• Stock analysts would often put a high rating on companies with good "deal flow." The more acquisitions a company made, the more likely there would be a catalyst for a higher stock price. The quantity of deals done was much more important than the quality of the deals.

• StockGeneration.com: From 1998 to 2000, StockGeneration.com was a Web site that allowed participants to trade real money in "virtual companies"–that is, companies that did not exist. It was really a ponzi scheme, but the euphoria of the tech bubble carried over to this virtual stock market. The "market" ultimately collapsed right around the same time the NASDAQ index started to fall.

• Nortel Networks, a manufacturer of telecom equipment based in Canada, became at its peak, over 30 percent of the market capitalization of the Toronto Stock Exchange 300 composite index–an index of the 300 largest companies in Canada. Nortel recently filed for bankruptcy protection.

• Mega-market caps: In early 2000, Microsoft and technology equipment maker Cisco were battling it out as the companies with the largest market capitalizations with each approaching the half-trillion dollar mark. The day Cisco took over the lead from Microsoft, the news sound bite 'explanation' provided by an investment manager was simply "Hardware will always beat out software in the long run." Microsoft, while no longer the overall leader, now has a 70 percent higher market-cap than Cisco.

• Convergence: A hot topic in the last few months of the tech bubble was how media and technology companies were converging into new powerhouses. In January of 2000, new economy company America Online (AOL) acquired old media company Time Warner. An investment analyst at the time noted that "today's announcement really does change the tectonic plates of the world." Recently, Time Warner announced it was looking to spin-off it's now very small AOL subsidiary.

• Pixelon, a "streaming-media" company, held a $16 million Las Vegas party to celebrate its IPO, which actually used up 80 percent of the company's latest round of financing. The company had been set up by a fugitive con artist who three years later would be serving a jail sentence.

While these examples give a glimpse of what the tech bubble was like, it does not really do justice to the era. This was not a momentary blip of madness, but rather something that got bigger and bigger day after day for several years. The gradual incremental changes that occurred over the '90s meant that many of the above examples we're seen as "normal" at the time.

Even those who saw the madness for what it was lost fortunes trying to short many of the tech stocks. It was a great example of Keynes famous comment: "the market can remain irrational longer than you can remain solvent."

Companies such as Amazon.com and eBay did fulfill some of their early promise, but the vast majority of the star companies from that time have either gone bankrupt or are a shadow of their former selves.

The NASDAQ composite index ultimately fell by 80 percent from March 2000 to July 2002. As much as "tech" was loved at the peak, two years later it was universally hated.

TEN STOCKS TO LAST THE DECADE
One last example of the mentality of the tech bubble was an article written in Fortune magazine in August of 2000, several months after the peak. Trying to figure out how to find the next Microsoft or Cisco, Fortune talked to a number of leading investment managers and analysts to find the stocks that would lead over the next decade. The 10 stocks and their subsequent performance are in the graph on the right.

Fortune called these stocks a "buy-and-forget" portfolio. I imagine investors in many of these companies do truly want to forget them now!

ANOTHER REMINDER?
The Great Tech Bubble is one of the great bubbles and collapses in financial market history. It's an excellent reminder of the madness that humans in financial markets are capable of.

That's just in case we need another reminder right now. ◌

Company	Return
Genentech	127%
Univision	-24%
Charles Shwab	-50%
Oracle	-53%
Nokia	-58%
Morgan Stanley	-65%
Viacom/CBS	-86%
Broadcom	-86%
Nortel Networks	-99.98%
Enron	Oops!
Average Return	-50%
S&P 500 Total Return	-25%

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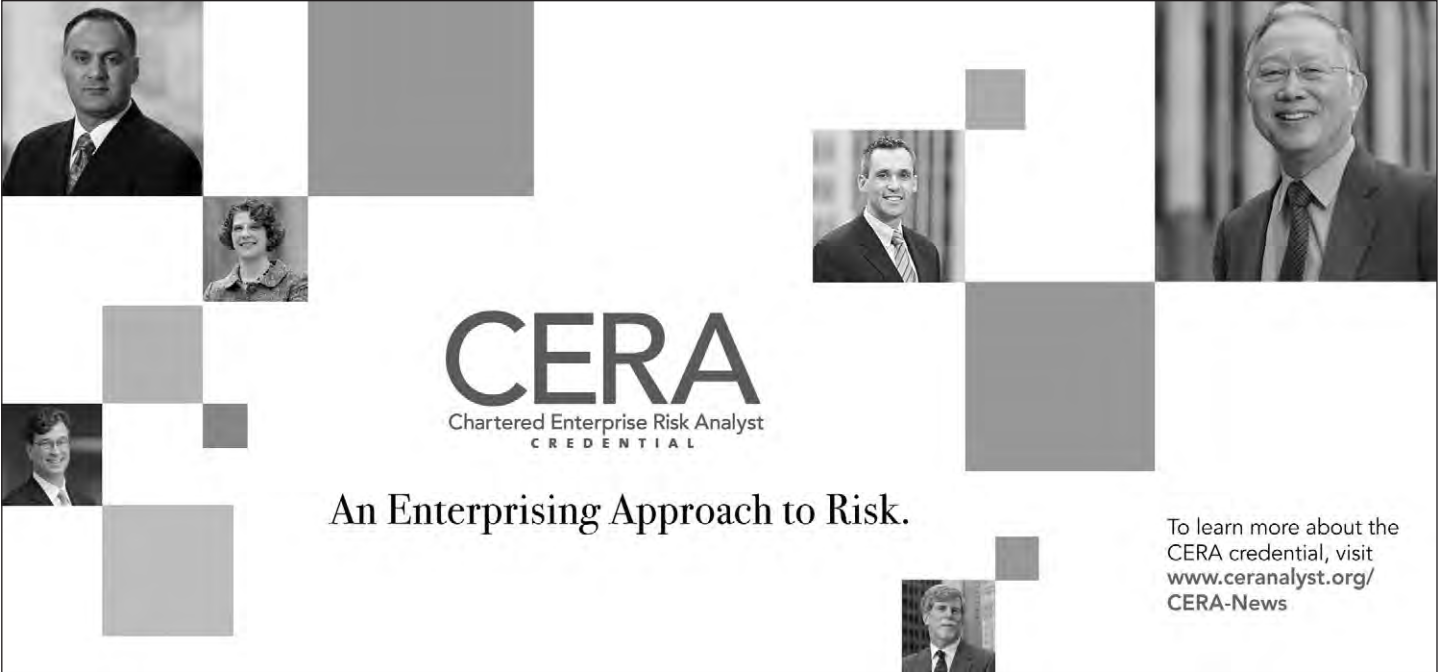Goodin, Dan. "Will K-Tel's Stock Fizzle," CNET News, June 10, 1998. http://news.cnet.com/Will-K-Tels-stock-fizzle/2100-1001_3-212148.html

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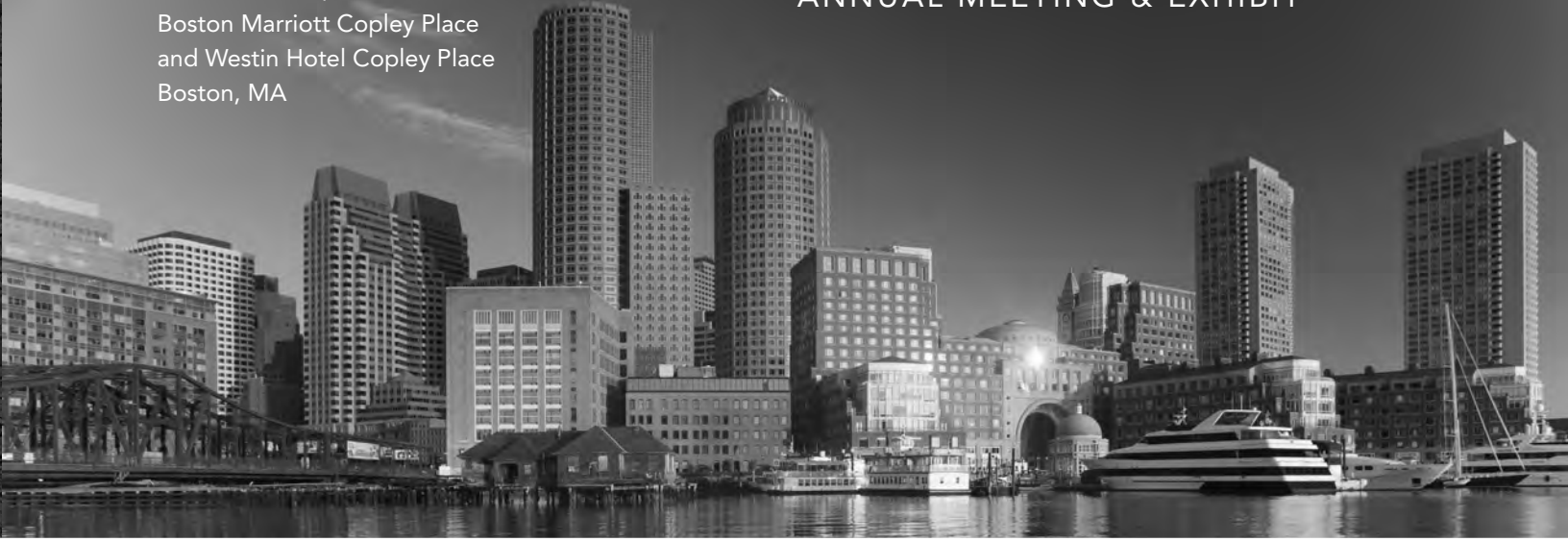
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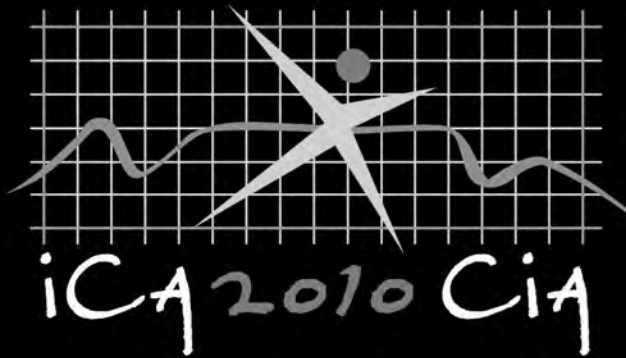
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