

# Capital Structure Arbitrage

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# Capital Structure Arbitrage

- Involves taking long and short positions in the different instruments of a company's capital structure.



# We will also discuss...

- Looking at one security in order to signal the purchase (or sale) of another

# Types of Trading Strategies



# Traditional Strategies

- Set up trades between the debt and equity of a company.
- Play between senior debt and junior securities.
- Convertible bond arbitrage.

# Newer Strategies

- Using options
  - Equity options
  - Credit Derivatives
  - Both

# Example - Stocks vs. Bonds

- October 2002 – Household – a US, A-rated consumer finance company
- Its benchmark 10-year bonds, in 2001 at a spread of 155 basis points over US treasuries, had hit 800bp over.
- Default swap prices were even wider at 900bp over.
- Stock price high of \$63.25 in April 2002.
- In October 2002 was still trading steadily at between \$22 and \$28.
- Is it about to go bust or just too much fear?
- Opportunity for loading up on its bonds.
- Problem – what if the bond markets are correct and the company is headed into bankruptcy?
- Credit derivatives are too expensive

# Partial Hedge

- Boaz Weinstein, head of credit derivatives trading for the Americas at Deutsche Bank, shorted the stocks – putting on a partial hedge.

# Growing in Popularity

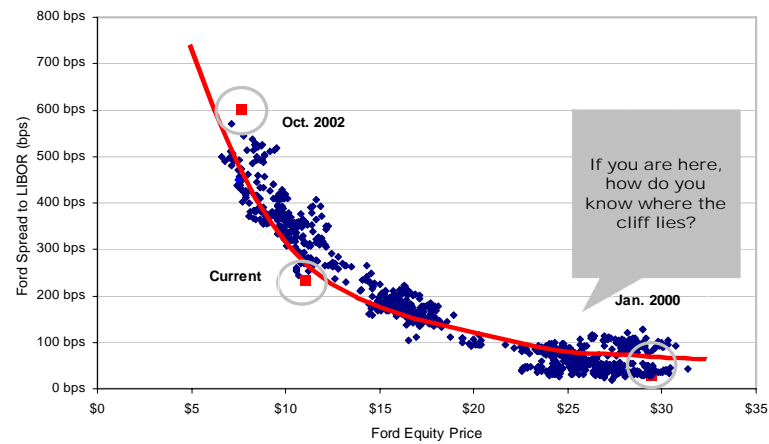
- He's one of a growing number of bank proprietary traders and hedge fund investors who see profits to be made by trading across asset classes to benefit from big discrepancies between the debt and equity prices

# Markets are not efficient

- At one point while the trade was still on, Weinstein says, “the spread tightened to 600bp from 800bp and the stock fell from \$26 to under \$23.”
- That looks like nirvana. Had he closed the trade then he would have made money on both the main bet as well as the hedge.
- As it was he kept it on, lost a bit on the hedge but made significantly more from spread tightening as this came in to 200bp on the day banking group HSBC announced its acquisition of Household.
- What would have happened to Household if HSBC hadn't come along is anybody's guess.
- It's a smart trade but it smacks of gut feel and instinct as much as science.

# Example: Stock vs. Credit Spread Chart (tracked by many hedge funds)

## The Credit Cliff – Easy to Spot After The Fact



# Correlation

- According to David Modest, Managing Director & Chief Risk Officer of Azimuth Trust:
- “The risk correlation on a debt-equity trade is between 5% and 15%.”

# Academic Study

- “Capital Structure Arbitrage: An Empirical Investigation using Stocks and High Yield Bonds”, Chatiras & Mukhterjee, Isenberg School of Management, University of Massachusetts, February 2004
- “Results indicate that the strategy does not work in a predictable manner at the firm level but does quite well at the aggregate portfolio level”

# Junior Debt example

- El Paso went through a Chapter 11 reorganization
- Dickstein Partners calculated that even after the senior bond holders were paid, there is enough to pay the junior bonds
- They purchased the Junior debt for 50 cents on the dollar

# Convertible Bond Arbitrage

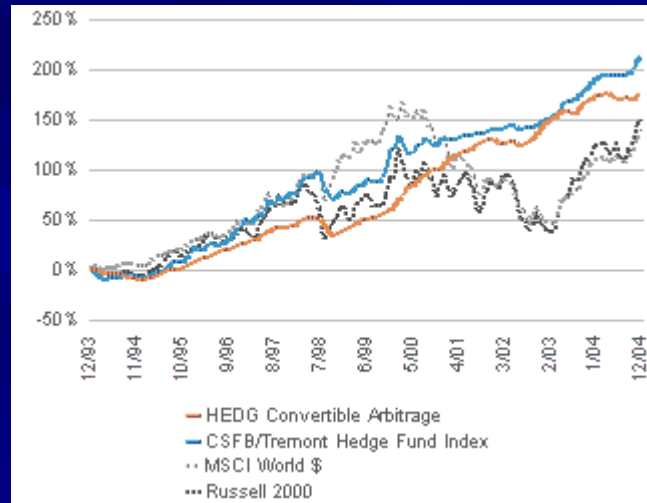
- A common hedge fund strategy
- Purchase the convertible & short the shares (delta hedge ratio)
- **Positive carry = Coupon – Delta (Borrow Rate + Dividend)**
- Can be leveraged up many times

# More complicated strategies

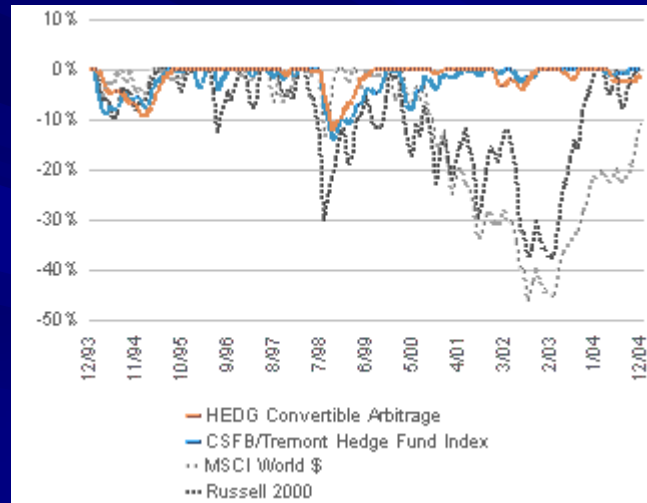
- Involving shorting US Treasuries
- Also, buying credit protections (e.g. CBAS  
- Convertible Bond Asset Swaps)

# High historical returns

(from CSFB Tremont)



# With low drawdowns



# Highly Analytical Tools (ConvB – by Supercc)

**ConvB**

Scenarios Portfolio from Bloomberg Edit Yield Curves

**Super Computer Consulting Inc.**

Add Bond/Preferred: ED190054 Edit Delete Chart Implied Volatility Implied Cr

<Corp> Add <Pfd> Add Save To File Load From File

Amount Owned	CUSIP	Description	Equity Name	Equity Price	Volatility	Credit Rating	Credit Spread	Amount Outstanding	Amount Issued	Theoretical Price	Inve
	ED190054 Corp	BEV 2 3/4 11/01/33	BEV	\$ 12.16	47.95%	BB-	C510	115000000	115000000	\$ 190.70	\$
	ED4531213 Corp	CNP 2 7/8 01/15/24	CNP	\$ 11.77	18.67%	BBB	C601	255000000	255000000	\$ 102.98	\$
	EC4635321 Corp	CYH 4 1/4 10/15/08	CYH	\$ 30.80	21.60%	BB-	C511	287500000	287500000	\$ 104.89	\$
	EC3339267 Corp	DIS 2 1/8 04/15/23	DIS	\$ 23.88	17.07%	BBB-	C610	1322500000	1322500000	\$ 111.34	\$
	255579AA Corp	DKYN 7 05/15/12	DKYN	\$ 18.20	30.77%	B-	C511	24737000	50000000	\$ 101.48	\$
	EP044774 Pfd	FNM 5 3/8	FNM	\$ 64.45	22.20%	#N/A	C51	25000	25000	\$ 95,577.66	\$
	ED3422729 Corp	FSH 3 1/4 03/01/24	FSH	\$ 64.19	21.49%	BBB-	C507	330000000	330000000	\$ 109.86	\$
	EP0088512 Pfd	GM 6 1/4	GM	\$ 37.83	20.89%	BBB-	C53	172000000	172000000	\$ 28.41	\$
	EP0052746 Pfd	GM 5 1/4	GM	\$ 37.83	20.89%	BBB-	C53	104000000	104000000	\$ 24.74	\$
	ED1023305 Corp	GV 3 3/4 05/07/23	GV	\$ 5.56	38.74%	BB-	C509	150000000	150000000	\$ 117.80	\$
	EC3809228 Corp	N 3 1/2 03/14/52	N	\$ 34.30	28.46%	BBB-	C66	227100000	227100000	\$ 147.75	\$
	ED2277504 Corp	KDN 4 05/23/23	KDN	\$ 30.94	18.79%	BB-	C508	200000000	200000000	\$ 120.82	\$
	ED0136181 Corp	LAMR 2 7/8 12/31/10	LAMR	\$ 42.24	18.12%	BB-	C510	287500000	287500000	\$ 102.28	\$
	YV3081740 Corp	LTR 3 1/8 09/15/07	LO	\$ 45.29	34.13%	A	C8	1150000000	1150000000	\$ 100.72	\$
	EC4939293 Corp	MAN 0 08/17/21	MAN	\$ 44.70	31.12%	BBB-	C10	435244000	435367000	\$ 64.53	\$
	ED5301202 Corp	MEE 2 1/4 04/01/24	MEE	\$ 38.68	41.16%	BB	C508	175000000	175000000	\$ 142.03	\$
	EC4689633 Corp	PMI 2 1/2 07/15/21	PMI	\$ 38.50	21.62%	A	C312	360000000	360000000	\$ 104.40	\$
	ED2723903 Corp	RDP 14813 01/15/34	RDP	\$ 59.91	20.30%	BB-	C509	582249000	582249000	\$ 44.28	\$
	349631200 Pfd	FO 2.67	FO	\$ 84.46	17.25%	A	C53	281515	5507528	\$ 524.07	\$

Summary

Ready

start Microsoft Excel - ConvB Document1 - Microsof... 11:02 AM

# Newer Strategies

**New**

And

**Improved!**

# The next big thing

- “The most significant development since the invention of the credit default swap itself nearly 10 years ago.”
- “Trading default protection versus equity is going to become the hottest strategy in the arbitrage community next year.”
- “For bank prop desks, it’s the next big thing, a handy strategy to replace the riches several garnered from playing the interest rate and forex markets.”
- –Euromoney, December 2002
- “During May and June, capital structure arbitrage was one of the few hedge fund techniques in positive territory.”
- –Financial Times, July 21, 2004

# Hot Hedge Fund Strategies for 2005

- ***Hedge fund strategies are getting more complicated, says Goldman Sachs fund of funds chief.***
- FinanceAsia.com, February 23, 2005
- Nadja Pinnavaia, head of Goldman Sachs Hedge Fund Strategies Group for Europe and Asia, explains why some hedge fund managers are delving into more illiquid, complex strategies to generate attractive returns.
- There are certain strategies that are naturally capacity constrained and where the overcrowding argument is more valid. For instance it's natural that when an arbitrage trade is easily accessible the returns will diminish. This has been the case with convertible bond arbitrage strategies where the source of issuance is cheap and entry barriers in terms of skill level are relatively low.
- This is why, when we look at arbitrage strategies, we're looking to invest in managers who are at the cutting edge of arbitrage innovation. The constant evolution of financial instruments in the industry will enable new types of arbitrage opportunities to be exploited. We look for strategies with a high intellectual barrier to entry to ensure the opportunity can be protected. We've seen interesting arbitrage strategies using credit instruments as well as capital structure arbitrage.

# CDS vs. Stock

- “In early November credit protection on building materials group Hanson was trading at 95bp—while some traders’ debt equity models said the correct valuation was 160bp. Its share held steady. That was the trigger that capital structure arbitrageurs were waiting for.
- One trader who talked to Euromoney bought €10 million-worth of Hansen’s five-year credit default swap over the course of November 5 and 6 when they were at 95bp. At the same time, using an equity delta of 12% derived from a proprietary debt equity model, he bought €1.2 million-worth of stock at £2.91 (€4.40). Twelve days later it was all over. On November 18, with Hanson’s default spreads at 140bp and the share price at £2.95, the trader sold both positions.
- Unusually, both sides of the trade were profitable. Sale of credit default swaps returned €195,000. Selling the shares raised €16,000, for a total gain of €211,000.”
- Euromoney, Currie & Morris (2002)

# Credit Derivative Plays

- From the Financial Services Authority (FSA) report: “Financial Risk Outlook 2004”
- Credit default swaps can also be used by traders to influence the underlying price of new bond issues. In the last year, there have been more examples of this. The strategy involves selling the bond short prior to issuance and buying protection through the use of credit default swaps, helping reduce the price of the underlying bond. Traders can then make a profit on their short positions.
- In some cases over the last year this has led to significant losses for traders when they found they were unable to cover their short positions by buying the bond when it is issued. This was because the bond issue turned out to be oversubscribed, partly because of the popularity of this strategy amongst traders.

# Academic Study II

- “How profitable is capital structure arbitrage?”, Fan Yu, University of California, Irvine, Sept. 30, 2004
- Capital structure arbitrage is primarily a bet on convergence
- It works well when most firms in financial distress survive. It works poorly when most of them end up in bankruptcy
- In particular the risk arises when the arbitrageur shorts CDS and the market spread subsequently skyrockets, resulting in market closure and forcing the arbitrageur to liquidate

# Equity derivatives

- CSFB (Credit Suisse First Boston) issued “Credit Driven Single Stock Option Update”, Feb 27, 2003
- A deterioration in a company’s creditworthiness is often highly predictive of a future decline in the firm’s equity stock price.
- Theoretically, equity options should accurately reflect any information introduced into the credit markets.
- However, at times, the equity markets either overcompensate for or under react to a shock to the credit markets.

# Two Strategies

- Companies whose equity implied volatilities have overcompensated for an increase in credit risk would make good call overwriting candidates as their calls are expensive and their underlying stock prices are likely to decline.
- Similarly, companies whose equity implied volatilities have under reacted to an escalation in credit risk would make good put buying candidates as their stock prices are also expected to fall while their implied volatilities are relatively cheap.

# The Journal of Credit Risk

The screenshot shows the Microsoft Internet Explorer browser window displaying the website for The Journal of Credit Risk. The address bar shows the URL <http://www.journalofcreditrisk.com/>. The page header includes the Incisivemedia plc logo, a 'RELATED PRODUCTS' dropdown menu, and the date '16:27 GMT 14 February 2005'. The main banner features the title 'The Journal of Credit risk' and a 'Launch Offer 20% Discount' with a login form for 'username:' and 'password:'. The left sidebar contains a 'Site navigation' menu with links to Home, Latest issue, Editorial Board, Subscribe, Sample Request, Submission Guidelines, About Us, and Advertising. Below this is a 'Site features' menu with links to Research Papers, Problems & Solutions, Credit Risk Forum, and Book Review. The main content area includes a 'Welcome to www.journalofcreditrisk.com' message, an 'Editor's letter' by the editor, and a 'Latest issue' section listing three articles: 'Merton's Model, Credit Risk and Volatility Skews' by John Hull, Izzy Heiken and Alan White; 'Extensions to the Gaussian Copula Random Recovery and Random Factor Loadings' by Lief Andersen and Jakob Sidenius; and 'On the Pricing of Step-up Bonds in the European Telecom Sector' by David Lando and Allan Mortensen. The right sidebar features a 'View latest issue' link, a 'Quick search' box, a 'Do advanced search >>' link, a 'Not a subscriber?' link, a 'Get a free trial >>' link, and an 'Email alert' sign-up section. The Windows taskbar at the bottom shows the Start button and several open applications: Microsoft Outlook, CBOE, Microsoft PowerPoint, Adobe Acrobat Professional, and the Journal of Credit Risk website.

# Credit Default Swaps and Equity Options

- Merton's Model, Credit Risk and Volatility Skews  
by John Hull, Izzy Nelken and Alan White
- The Journal of Credit Risk, Vol 1, No 1

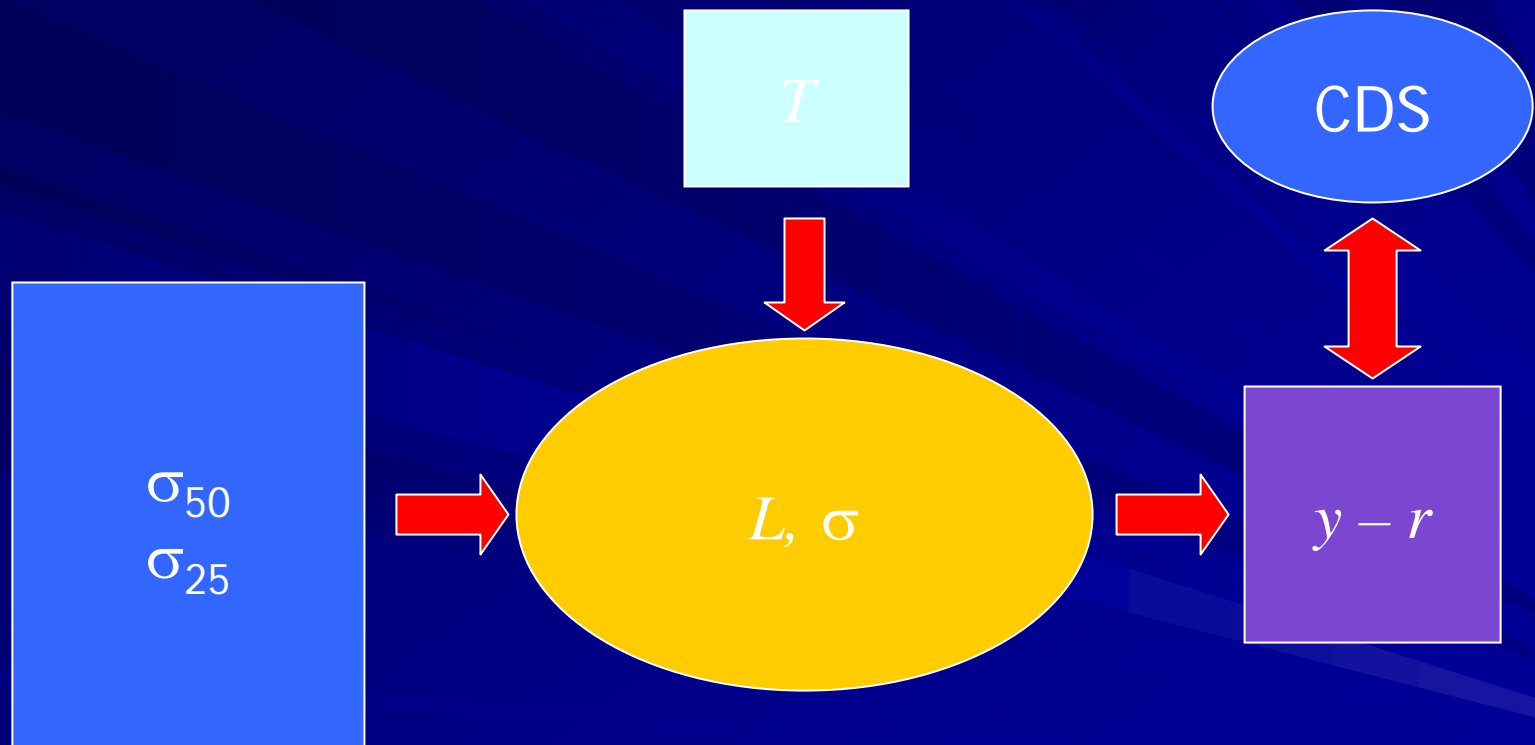
# Two markets

- The Credit Default Swap market (OTC, 5 year swaps)
- The equity Options market (exchange traded, short term expiration)

# We found that

- The implied volatility skew
- ... is related to...
- The credit spread of the same issuer

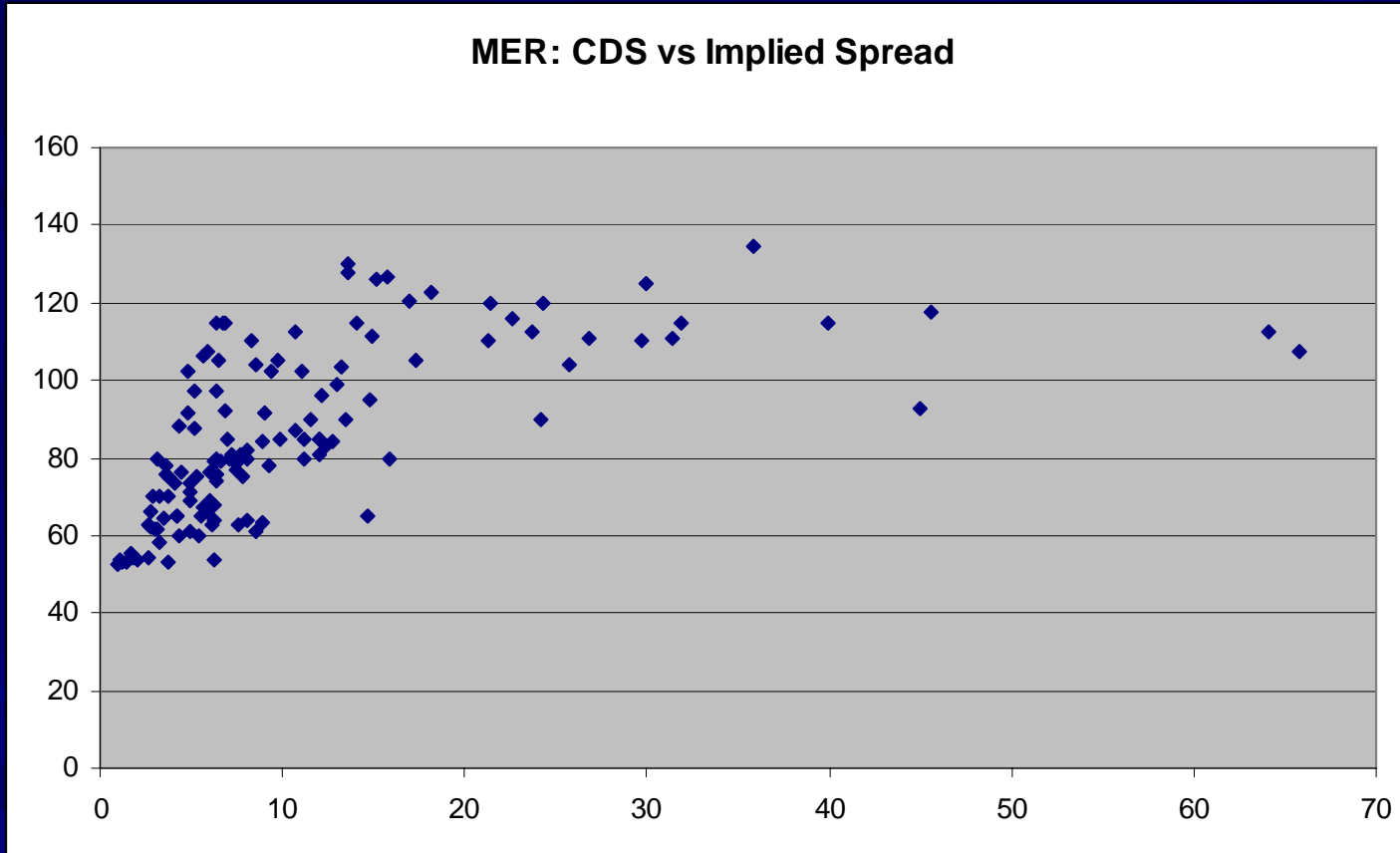
# Mapping



# We've developed

- A relationship between the skew in the equity options markets
- ...and the Credit Default Swap price

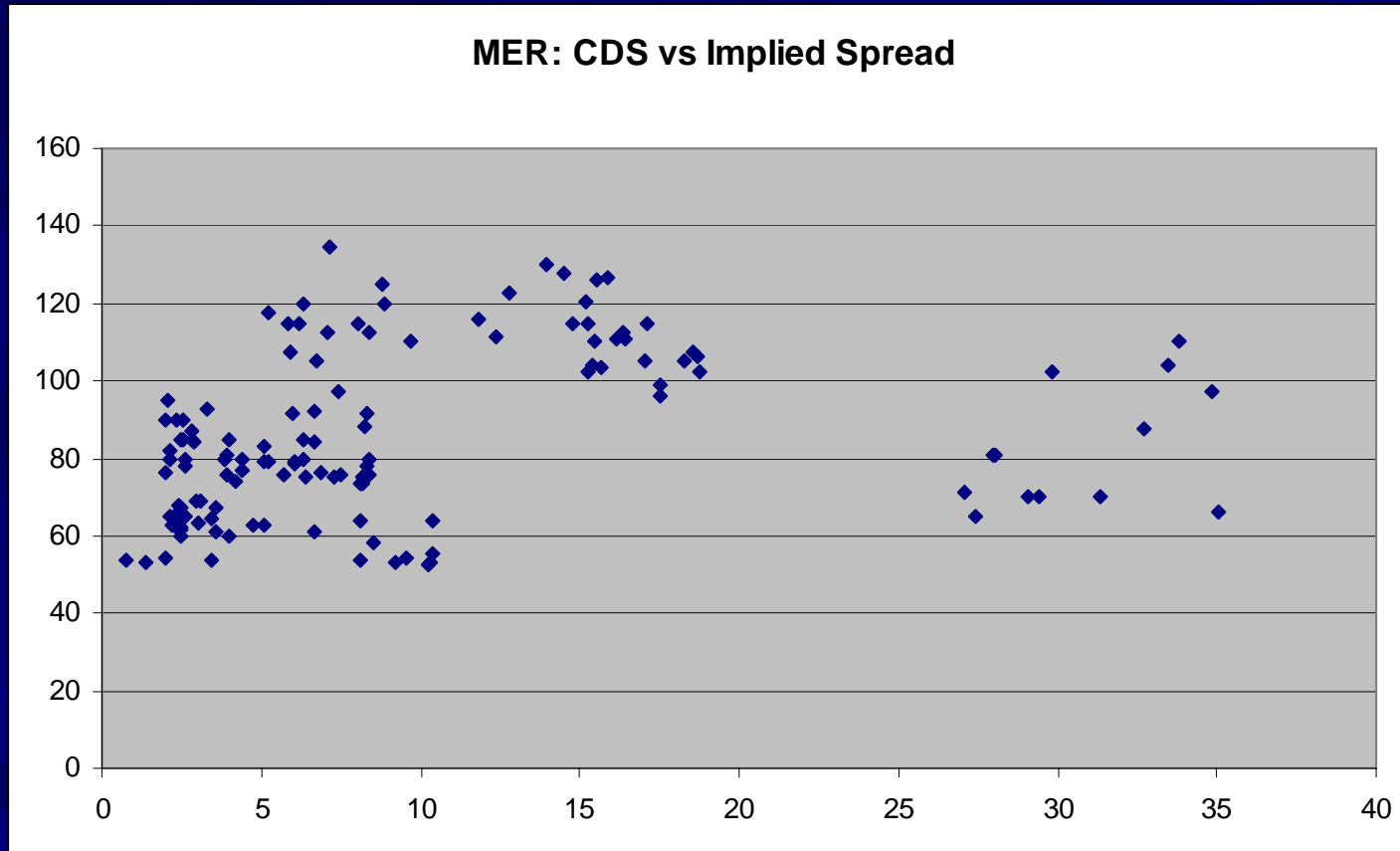
# Merrill Lynch – Spreads from Vols



Rank Correlation = 0.83

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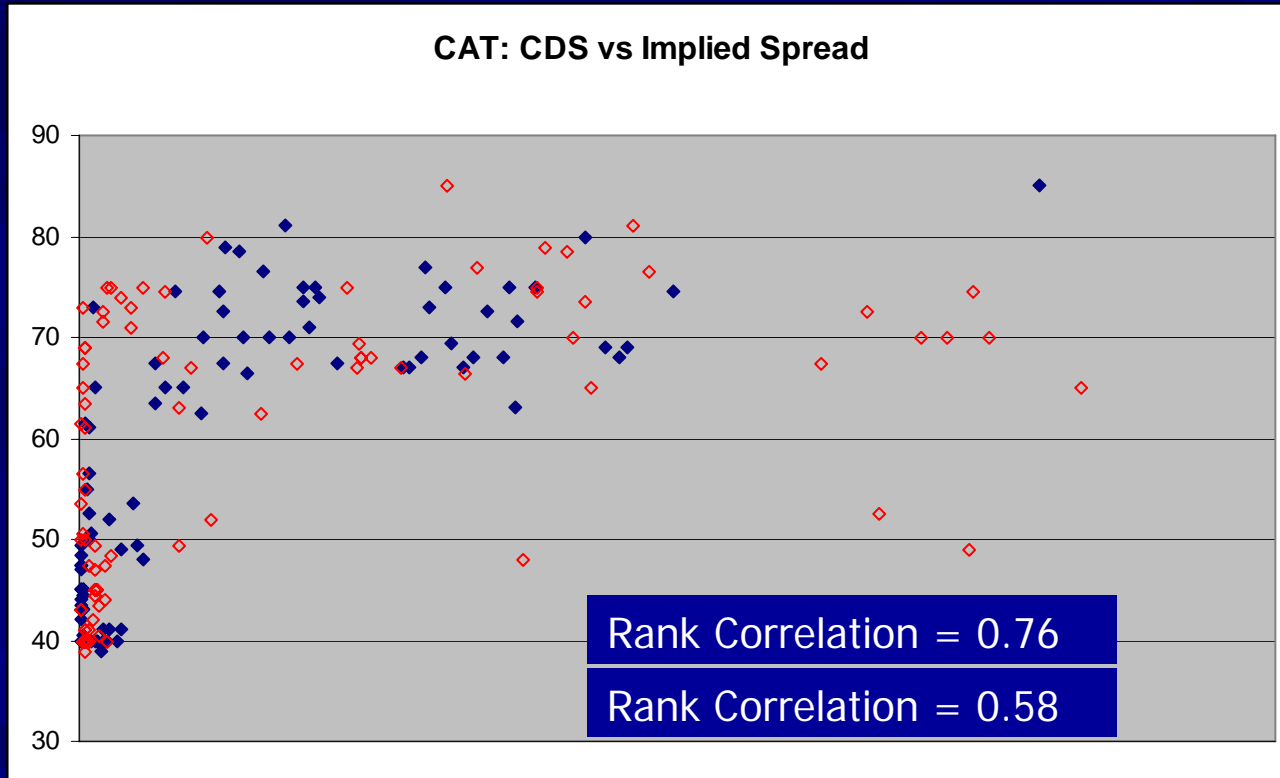
# Merrill Lynch – Spreads from Equity



Rank Correlation = 0.40

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# CAT Example - Spreads



# Question

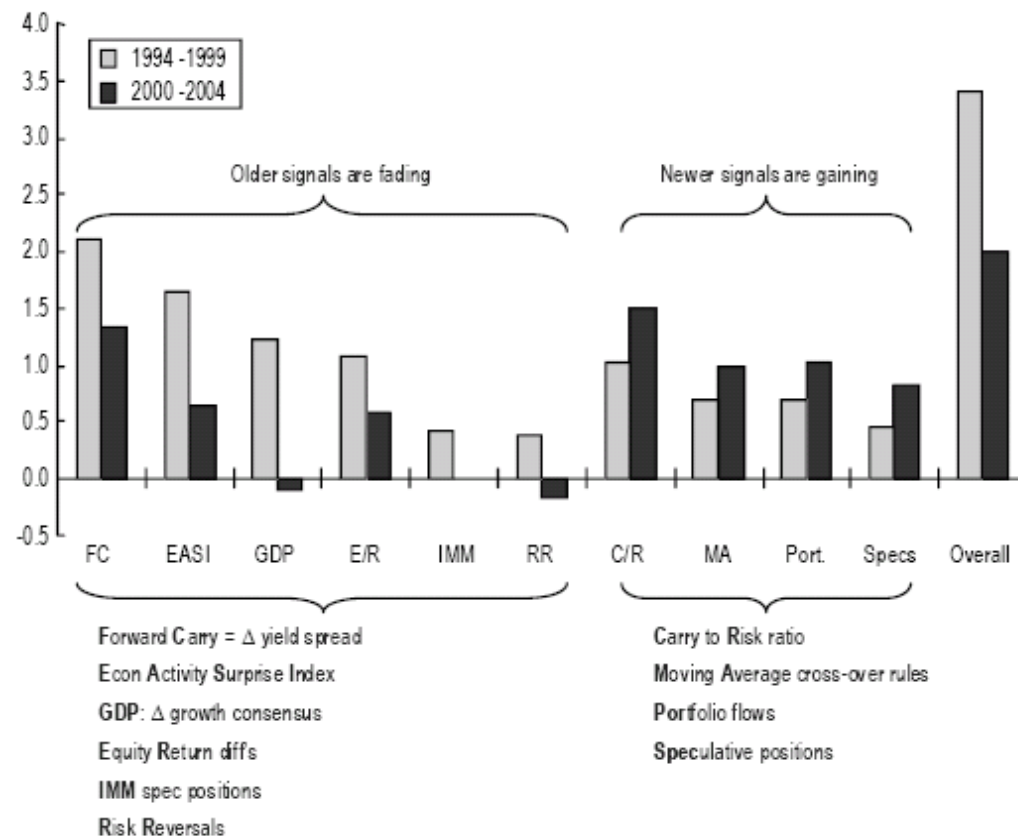
- Would the clearing firm give you a margin relief for these strategies?
- Do they recognize this as a “hedge”?

# The opportunities

- “Have hedge funds eroded market opportunities?” (JPMorgan, October 1, 2004)
- As hedge funds grow larger, they will eventually erode the same market opportunities and mispricings they have relied on to create their superior returns.
- Opportunities remain ample where there are fewer hedge funds, where derivative markets are not deep yet, and where funds use new trading rules, proprietary information, or advanced analytics.

# New strategies

Chart 30: Information Ratios on directional FX trading signals in JPMorgan's FX Barometer



Source: JPMorgan

# The future

- Relative value is becoming more and more complex: it requires new models and sophisticated analysis, and increasingly will need to be played in the volatility markets, or new markets and products
- Relative value remains also more attractive where there are more supply/demand shocks (e.g., the US rate market), and hedge funds are relatively small vs other players.
- Credit has so far not been fully arbitrated yet as derivatives have not yet permeated the credit world.
- But CDOs and CDS are steadily growing and will soon create the liquidity needed for hedge funds and other participants in the credit world to fully exploit, and eventually eliminate, credit mispricings.