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# Derivatives Usage by Insurer and Role of Derivatives in Recent Economic Meltdown

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# Possible uses of derivatives by Insurance companies

- Efficient portfolio management.
- Hedging specific liabilities.
- Enhancing returns or speculations
- Solvency management.

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# Efficient Portfolio Management

- Reduction of investment risk
- Tactical asset allocation.
- Tax Management.

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# Hedging specific Liabilities

- Liabilities for structured funds.
- Options embedded in traditional products.
- With profit guarantees

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# Enhancing returns

- Creating synthetic assets.  
e.g. index linked corporate bond = fixed interest corporate bond + interest rate swaps.
- Exploiting investment opportunities.

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# Solvency management

- Reducing risk of falling equity value using equity put option.
- Protect solvency against the event of adverse movements in interest rate.
- Shifting effective asset allocation from bond to equity.

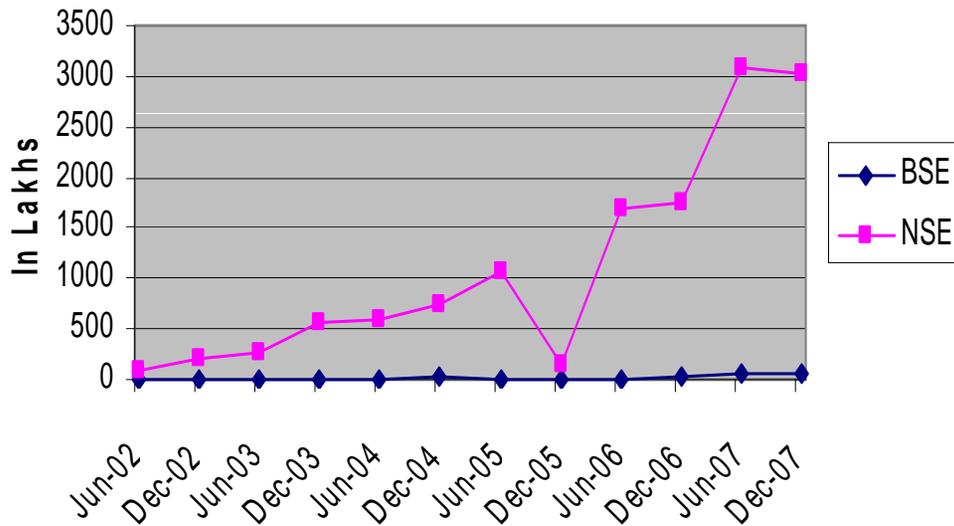
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# Evolution of derivative in Indian Market

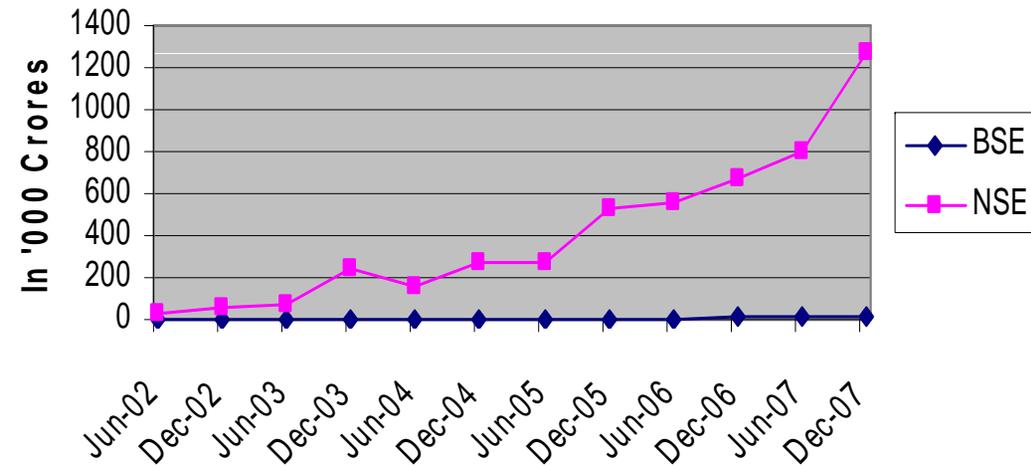
- Derivative trading was cleared with the securities laws amendment bill on 1998.
- But trading was started with the introduction of BSE30(Sensex)index future and S & P CNX Nifty index future in the year 2000.
- In January 2004, the IRDA allowed Insurance companies to deal in financial derivatives to a limited extent.
- In January 2004, RBI, allowed FIIs to trade in equity derivative.
- In the year 2006 with the amendment of RBI act OTC derivative transaction is allowed provided one of the parties is either RBI or any entity regulated under RBI act, banking regulation or FEMA.

# Exchange Traded Derivative transaction upto December' 2007

**Total No. of Derivative Transaction in BSE & NSE**



**Notional Turnover of Derivative transaction in BSE & NSE**



# As per IRDA Guideline

## Derivative instrument allowed

- Forward rate agreement (FRAs).
- Interest rate Swaps (IRS)
- Exchange Traded Interest Rate Futures

## Permitted Purpose of Dealing in Derivative

- Hedging interest rate risk of investment in fixed income securities.
- Hedging for forecasted transaction

# Shortcomings of Existing Guideline

- Historically fixed income securities are less volatile & with less default risk.
- Short term MMIs are very secured and no hedging is required.
- Exchange traded fixed income derivatives usually have term less than one year leading difficulty on hedging long term security return.
- Cost of hedging may outweigh the benefit from hedging.
- Current guideline is silent about the insurers liability, a perfect hedging should be with respect to the liability.

# Derivative Segment (SEBI Handbook 2008 page 43)

**Table 26: Derivatives Segment at BSE and NSE**

Month/ Year	No. of Trading Days	Index Futures		Stock Futures		Interest Rate Futures	
		No. of Contracts	Turnover (Rs.crore)	No. of Contracts	Turnover (Rs.crore)	No. of Contracts	Turnover (Rs.crore)
1	2	3	4	5	6	7	8
<b>BSE</b>							
Jun-00 to Mar-01	207	77743	1673	-	-	-	-
2001-02	247	79552	1276	17951	452	-	-
2002-03	251	111324	1811	25842	644	-	-
2003-04	254	246443	6572	128193	5171	-	-
2004-05	253	449630	13600	6725	213	-	-
2005-06	251	89	5	12	1	0	0
2006-07	250	1638779	55491	142433	3515	0	0
2007-08	251	7157078	234660	295117	7609	0	0
<b>NSE</b>							
Jun-00 to Mar-01	211	90580	2365	-	-	-	-
2001-02	247	1025588	21482	1957856	51516	-	-
2002-03	251	2126763	43951	10676843	286532	-	-
2003-04	254	17191668	554462	32368842	1305949	10781	202
2004-05	253	21635449	772174	47043066	1484067	0	0
2005-06	251	58537886	1513791	80905493	2791721	0	0
2006-07	249	81437424	2539575	104955401	3830972	0	0
2007-08	251	156598579	3820667	203587952	7548563	0	0

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# Regulator may seek information on:

- The purpose for which derivatives to be used.
- Procedures for approval of counterparties and brokers.
- The limits to credit, market and other risk.
- Exposure limit.
- Procedure for monitoring the liquidity risk.
- The professional qualification of those entrusted with derivative activities.
- The valuation methodology.

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# Properties of Derivatives that may be allowed to Insurance companies:

- The potential exposure should be reliably measured.
- Closing out of the derivative should not be difficult.
- The derivative should be readily marketable.
- Independent verification of pricing should be possible.
- The counterparty should be suitably creditworthy.

# Deposit Insurance Corporation Act of Canada

## Eligible financial contract:

- A derivative agreement that trade on a futures or options exchange or other regulated market.
- An agreement to
  - borrow or lend securities or commodities,
  - settle securities, futures, options or derivative
  - act as a depository for security
- A repurchase, buy-sellback agreement wrt securities or commodities.
- A margin loan in securities account or future accounts.
- Any combination of the above four.

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# Insurance & Superannuation commission of Australia

Some restriction on following types of instruments

- Highly leverages derivatives.
- Uncovered derivatives.
- Derivatives where the potential of losses is considerably higher than the initial investment.
- Derivatives where the potential exposure is not measurable.
- Derivatives where closing out the position is difficult.
- Derivatives where the underlying asset is not admissible for solvency purpose.

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# Life insurance products with guaranteed benefit

- Capital guarantee
  - Gross premium return guarantee
  - Net premium return guarantee
- Guarantee in rate of return on
  - Gross premium
  - net premium

(either in maturity or surrender or both)

- “CPPI” type of product where the Guaranteed Maturity is calculated at the maximum NAV recorded throughout the term.

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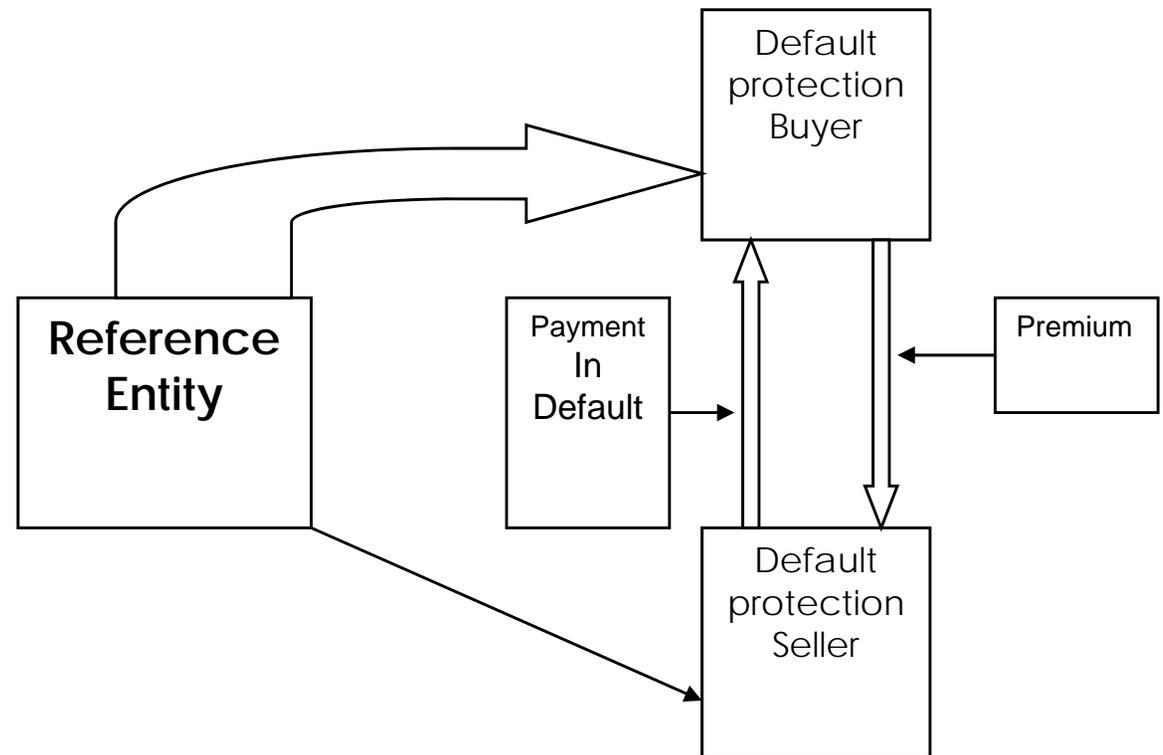
# Role of Derivative in the recent Market Meltdown.

- The OTC Credit derivatives mainly the CDS (credit default swap) are claimed to play the triggering role in the recent turbulent condition in the Global financial market.
- The CDS has been called as “the most important instrument in finance” by former Federal Reserve Chairman and a financial “weapon of mass destruction” by Warren Buffet.

# How CDS functions

- Reference entity is the Borrower.
- Default protection Buyer is the lender.
- Default protection seller is the issuer of CDS.

## Diagram of a Typical CDS:



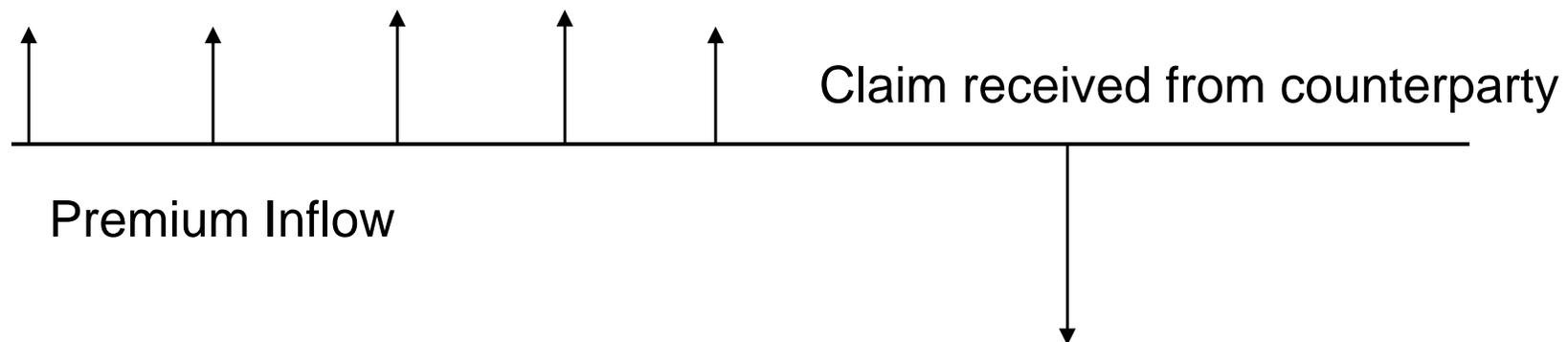
# CDS pricing:

- $PV \text{ of CDS} = \text{Premium} * \text{Discount Factor}$
- $PV \text{ of Credit Protection} = \text{Claim received} * DP * DF$

Premium calculated by solving the equation:

$$PV \text{ of CDS} - PV \text{ of Credit Protection} = 0$$

Cash Flow:



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# CDS: Whether Insurance or derivative

- CDS is like an insurance policy used by the debt owners to hedge or insure against the default on a loan.
- CDS may be purchased by protection buyer that own the underlying bond for which protection is provided.
- An one time or regular premium can be paid by the CDS purchaser to the issuer of CDS, which depend on the outstanding loan or amount of loan which is exposed to the risk of default.

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# Issues with CDS

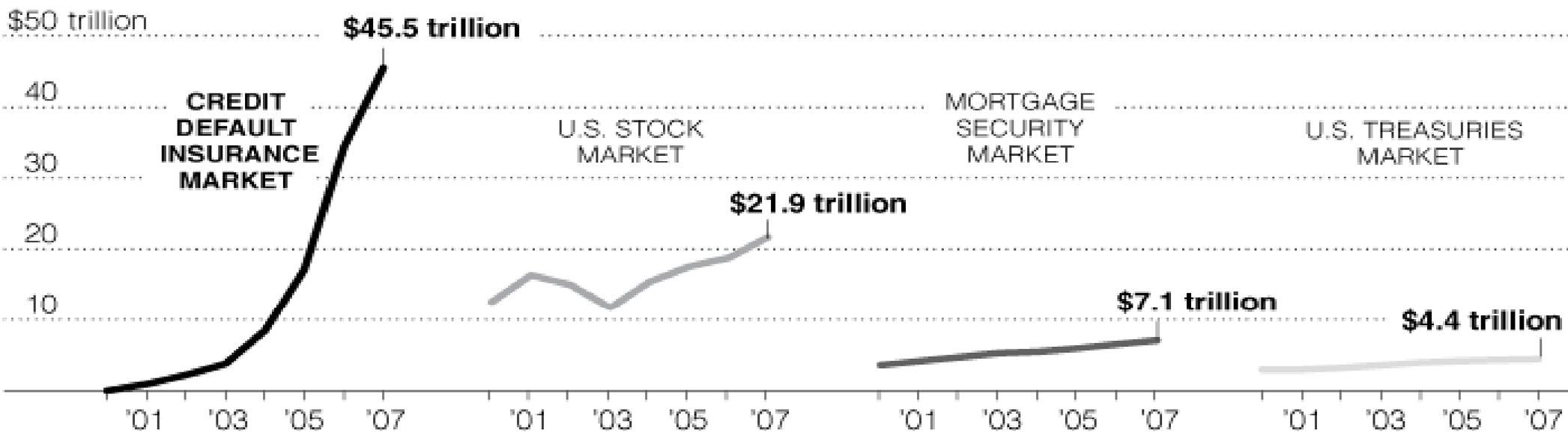
- In the global market, CDS are OTC contract and completely unregulated.
- The formula for deciding the premium of CDS contains the default probability ( $P$ ) and the expected recovery rate ( $R$ ) of the reference entity (borrower).
- $P$  &  $R$  again determined by the yield of the loan (bond).
- The probability of the default of the counterparty is ignored.

# Growth of CDS market.

- Till 6/2008 the total market underlying the credit derivative crossed USD 62 trillion.

## In the Shadow of an Unregulated Market

The value of the credit default insurance market is now much larger than the domestic stock market, mortgage securities market and United States Treasuries market.



Sources: Thomson Proprietary Research; International Swaps and Derivatives Association

THE NEW YORK TIMES

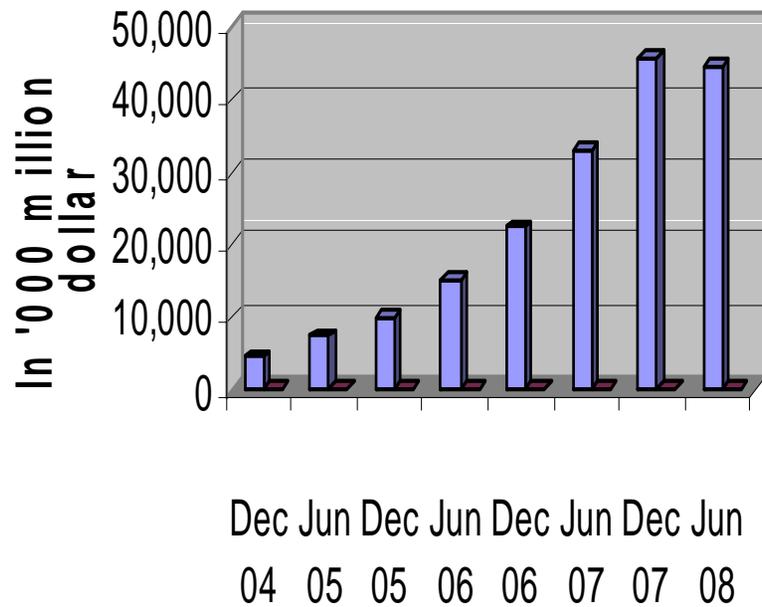
# CDS used Global Insurers (BIS data)

Million USD Bought	Dec 04	Jun 05	Dec 05	Jun 06	Dec 06	Jun 07	Dec 07	Jun 08
All counterparties	4,652,583	7,658,950	10,672,056	15,728,650	22,570,640	32,978,816	44,298,440	45,852,804
Insurer			176,429	228,585	211,212	243,638	328,221	278,676
% usage by Insurer	0.00%	0.00%	1.65%	1.45%	0.94%	0.74%	0.74%	0.61%

Million USD sold	Dec 04	Jun 05	Dec 05	Jun 06	Dec 06	Jun 07	Dec 07	Jun 08
All counterparties	4,494,943	7,405,111	10,174,050	15,232,255	22,372,084	32,917,150	45,625,528	44,555,188
Insurer			58,591	68,164	94,884	87,821	175,520	119,304
% usage by Insurer	0.00%	0.00%	0.58%	0.45%	0.42%	0.27%	0.38%	0.27%

# CDS exposure by global Insurers:

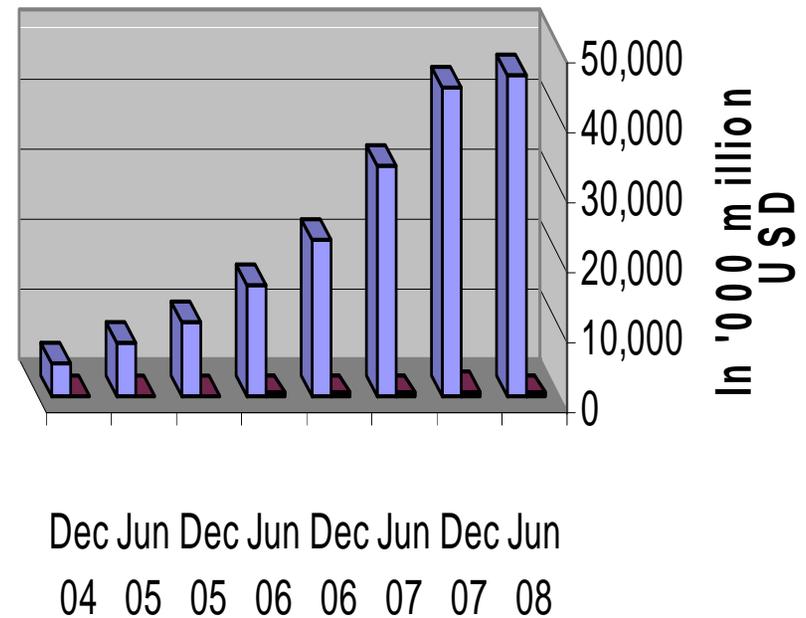
## Short position in CDS



■ All counterparties

■ Insurers

## Long position on CDS



■ All counterparties

■ Insurers

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## Conclusion:

- In general Exchange traded derivatives are popular tool for global insurance fund managers.
- Indian fund managers should also be given higher level of flexibility removing too much restriction on derivative usage.
- For increase in popularity of Guaranteed benefit product.
- For managing any future innovative products e.g. Variable Annuity.

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# Thank You