
Comparative study of credit exposure of J.P. Morgan chase & other banks

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ABSTRACT

The objective of paper is to assess the top investment banks exposure in credit default swaps to mitigate or minimize credit risk. As these investment banks holdings of derivatives and continue to be concentrated is near about 96 percent of the net notional amount of derivatives in the commercial banking system. The huge credit exposure have severe effect on increasing volatilities across asset class markets and severely impacted in different kind of risk including credit risk which subsequently push banks towards global turmoil. However, banks buys these derivatives to hedge different type of risk in global markets and buying these CDS seems to be insurance against risky assets. The paper will analyses the exposure taken by big banks during sub-prime crises in CDS as compare to their total assets and to find out that any relation exhibit between increasing investment activities and credit default swaps during time of banks turmoil or do they buy more CDS to insured themselves during banking panic.

KEYWORDS: *Credit Risk, Credit Default Swaps, Credit Exposure, Volatility.*
JEL Classification : B26, G33, G21.

INTRODUCTION

This is important to understand the investment banking behaviour in term of their activities both on balance sheet and off-balance sheet items. It has severity of risk, but do not have proper instruments to recognise the potential risk. Mostly those items put on off-balance sheet and do not reported in financial statement of the banks, but to be consider very sever in the term of their size and exposure, and their risk profile due to heavy exposure in the market. However, the nature of investment banks activities are engaged in various investment segment with having huge exposure in derivative segment of the banks.

Off-Balance Sheet (OBS) activities are a special category of bank activities and represent the operations which are not evidenced in the bank balance sheet. Whereas some of the OBS activities are evidenced simultaneously in the balance sheet and off-balance sheet. The typical examples are futures, forwards or options and exotic derivatives. These derivative instruments are recorded in the balance sheet in their real value and in the off-balance sheet in their nominal value.

The off-balance sheet become the potential of future balance sheet items as they are directly associated to the various risk's i.e. market and credit risk. And over a period it may realized into the actual balance sheet assets and if certain condition of non-payment of the obligation

by the buyer realized then it would have severe effect and become Credit risk which spread over the balance sheet and other financial instruments which are direct credit equivalents.

Credit risk in derivative differs from the credit risk in loans due to the more uncertain nature of the potential credit exposure. In the case of loan, the total risk is associated with the amount advanced to borrower. So the nature of credit risk becomes unilateral and banks face the credit exposure up to the borrower. While in the derivative contract like swaps where banks hold a bulk of bank derivative contracts the credit exposure is bilateral, if contract is long enough then banks probably have multilateral swaps contract because credit exposure is a function of various variables of market movements. In the derivative contract banks themselves do not know the actual value of derivative contract and just estimate the notional value¹.

The notional amount is a reference amount from which contractual payments will be derived, usually this amount is not at risk. Credit risk is to be considered one of the more significant risks in bank derivatives trading activities, which is represented in the term of notional amount of a derivative contract as a reference amount from which contractual payment will be set off. Usually the whole this is not to consider an amount of risk, but credit risk in derivative contract is a function of number of variables, such as volatility of underlying market factors including interest rate, currency, commodity, equity, etc., and counterparty exchange, maturity and liquidity of contracts and of course creditworthiness of the counterparties.

DATA METHODOLOGY

The Credit derivative has been recognized as the fastest growing area of the over-the-counter (OTC) derivative during the first decade of the twenty-first century as per British Bankers Association. The size of credit derivatives (CD) has been increased almost 112 times, from the market size of 1996 from \$180 billion notional value to \$20 trillion in 2006 with expectation to continue sharp growth of CD's notional amount about \$33 trillion by 2008 (Almsafir, 2013). The underlying objective of sharp increase of the CD's are to use as instruments to provide financial capital as a tool to manage credit exposure as well to isolate the credit risk of the underlying asset through insuring against a specific credit event.

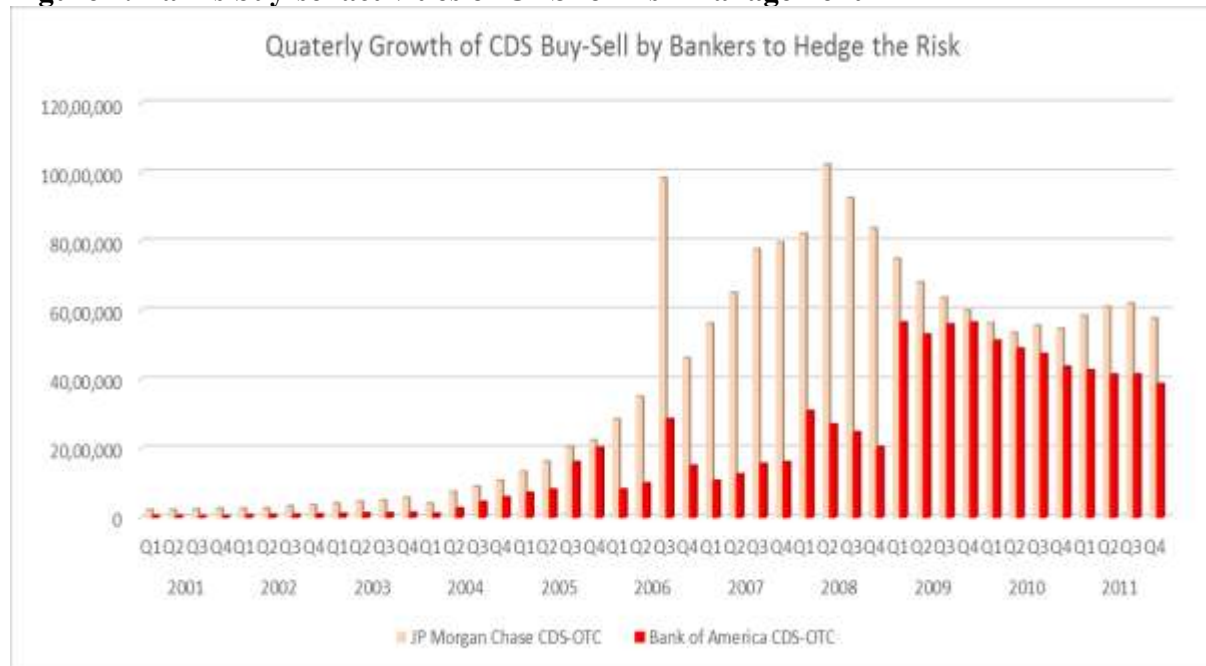
The credit exposure data of all three banks has been collected from OCC's quarterly report from 2001-to-2011 on bank derivative activities, their derivative exposure, CDS exposure on the basis of quarterly insured derivative activities as compared to total assets of the investment banks, etc. issued by Comptroller of the Currency Administration of National Bank, Washington, DC.

CREDIT DERIVATIVE EXPOSURES OF INVESTMENT BANKS

The previous two decades have recorded a rapid rise in the use of credit default swaps (CDSs), i.e. financial instruments to hedge and trade credit risk by banks and financial institutions. The strong growth of this market is largely the consequence of banks' desire for better credit risk management policy and also gain from exposure to the credit market. Fundamentally Lore and Borodovsky (2000), argue that the two reasons which encourage banks to participate on credit derivative market have found them attractive; the first one is, credit derivative allow to hedge the exposure for manage their credit risk efficiently. Secondly, CD's allow the dealers to trade more efficiently and employ less capital and can be designed to meet specific counterparties' requirements. Here we need to address the issue

that banks are taking huge exposure in credit derivative instalment for the psupose of hedging the risk or either they are engaged purely on trading activities for gain are questionable as CD's also pronounced "a weapon of mass destruction".

Figure 1. Banks buy-sellactivities of CDS for risk management

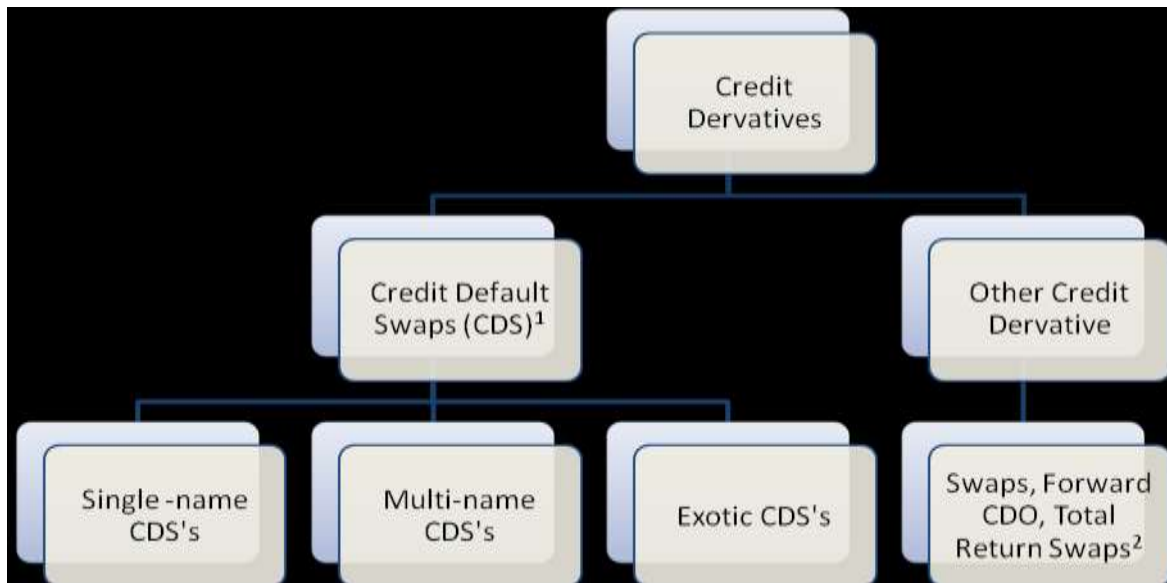


Source: OCC's quarterly report (from 2001-to-2011) on bank derivative activities issued by Comptroller of the Currency Administration of National Bank, Washington, DC.

The following graph shows the quaterly growth of buy-sell of CDS among the top U.S Banks JP Morgan Chase and Bank of America represent the excessive CDS growth over the year since 2001 to 2011. The figure depicted Buy-Sell Credit Derivatives Swaps by the both banks have signigatly during the pre-crisis and crsies period particularly by JP Morgan Chase have engaged more on CDS for insuring against credit event.

The credit dervative classified in two group one is known as credit default swap (CDS) where buyers and sellers can bet on a corporate or sovereign risk either in single name from or in groups of names in an index. While in another type of credit derivative known as a CDO, where a pool of credits is created synthetically i.e. creating debt instuments independent of the underlying cash market. In another important argument that in the CDS market participants "connectivity" increase in global finaical systmes. So that collapse of the major banks and fiancial institution deals in CDS bring potential impact on crises to the paritcular sector and push to defaulting other including the whole economy.

Figure 2. Credit Derivative various Instruments.



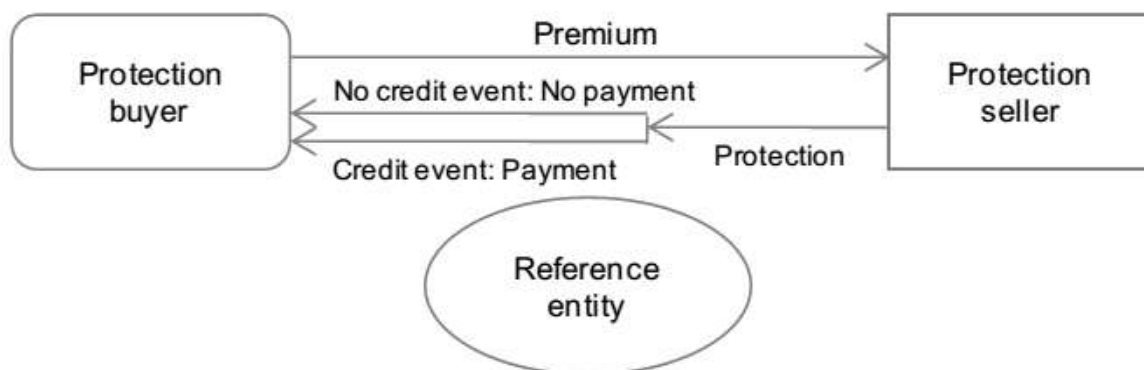
Source: Deutsche Bank Research on CDS

Note-1: Credit Default Swap (CDS) are the plain vanilla version of credit derivative is a credit swaps in which the protection of buyer pays a fixed recurring amount in exchange for a payment contingent upon a future credit event.

Note-2: Total Return Swaps, are a bilateral financial contract in which the total return of an assets during the holding period is exchanged for another cash flow.

The basic purpose of CDS to be invented were for hedging trade and credit risk. The intuition behind is that one side party pays the other for assuming the risk that an underlying entity fails. In principle, this allows hedging against credit risk on one side and participating in the credit business by means of an arm's length financial transaction on the other side of the market. However, Simultaneously provide additional risk of counterparty default as two parties enter a CDS contract introduce another dimension of risk.

Chart1. How CDS Works



Source: dbresearch on CDS

While the sole purpose of the CDs have been mainly used as hedging tools, they are used also for speculative purposes. A Fitch Rating report suggested that about 58% of the global banks are highly motivated for using CDs for the “trading” purpose. While only 30% of the global banking had “hedging” as their predominant motivation dealing in credit derivatives. Therefore if the main purpose of dealing in derivative is trading then it is important cause for banks to realize the underlying risk characteristics that would make them more vulnerable during stress conditions (Minton et al, 2009). That suggest the whole motivation of banks to deal in CDs for the purpose of speculative rather than for hedging credit risk.

These had put questions in the role of derivative played during the financial crises, including what should be optimal size of derivative and exotic derivative instruments as well exposure in CDS to hedge the credit risk, and which position banks have to take in the CDs market whether it is net protection buyers or net protection sellers to indicate that the CDs have been to use to speculate or to avoid the credit exposure. The research report on CDS suggested that in a mass buyer and seller of credit protection are banks. They did not engaged in buying and selling in the CDS instruments for risk management purpose but activity participated in CDS market for trading purpose, banks trading activities including loan portfolio activities are among the top for banks deal in CDS market. While hedging accounts almost 25-30 Percent of total activities in credit default swaps market.

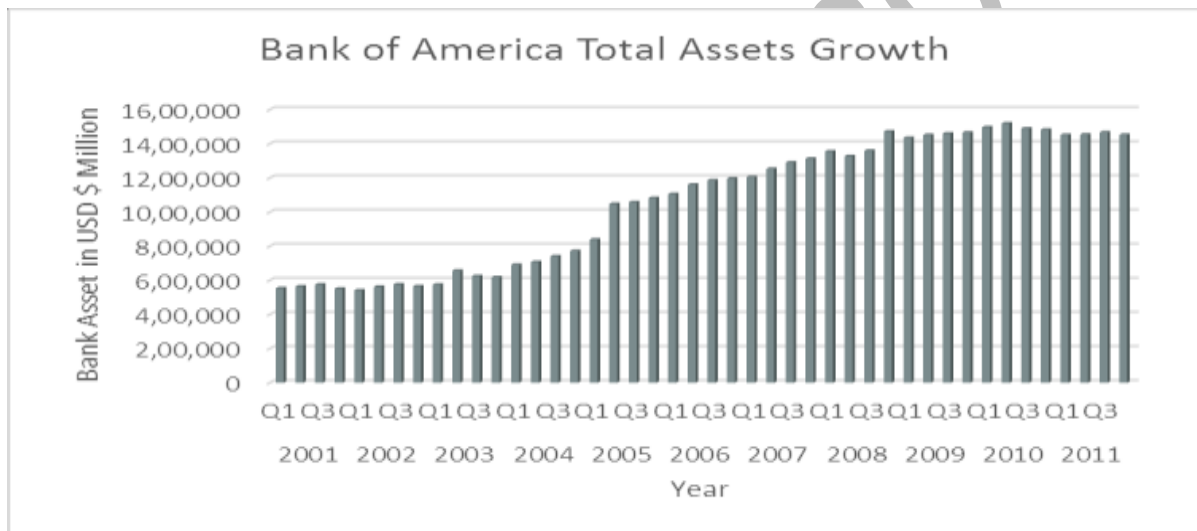
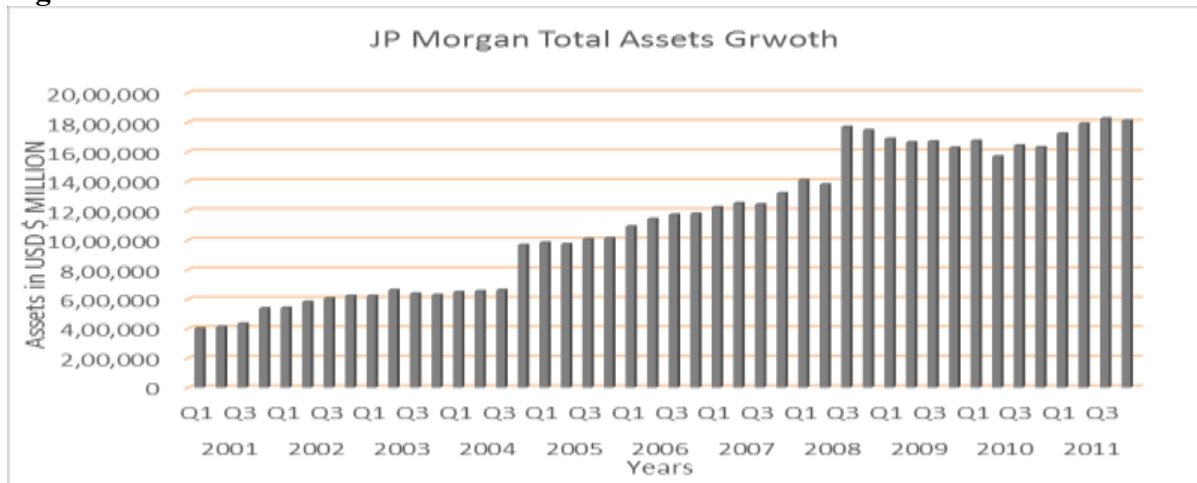
There are few reasons which supports that CDs in general and Credit Default Swaps (CDS) specifically have contributed to the crises and are dangerous for banking crises (Stulz, 2010). The following assumption has been made as it was argued that CDs market participants such as Lehman Brothers, Bear Stearns and AIG have allowed constructing huge risk position, and those huge exposure have push systemic risk. This enormous exposures have significant contribution to construct crises in banking and financial institution which consequent there were collapse of big banks who were active participants in the market.

The another argument was that due to lack of transparency of the CDS market has made it feasible for those entities that participate on market to manipulate that market. This seems that those institutions are much weaker on their financial position than they in fact were and minority the soundness of financial system and partially remain an important cause for fall of big banks.

BANKING ASSETS GROWTH AND DERIVATIVES EXPOSURES

To analyses credit derivative growth by banks the data has been collected from the OCC quarterly report on bank derivatives activities and trading revenues on call report provided by U.S banks since 2001 to 2011. Which provide credit equivalent exposure of the top most U.S. banks for better understanding of the credit derivative growth with respect to the banks assets. The Figure below shows the total assets of the top U.S. Banks in term of USD \$ Million for three banks i.e. JP Morgan, Bank of America, and Merrill Lynch provide picture of growth of assets during the period.

Figure 3. All Banks Total Assets



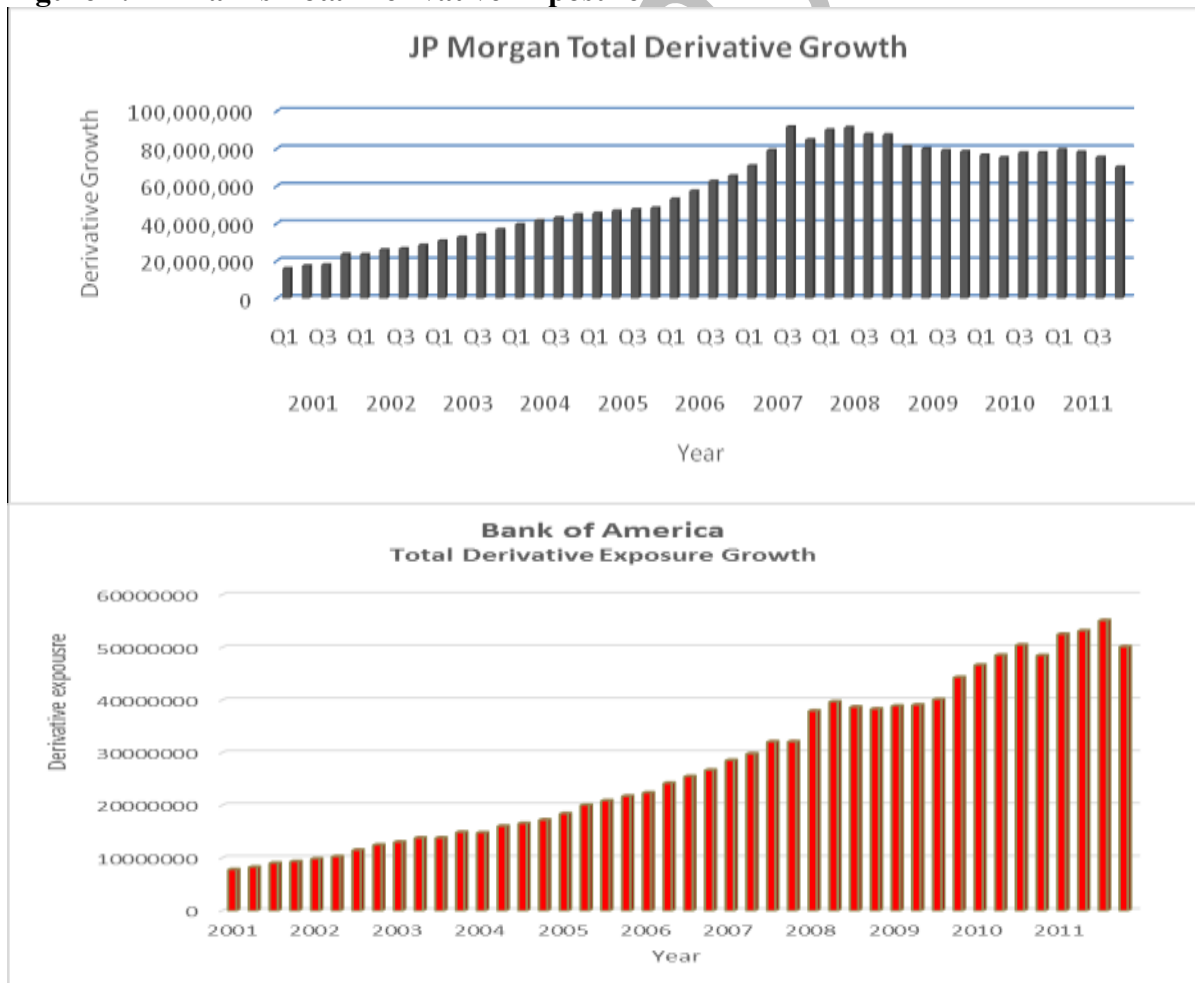
Data source: occ's quarterly report on bank derivative activities, since 2001-2011.

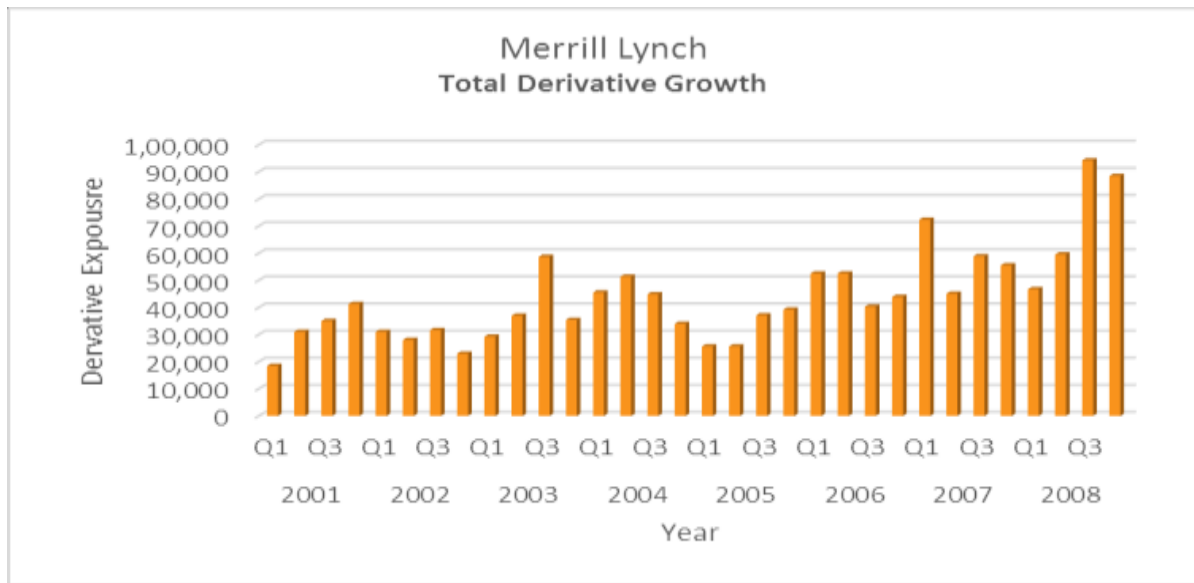
Total Derivative Exposure by Banks

Credit derivative exposure have grown rapidly form past several years. Credit derivative are consider important product for the purpose of hedging in the contract by product and maturity. At the time of default, this is the maximum value that will be lost if the counterparty to that contract defaults. Since default is an uncertain event that could occur at any time during the life of the contract. While considering the credit exposure, it should not only consider current credit exposure but also potential changes in the exposure during the contract’s life.

Particularly for the derivative contract whose value can change substantially over time and accordance to the state of the market and function of changes in interest rates, foreign exchange rates, and changes in the volatility reflect the potential future exposure, depicted below in the figure shown that total derivative growth data on counterparty credit exposure. The total derivative exposure includes exposure from contracts held for trading or for risk management purpose. Holding of derivative continue to be concentrated in the largest banks for the purpose as figure shown that derivative exposure has been grown continuously over a period. The following figure of all three banks has depicted the derivative exposure taken by individual banks.

Figure 4. All Banks Total Derivative Exposure





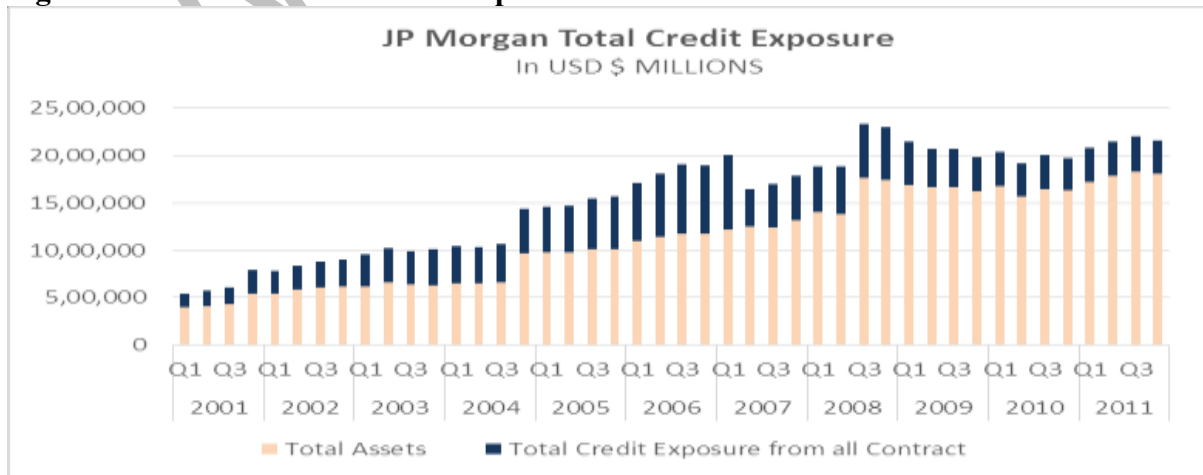
Data source: occ's quarterly report on bank derivative activities, since 2001-2011.

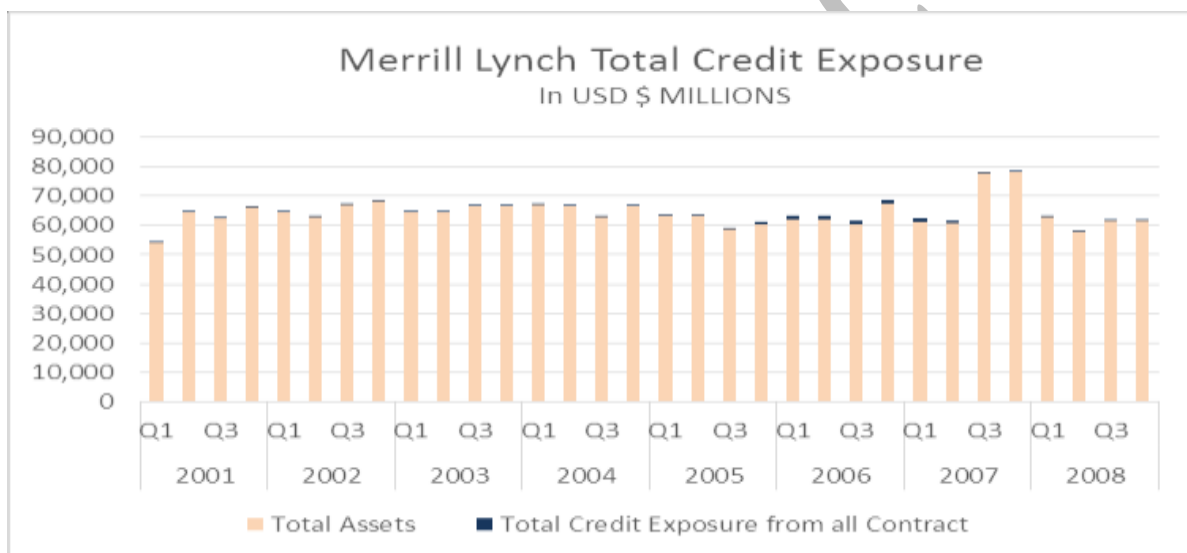
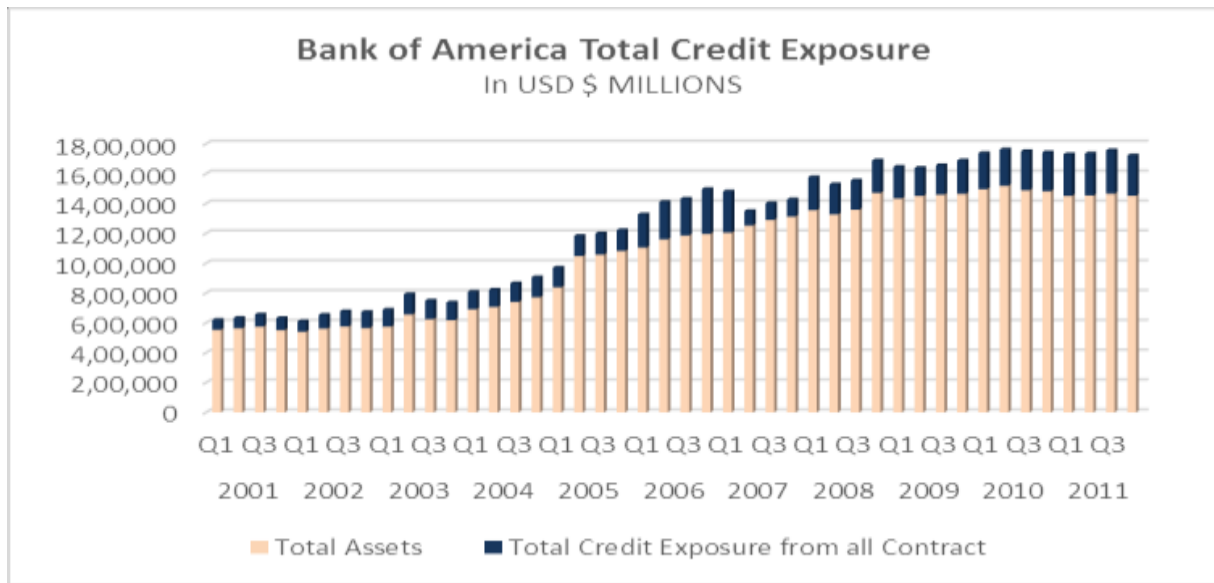
The above exposure of derivative are based on derivative which include, exposure in credit derivatives as per the data collected by OCC quarterly reports, the total credit exposure which is known as a current credit exposure and potential credit exposure, is the amount owed to banks if all contract were immediately liquidated. This is useful measure for credit risk in a dealer's portfolio information, which is available in call reports.

Banks Credit Derivative Exposure

Counterparty credit exposure is a measure of the amount that would be lost in the event that a counterparty to a financial contract defaults. Only contracts that are privately negotiated between counterparties, i.e. over-the-counter (OTC) derivatives, are subject to counterparty credit risk. Contracts that are traded on an exchange are not affected by counterparty risk, because the exchange guarantees the cash flows promised by the derivative to the counterparty.

Figure 5. All Banks Total Credit Exposure





Data source: occ's quarterly report on bank derivative activities, since 2001-2011.

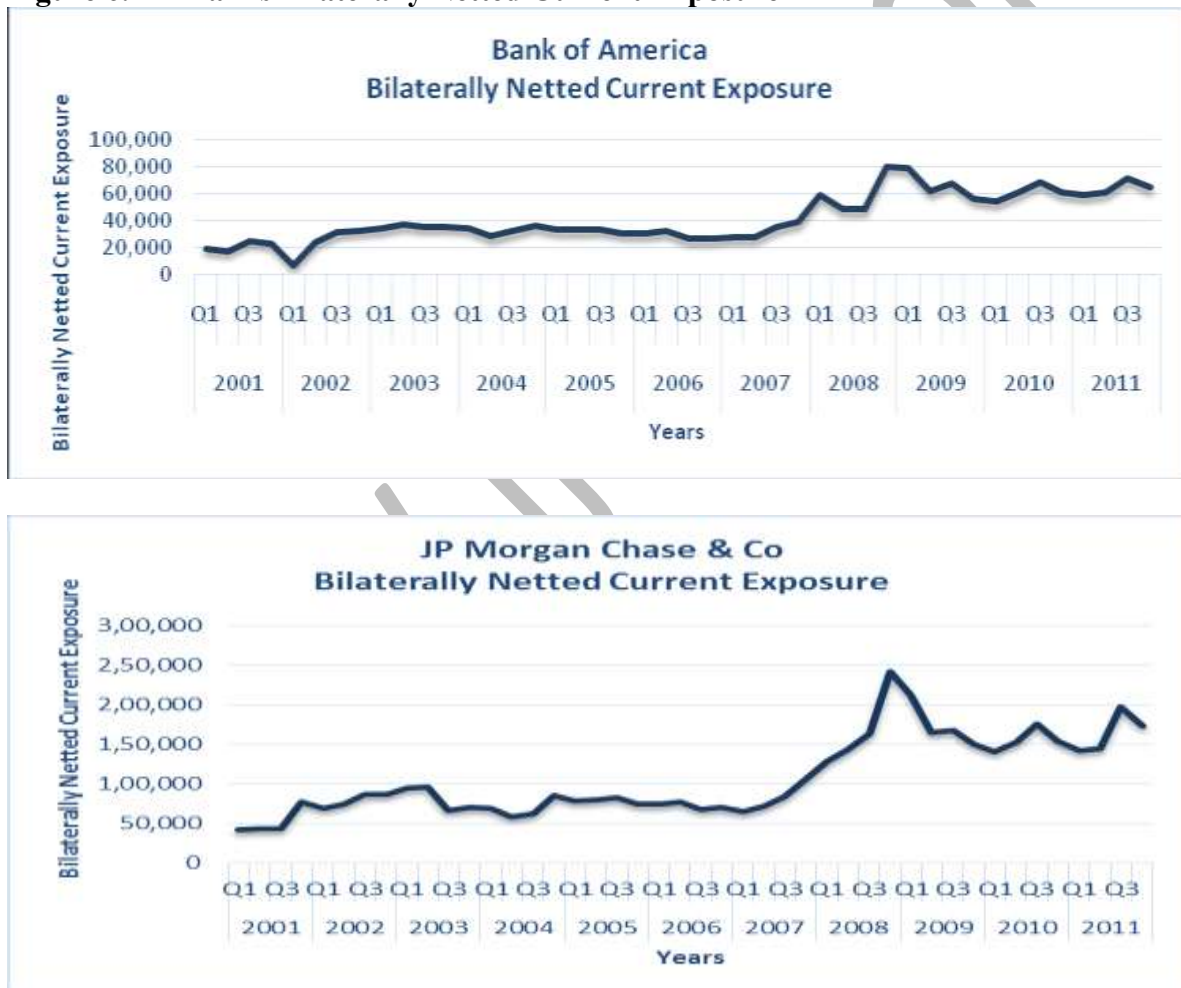
Further, the reports suggested that the banks' exposure on derivatives are primarily preponderance of trading activities, the banks with the 25 largest derivatives portfolios hold 98 percent of their contracts for trading purposes, while the remaining percent held for their own risk management purpose (i.e. risk hedging).

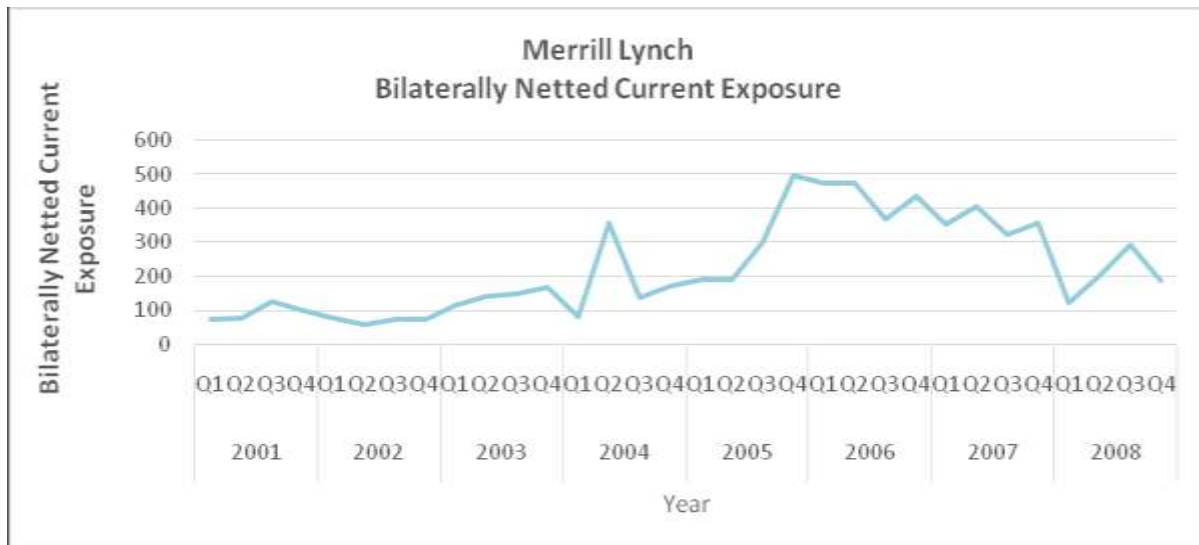
In the measuring credit exposure in derivative contracts involves identifying those contracts where banks would lost the amount if the counterparty defaulted today. The total of all contracts with positive value known as derivative receivables to the bank termed as gross positive fair value (GPFV) and represented as an initial measurement of credit exposure. The bilaterally "net" current credit exposure define legally enforceable agreement of contract with negative value may be used to offset contracts with positive values.

Hence, a bank’s net current credit exposure across all counterparties would be sum of all gross positive value (after offsetting negative value) for counterparties which basically aim to reduces a large number of individual positions or obligations to a smaller number and therefore netting can reduce the size of credit and liquidity exposures incurred by market participants and, contribute to the containment of systemic risk.

A bilateral netting arrangements could actually lower the bank's counterparty credit exposure in the way of permitting netting of unrealised losses against unrealised gains from outstanding forward contracts in the event of a counterparty's closure. The multilateral netting reduce all obligations to a single debit or credit position of each participant, the “net” current credit exposure is the primary metric used by the OCC to evaluate credit risk in banks derivative activities has been shown in the figure 6. A more risk sensitive measure of credit exposure would also consider the value of collateral held against counterparty exposures.

Figure 6. All Banks Bilaterally Netted Current Exposure





Data source: occ's quarterly report on bank derivative activities, since 2001-2011.

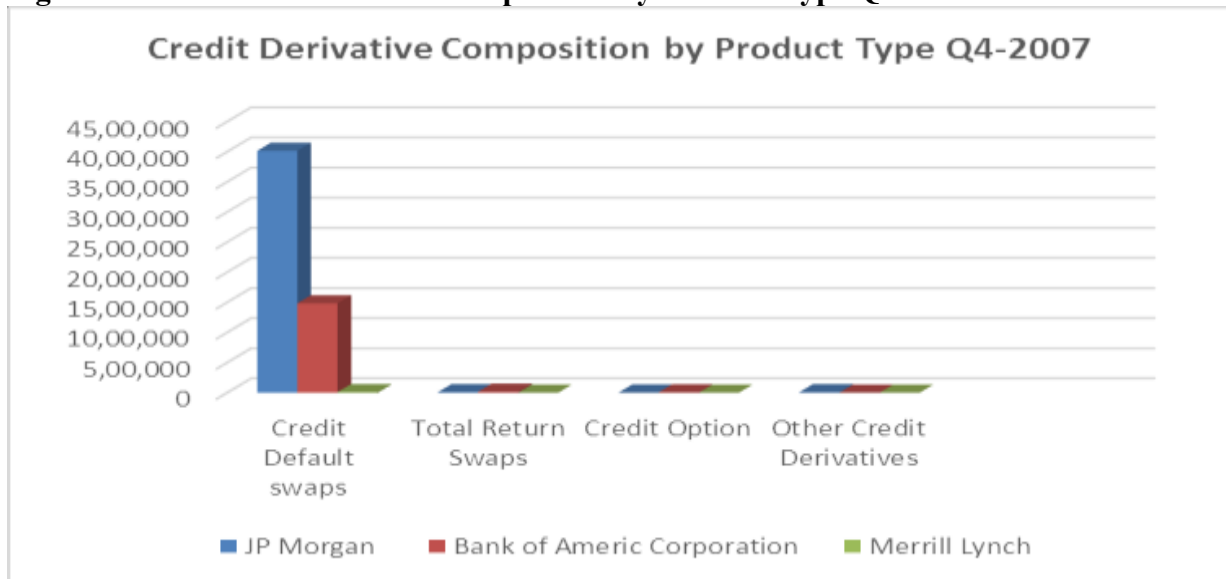
The legally effective multilateral netting agreement sometimes increase risk rather than reduction in actual exposures which depends on the legal soundness of a netting scheme. Even the potential to increase systemic risks because they concentrate risks on the central counterparty. But in a system which able to manage and contain prudently its exposures to the participants and to the extent that in the event of a one participant's default. Then it is able to continue to satisfy its obligations to the others and the system's operation will contribute to a reduction in the level of exposures experienced by participants and also to a reduction in the level of systemic risk. But in such case that this conditions are not met the system's operation will increase the likelihood that the credit or liquidity problems of one market participant will suddenly and negatively affect the condition of others and Moreover, the concentration of risks on the central counterparty exposes all participants to the risk that the central counterparty itself may fail.

Credit Derivatives

The role of Credit derivatives have grown rapidly over the past several years. The OCC quarterly reports provide detail on individual bank holdings of credit derivatives by product and maturity, including credit quality of the underlying hedged exposures. The data on derivative exposure suggest that credit default swaps represent the dominant product at almost 98% of all credit derivatives nationals.

The notional amount of credit derivatives in the CDS during fourth quarter of 2007 accounted almost \$4 million by JP Morgan and almost 1.5 million by Bank of America and significantly by Merrill Lynch banks for the purchased credit protection (i.e. hedging credit risk). A new and rapidly growing market, operational issues became a supervisory concern in the credit derivatives market. Currently OCC is providing as a financial supervisors and major market participants to address infrastructure issues in credit derivatives.

Figure 7. The Credit Derivative composition by Product Type Q4-2007.



Data source: occ's quarterly report on bank derivative activities, since 2001-2011.

These, CDS financial tools which transfer the credit exposure from one party to another as they are the instruments of hedging. Usually when banks buy the credit protection the seller, who offer credit protection in return of periodic premium, to remunerate the buyer if a credit event occurred are mostly big insurance agencies like American Insurance Group (AIG). These insurance agencies interrelated with many major commercial and investment banks and other financial institutions that primarily purchased protection from AIG for their own debt portfolios through counterparty credit relation on CDS (Ibid). Since, 2000 the role of AIG become active in the CDs market including CDS as a protection seller, AIG had \$ 500 billion notional exposure in CDS positions (Stowell, 2012), which become the seed or systematic credit risk and later huge crises.

CONCLUSION

An increasing activities of global banks to offer their services to the rest of the world has been grown significantly and having the pattern of inter-connectedness with the other domestic and international financial institution. Which had posed a significant threat in the term of risk spreading through various complex instruments offered by banks, due to their nature and lack of transparency. Particularly, derivatives product offered by these larger investment banks are found to be more riskier, as the actual risk cannot be estimated, and these product found to be highly complex. Once they were offered to the public or institutions for risk hedging purpose, the underlying risk for the whole institution become sever and pose theraat for systematic crises if the (once) default occurred.

These derivative exposures are quit high as compared to the bank's assets, for the risk management banks usually hedge these derivative risk on exposure through buying and selling credit default swaps, to protect form any adverse event. All banks who have been buying those default swaps form the insurance agencies or financial institution in respected pose serious threat to the inclusive financial systems.

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