

THE ROLE OF OVER-THE-COUNTER (OTC) DERIVATIVES IN GLOBAL FINANCIAL CRISIS AND CORPORATE FAILURES IN RECENT TIMES AND ITS REGULATORY IMPACTS

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ABSTRACT: *The paper examined the role played by over-the-counter (OTC) derivatives in the recent global financial crisis and corporate failures, and the extent to which these have impacted the regulation of OTC derivatives products and markets. The research methodology employed is the critical analysis of empirical literature. The findings of the paper are therefore mixed as there were divergent views as to OTC derivatives being the sole cause of the global financial crisis and corporate failures among stakeholders. The paper therefore proposed consistency in OTC derivatives reforms among countries, proper supervision by regulatory bodies over OTC participants among others.*

KEYWORDS: Over - The – Counter, Derivatives, Risk, Regulation, Financial Markets, Financial Crisis

INTRODUCTION

OTC Derivatives

Derivatives are complicated and sophisticated financial instruments that derive their value from some underlying asset, reference rate, or index (Wiggins & Metrick, 2015). Therefore, a derivative is a security whose value depends on (or derives from) the value of an underlying asset, reference rate or index (the “underlying”). OTC trading as a form of off-exchange trading – in which brokers or dealers trade directly with one another. The Committee on Payment and Settlement Systems (CPSS) Glossary defines OTC trading as a method of trading that does not involve an exchange. In OTC markets, participants trade directly with each other, typically through telephone or computer links. In other words, OTC markets are decentralised markets — as opposed to centralised markets traded on platforms or in venues — in which members’ trade among themselves on a bilateral basis, mainly by means of telephone, facsimile or e-mail. The major characteristic of OTC markets is that they do not use market infrastructures for the trading phase, that is, there is no use of trading platforms or central venues of execution when the counterparties bilaterally agree on the contracts and their details such as price, date and place of settlement among others (Benito, 2011).

The most common types of underlyings are commodities, stocks, bonds, indices, interest rates, currencies, or spreads between the value of such assets. The value of a derivative fluctuates with changes in the value of the underlying asset or index; this occurs even if the owner of the derivative does not own the underlying asset (Miller and Ruane, 2012). Examples of derivatives that are common to traders include forwards, futures contracts, options, interest rate swaps and credit default swaps, the basic characteristics of which are described in **Appendix A** according to Wiggins and Metrick (2015).

Trading of Derivatives

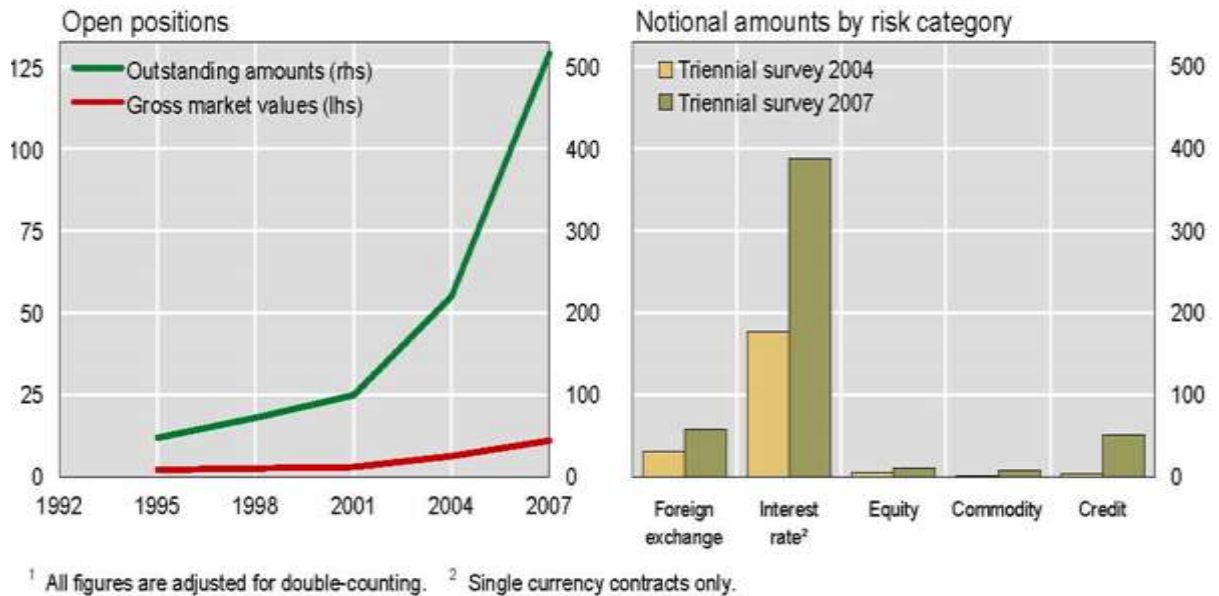
Derivatives are basically traded in two main ways: (1) on specialised, regulated derivatives exchanges, and (2) over-the-counter (OTC). Before the changes made by Dodd-Frank, futures contracts were traded on commodity exchanges and stock options were traded on stock exchanges, regulated by the Commodity Futures Trading Commission (CFTC) and the Securities and Exchange Commission (SEC) respectively. In an exchange-traded deal however, the exchange matches the two sides of the deal and also acts as a clearing house guaranteeing each side, essentially assuming the parties' obligations. Trades and prices are readily tracked on exchanges, facilitating greater transparency and readily available market valuations. Therefore, when the markets became stressed in 2008, there was little effect on these types of derivatives. Holders of this type of derivatives could easily assess their risk, since they knew that the exchanges stood behind the derivatives and would match the published values (Miller & Ruane 2012).

In contrast to the exchanges, however, the OTC derivatives market consists of a network of dealers who stand ready to take either the long or short positions and make money on spreads and fees. Collateral was required for some transactions but not always, and large uncollateralised risks could occur (Ibid, 2012). The dealer absorbs the credit risk of customer default, and the customer faces the risk of dealer default. OTC trading allows the counterparties greater flexibility as they can negotiate the terms of the derivative contract between each other, meaning that the counterparties can tailor the contract to suit their specific requirements. Similarly, OTC trading also, historically, afforded the counterparties privacy as reporting requirements was largely limited to exchange-based trading. Additionally, OTC trading has proved a vastly more popular option than exchange-based trading. The House of Lords European Union Committee noted that, "in 2007 the market value of OTC derivative contracts was eight times greater than the equivalent value of the exchange traded derivatives (Jones, 2013).

Size of OTC Derivatives Market

By far, the overwhelming majority of derivatives are traded on the OTC market around the world. As can be seen in Figure 1, as of June 2008, the OTC market was USD\$684 trillion in notional value, with exchange-traded derivatives amounting to USD\$84 trillion. The market dipped though during the financial crisis, with OTC derivatives dropping by USD\$79 trillion (11.6%) from June 2008 to June 2009. However, by 2013, the market had returned to pre-crisis levels.

Benito (2011) indicates that OTC derivatives are bilaterally negotiated contracts that can be settled either in cash or physically. As with any other OTC contract, they are usually customised and traded off-exchange, aiming at meeting the specific needs of counterparties. In the last decade, OTC derivatives markets have been positioned to comprise the biggest global market, both in terms of size and interconnection between financial institutions and the securities markets. The market collectively reached its peak in mid-2008 with more than US\$680trn of gross national value for outstanding contracts.

Figure 1: Positions in OTC Derivatives Markets (in US\$ trillions)

Source: *Bank of International Settlements 2007 and Wiggins and Metrick (2015)*

Importance of OTC Derivatives

From Figure 1, there is no doubt that OTC derivatives are powerful tools that enable financial institutions, businesses, governmental entities, and other end users to manage the financial, commodity, credit and other risks that are inherent in their core economic activities. In this way, businesses and other end users of OTC derivatives are able to lower their cost of capital, manage their credit exposures, and increase their competitiveness both in the United States and the rest of the world. Almost all OTC derivatives transactions involve sophisticated counterparties, and, unlike the futures markets, there is virtually no “retail” market for these transactions. The use of OTC derivatives is a positive force in the financial markets. As Federal Reserve Chairman Greenspan noted at Senate Banking Committee hearing in March 7, 2002 “they (derivatives) are a major contributor to the flexibility and resiliency of our financial system. Because remember what derivatives do. They shift risk from those who are undesirous or incapable of absorbing it to those who are.”

Therefore, OTC derivatives are used to unbundle risks and transfer those risks to parties that are able and willing to accept them. For instance, if a corporation has floating rate debt outstanding and is concerned that interest rates might rise, it could use an interest rate swap to effectively convert its debt into a fixed rate obligation, thereby fixing its exposure. Similarly, if a business has the right to receive non-dollar denominated revenues from a foreign-based affiliate, it could use a currency swap to hedge the risk of exposure to fluctuating exchange rates. The Senate Banking Committee in March 7, 2002, also recognised that, as the result of OTC derivatives transactions such as the above, “efficiency is enhanced as firms are better able to concentrate on their core economic objectives.” For instance, Swaps transactions are custom tailored to meet the unique needs of individual firms.

As a result of the tailored nature of such transactions, swaps differ substantially from the standardised exchange-traded futures contracts regulated by the Commodity Futures Trading Commission (CFTC). Therefore, in a typical OTC derivatives transaction, two counterparties enter into an agreement to exchange cash flows at periodic intervals during the term of the agreement. The cash flows are determined by applying a prearranged formula to the “notional” principal amount of the transaction. In most cases, such as interest rate swaps, this notional principal amount never changes hands and is merely used as a reference for calculating the cash flows. The flexibility and benefits that these transactions provide have led to their dramatic growth as demonstrated in Figure 1.

In addition to interest rate and currency transactions, commodity, equity, credit and other types of transactions are widely used. Almost any kind of OTC derivative can be created (Benito, 2011). Transactions take place around the world, but the United States has been a leader in the development of OTC derivatives transactions, and American businesses were among the earliest to benefit from these risk management tools. The dramatic growth in the volume and diversity of OTC derivatives transactions is the best evidence of their importance to, and acceptance by, end users. While its use is a matter of choice among the parties to the transaction, almost all OTC derivatives contracts both within and outside the United States are based on the 1992 Master Agreement published by International Swaps and Derivatives Association (ISDA). The ISDA Master Agreement is a standard form and governs the legal and credit relationship between counterparties, and incorporates counterparty risk mitigation practices such as netting and allows for collateralisation. The ISDA Master Agreement also addresses issues related to bankruptcy and insolvency, such as netting, valuation and payment. The strength of the ISDA documentation and the important actions taken by Congress to ensure that OTC derivatives contracts would be enforceable in accordance with their terms, have contributed positively to the ability of the financial and commodity markets to absorb events such as the Enron bankruptcy without systemic risk (Wiggins and Metrick, 2015).

It is therefore clear the role played by OTC derivatives in the risk management of businesses and investors all over the world, in particular the USA as their acceptance has led to the unprecedented growth in the derivatives markets pre-global financial crisis 2007-2009 and post financial crisis period. OTC derivatives if used properly are a powerful tool in the management of business risk. On the other hand, if OTC derivatives are used as speculative instruments other than risk management tools they could have undesirable consequences for businesses and investors as Warren Buffet even describe OTC derivatives at some point as weapons of mass destruction which investors and businesses need to be cautious in using them.

Objectives of the Paper

The principal objective of this paper is to critically assess the role played by over-the-counter (OTC) derivatives in the recent global financial crisis and corporate failures and the extent to which these have impacted on the regulation of OTC derivatives products and markets.

In order to achieve the above objective, the following specific objectives are considered;

1. An assessment of the role played by OTC derivatives in the recent global financial crisis

2. An assessment of the role of OTC derivatives on corporate failures in recent times
3. An evaluation of how the (1) and (2) have impacted in OTC derivatives markets regulation particularly in the USA and the EU.

Research Questions

The following are the research questions this paper seeks to address;

- a) What role did OTC derivatives play in the global financial crisis?
- b) What role did OTC derivatives play in corporate failures in recent times?
- c) What regulatory reforms were undertaken in response to OTC derivatives' role in global financial crisis and corporate failures in recent times?

METHODOLOGY

This research was conducted using secondary data sources including journal papers from Elton B. Stephens Co (EBSCO) database and other relevant regulations such as the Dodd-Frank Act 2010 and European Commissions regulation on OTC derivatives. The paper critically analysed empirical literature.

LITERATURE REVIEW AND DISCUSSION OF FINDINGS

Role of Derivatives in the Global Financial Crises

Notwithstanding the importance of OTC derivatives as convenient and powerful risk management tools for businesses and investors, many researchers, academics, analysts, and commentators argue that OTC derivatives, to a large extent, either was responsible for the recent global financial crisis or contributed immensely to this crisis that plunged world economies to severe recession. Oldani (2015) indicates that over-the-counter derivatives played an important role in the buildup of systemic risk in financial markets before 2007 and in spreading volatility throughout global financial markets during the crisis. The opacity, size and complexity of over-the-counter (OTC) markets are under forensic examination by lawmakers, as they have led to the significant build-up of systemic risks across the global financial system and were at the heart of the 2007–2008 global financial crisis (Perare, 2012). Derivatives played a prominent role in spreading the risks out from their origin: the US subprime mortgage market. As most economists agree, the financial crisis has not only been the product of an excessive credit and asset bubble, but also of “poorly designed liberalisation, ineffective regulation and supervision, and poor interventions” (Claessens et al., 2014, p. 3).

The improper use of derivatives, in particular OTC derivatives, the high concentration and deep interconnections in the market, as well as the absence of transparency and standardization, contributed to spreading out the worst effects of the crisis. The G20 has been the place where strategic decisions to restore confidence have been taken, and it has gained increasing attention among international fora by playing a unique role in addressing the

weaknesses of the fragmented global financial system and in undertaking global reforms (Knight, 2014).

In response to this assertion, G20 have taken steps toward regulating financial operators (such as banks and financial intermediaries) to improve their capitalisation, reduce their systemic adverse effects, reduce the costs of bailouts and help the credit channel to work properly; they paid attention to use of OTC derivatives by financial operators (as opposed to non-financial operators) to reduce their risks. Important regulatory efforts have been taken to safeguard taxpayers' money, but there is still work to do. In November 2014, G20 leaders met in Australia and confirmed that a few gaps need to be closed in the financial system, in particular in the OTC derivatives markets, and that reforms of OTC derivatives need rapid implementation (Oldani, 2015).

A Review of OTC Derivatives Role in the Financial Crisis

Derivatives were originally created as a risk management tool to help firms limit their various risk exposures incurred during traditional lending activities. As indicated above, the relevance of derivatives in the financial system cannot be over emphasised. However, the derivatives market evolved into a risk-taking tool rather than a risk management tool, demonstrating that under certain circumstances derivatives can contribute to financial instability. Before the crisis, derivatives were traded after being pooled into securitised instruments that were extremely difficult to price. These investment vehicles were so complex that their inherent risk was essentially unknown. That said, although not necessarily the "cause" of the financial crisis, OTC derivatives played an instrumental role in amplifying the detrimental effects of the disaster. Had OTC derivatives been properly regulated, the global financial system may not have been hit so hard and the accompanying recession might not have been so deep and costly (Oldani, 2015).

Beginning with the US subprime mortgage market, OTC derivatives effectively exposed all conceivable corners of the financial system to the underlying risks. As most economists agree, the financial crisis, in addition to being a product of an excessive credit and asset bubble, was largely a result of "poorly designed liberalisation, ineffective regulation and supervision, and poor interventions" (Claessens et al., 2014, p. 3).

The improper use of derivatives, the high concentration and deep interconnections in the market, and the absence of transparency and standardisation all contributed to the sweeping impacts the world experienced during 2007 – 2008. Gary Gensler, chairman of the Commodity Futures Trading Commission, said Wall Street dealers need to be "explicitly" regulated for derivatives transactions, in addition to existing government oversight, as the risks of unregulated derivatives could bring down the financial system. "Some opponents of reform - some I would say in this room - would say this really wasn't at the centre of the crisis, the crisis was about mortgage underwriting practices, the crisis was about not enough capital in the banks and so forth," Mr. Gensler said in a speech to the Council on Foreign Relations in New York. "But I believe that the over-the-counter derivatives marketplace was in fact part and parcel to this crisis."

Economic bubbles are not recognised by those inside of them, and the entire Western World has become quietly trapped inside the largest economic bubble in history. The global financial crisis that began in 2008 has been attributed to sub-prime mortgage lending and mortgage backed securities (MBSs), such as collateralised debt obligations (CDOs), which

were revealed as toxic assets. Whilst the root cause of the financial crisis is assumed to have been the residential real estate asset price bubble, the underlying systemic risk, and the primary reason for the “too big to fail” doctrine whereby governments were compelled to save financial institutions at any cost, lies in over the counter derivatives (Hera, 2010). As indicated by Hera (2010) that the suspension of the US Financial Accounting Standards Board (FASB) mark-to-market rule in 2009 preserved the value of bank balance sheets, that is, of their mortgage portfolios, but what was of far greater importance was that it prevented triggering the conditions of thousands of OTC derivatives contracts, such as credit default swaps (CDS), that would have wiped out virtually all of the largest banking institutions in the world.

The collapse of the U.S.-subprime mortgage market, together with the problem of the widespread housing boom in other industrialised countries, gave rise to the recent global financial meltdown. There are many technical justifications of the stages leading to the subprime mortgage crisis and then to the financial instability. One of the demystifying elements of the financial system regards the derivative instruments traded on the over-the-counter (OTC) markets. The golden years preceding the financial crisis in 2007–2008 were indeed the foundation for complex financial instruments, especially in the derivative markets. The complexity of these instruments, along with the exaggerated risk-taking behaviour of the derivatives traders, represented two of the weak points of the financial system. The global OTC derivatives market grew from USD\$72 trillion in 1998 to USD\$684 trillion in June 2008, as measured in notional amounts outstanding (European Central Bank, 2009), whereas the world Gross Domestic Product grew from US\$29,861.165 billion in 1998 to US\$60,109.392 (International Monetary Fund, 2009), as measured in current prices.

The volume of OTC derivative contracts traded has hence grown very quickly during the last decade, exhibiting extensive speculations, which have been possible because the current regulatory system authorises, and to some extent, propels them. As Mark Lange, former United States presidential speechwriter, pointed out, “because derivatives are entirely unregulated and trade on no public exchanges, their originators can deliberately hide their vulnerabilities.” The complexity of the instruments, together with the systems governing their trades, turn out to have devastating effects on the entire financial system as demonstrated in the recent financial crisis of 2007-2009.

Foremost, the bilateral nature of the OTC market transactions contains counterparty risk, for which parties are affected by solvency of the direct counterparty as well as of other intermediaries along the chain of transactions. The counterparty risk is aggravated due to inadequate transparency about the counterparty’s other positions and its interdependency with the rest of the market. The counterparty risk, together with the lack of operational transparency, leads, then, to systemic risk. The definition of systemic risk can vary according to the complexity of the relationships it wants to describe. Kaufman (1999) refers to systemic risk as “risk or probabilities of breakdowns (losses) in an entire system as opposed to breakdowns in individual parts or components and is evidenced by co-movements (correlations) among most or all the parts.” This definition at best captures the spill over or the repercussions of a contagion effect of a failure of a (small) part of the financial system: the systemic risk is indeed the risk of a chain reaction of interconnected parties. In this regard, the institutionalisation of a centralised clearing house or central counterparty (CCP) may mitigate the different risks on OTC credit derivatives and hence correct the incentives of

large financial institution to become “too interconnected to fail” (Acharya, Engel, Figlewski, Lynch & Subrahmanyam, 2009).

The ISDA Master Agreement

The International Swaps and Derivatives Association (ISDA) is the major international trade association for derivatives issuers. ISDA published in 1992, and updated in 2002, a standardised form agreement that is the most widely used agreement documenting derivative transactions (the “ISDA Master Agreement.”). The agreement recognises that parties often enter into numerous derivative transactions with each other and serves to streamline and order the process by allowing many transactions under one master agreement (McNamara and Metrick, 2014F).

The Rise of OTC Markets

OTC markets are under forensic examination by lawmakers, as they have led to the significant build-up of systemic risks across the global financial system. In the aftermath of the 2007–2008 financial crisis, the size, opacity and complexity of OTC markets have come to light and improving their transparency and regulation has become a political priority. Governments are going to great lengths to assure their citizens that OTC derivatives and derivative dealers will be appropriately regulated, that all swap instruments will be closely scrutinised and that no new swap instrument will slip between the “regulatory cracks.” Moreover, the G-20 in September 2009 agreed in Pittsburgh that all standardised OTC derivatives contracts should be traded on exchanges or electronic trading platforms, where appropriate.

The rapid expansion and diversity of OTC markets can be largely attributed to the increased innovation and financial engineering that was triggered by the rising demand for speculation and the securitisation of debt. (Securitisation is a process by which less marketable assets are turned into structured products with a broader market exposure. Securitised assets, most notably subprime residential mortgage backed securities, and became collateral for the most infamous collateralised debt obligations (CDOs) that ushered in the 2007–2008 financial crises). In tandem, the demand for credit instruments increased with the decapitalisation of firms through the substitution of equity by debt through leverage buyouts and mergers and acquisitions. The International Monetary Fund (2009) reports that over the past 5 years, the debt of non-financial corporations in the United States increased by approximately US\$ 840 billion, while their equity position has been reduced by approximately US\$300 billion. As Adam Smith stressed in *Wealth of Nations* as long ago as 1776, that is 200 years before I was born, that the risk of unregulated credit instruments lead to a “merry go round of money and credit that becomes even more dangerous as it become opaque through the involvement of many different actors” (Braithwaite, 2010).

A combination of several factors such as low-interest rates, affordable credit, pro-credit tax policies and the globalisation of the financial services industry were largely responsible for the global financial meltdown. But what emerged from this trend were financial and non-financial firms that began to become increasingly interwoven, heightening the demand for derivatives, especially credit and interest rate products. Additionally, the fusion of financial and non-financial firms prompted various forms of government intervention, including direct capital injection in the form of bailouts of too big and too-systemic-to-fail entities. For instance, the United States government started a programme in 2008 called Troubled Asset

Relief Program (TARP), which aims at purchasing assets and equity from financial institutions to support their financial position, financially assisting the automotive industry, investing in partnerships designed to increase liquidity and assisting mortgage programmes (Congressional Budget Office, 2012). This trend also contributed to the demand for derivative instruments over the last 10 years.

OTC markets are also associated with sophisticated electronic trading platforms, which have attracted what have become known as “dark pools” (Braithwaite, 2010) of capital or liquidity that seek to benefit from the more lightly regulated markets and that enable trading in equities and other instruments to be masked. Within this so-called “shadow” side of finance are the trading and speculative roles played by, for instance, hedge funds and the proprietary trading arms of banks, dealing for themselves or on behalf of large institutional investors. This has led to a manifestation of transparency and liquidity concerns at the forefront of OTC market reforms. Indeed, the so-called “flash crash” in May 2010, when trading activity saw “some stocks briefly losing 99% of their value” (Gordon, 2010) and the major indexes dropped by 9 per cent—including “a 7% decline in a roughly 15 minute span” (Corkery, 2010)—provides evidence of how high-frequency trading combined with speculation can radically destabilise markets.

Proponents of OTC markets contend that they improve the pricing of risk, help participants manage risks, lower transaction costs, reduce “information leakage” and give large institutions more freedom to trade without the “retail herd” tracking their every move. But due to the lack of transparency surrounding these markets, they also rob or restrict information from both the regulators and participants and pose the risk of spreading liquidity too thin. It also blocks the collection of high-frequency market-wide information on market activity, transaction prices and counterparty exposures (Perare, 2012).

Corporate Failures and OTC Derivatives Role

Derivatives have been associated with a number of high-profile corporate events that ruled the global financial markets over the past two decades. To some critics, derivatives have played an important role in the near collapses or bankruptcies of Barings Bank in 1995, Long-term Capital Management in 1998, Enron in 2001, Lehman Brothers and American International Group (AIG) in 2008. Warren Buffet even viewed derivatives as time bombs for the economic system and called them financial weapons of mass destruction (Berkshire Hathaway Inc, 2002). However, derivatives can bring substantial economic benefits if handled properly. These instruments help economic agents to improve their management of market and credit risks. They also foster financial innovation and market developments, increasing the market resilience to shocks. The main challenge to policymakers however, is to ensure that derivatives transactions are being properly traded and prudently supervised. This entails designing regulations and rules that aim to prevent the excessive risk-taking of market participants while not slowing the financial innovation aspect. And it also calls for improved data quantity and quality to enhance the understanding of derivatives markets (Chui, 2002).

In the last decade, there has been a huge growth in the value of OTC derivative contracts. Although interest-rate derivatives contracts compose the majority of OTC contracts, the CDS contracts also envisaged a high growth rate and grew over \$60 trillion of gross nominal value by the end of 2007. On the contrary, the global financial crisis has changed the mindset of the overall financial market actors. Systemic failures, as well as failures of firms on a single

basis, were observed during the crisis. The examples of major failures in investment banking were Bear Sterns, Lehman Brothers, and Merrill Lynch. Moreover, there were failures in banking such as, Fortis - as well as in the insurance sector such as AIG, and also in the mortgage finance sector such as Fannie Mae and Freddie Mac. Besides, lack of transparency in the OTC derivatives played an important role in contributing to these failures (BIS, 2014a).

Among the problems associated with OTC markets during the current crisis, the most significant problem was the lack of transparency. As a result of lack of transparency, improper reporting and inappropriate valuation measures, the market continued to deteriorate. The regulators, supervisors and even the market actors themselves were not aware of the actual level of risk and this caused panic to expand rapidly. In other words, nobody had an idea of the extent to which credit risk was inherent across the financial system (Miller and Ruane, 2012).

Furthermore, firms with highest credit ratings were allowed to conduct business by using less collateral compared to the other firms. Thus market convention caused inadequacies in collateral posting requirements for firms with highest credit ratings; this resulted in huge portfolios consisting of OTC derivatives for some systematically important actors. Alongside the non-transparent nature of transactions, risk management deficiencies of financial firms regarding OTC instruments aggravated the problem. Finally, the inadequacies and/or inefficiencies in supervision and enforcement processes as well as the weaknesses in regulatory process had a remarkable effect on the emergence of the crisis (IOSCO, 2010).

Enron Collapse and OTC Derivatives

The Enron Bankruptcy, the well-publicised events leading to Enron's bankruptcy filing in December 2001 have raised serious concerns involving accounting practices, securities law disclosures and corporate governance policies. ISDA shares the view that these issues deserve serious attention by policymakers and that, once the relevant facts are known, appropriate remedial actions should be taken. Some commentators have suggested, however, that Enron's OTC derivatives activities caused its demise and have concluded that this demonstrates the need for increased regulation of OTC derivatives by the CFTC, which ISDA disagrees though. In a study entitled "Enron: Corporate Failure, Market Success", released in April 2002 (available on ISDA's web site), ISDA concluded that the reasons for the failure of Enron did not, and does not, warrant new federal regulation of OTC derivatives. Had Enron complied with accounting and disclosure requirements it could not have built the "house of cards" that eventually led to its downfall. The chain of events leading to Enron's bankruptcy simply does not warrant an expansion of the CFTC's regulatory authority with respect to OTC derivatives. With respect to the Enron Online facility, ISDA understands that Enron Online was operating prior to the adoption of the CFMA and did not rely on the CFMA for authority to operate. ISDA understands that Enron Online was a bilateral dealer platform with Enron as the counterparty to every trade.

In this respect, Enron Online represented the migration of bilateral trading over the telephone to trading on the Internet. The sophisticated counterparties that entered into transactions with Enron through the Enron Online facility understood that they were bearing the credit risk with respect to Enron. That risk was handled by Enron's counterparties through methods such as the use of master agreements with close-out netting provisions and use of collateral arrangements (ISDA, 2012).

Lehman Brothers Collapse and the Role of OTC Derivatives

When it filed for bankruptcy protection in September 2008, Lehman Brothers was an active participant in the derivatives market and was party to 906,000 derivative transactions of all types under 6,120 ISDA Master Agreements with an estimated notional value of \$35 trillion (Summe, 2011; Wiggins and Metrick, 2015). What is important to take note of is the fact that Lehman's derivatives were bilateral agreements not traded on an exchange but rather in the OTC market. Well, the motivation to invest heavily in the OTC derivatives is partly because of the exemption from the automatic stay provisions of the U.S. Bankruptcy Code; parties to Lehman's derivatives could seek resolution and self-protection without the guidance and restraint of the bankruptcy court. However, Wiggins and Metrick (2015) argue that the rush of counterparties to novate Lehman's derivative contracts, and the confusion following contracts that were terminated after its bankruptcy filing, added to the stress of the financial crisis in two ways: (1) loss of value to the Lehman estate and (2) exacerbating the contagion effects of the bankruptcy.

The sheer size of Lehman's derivatives book and how it was resolved raised questions about the systemic risk posed by this significant unregulated market as many regulators, academics, analyst to mention but a few believed that the OTC transactions above if not wholly but partly was responsible in the collapse of Lehman Brothers which in turn had a spillover effect on the recent financial crisis. As a matter of fact, Lehman derivatives were approximately 5% of the derivatives outstanding globally at the time (Ibid, 2012).

OTC markets collapsed — or were near to doing so — when Lehman Brothers failed. The characteristic opacity of these markets fuelled fears and rumours about solvency and the real financial situation of different participants in the markets. Panic is contagious and a lack of transparency does not help to curb panic. As a consequence, participants in OTC markets did not want to trade with other participants, which obviously affected the liquidity of the financial markets as well as the capacity to find prices for specific financial instruments (Benito, 2011).

The ISDA Master Agreement permits all transactions under the agreement to be netted against one another to determine a net liability of one party to the other. Upon a party's (or guarantor's) default, the non-defaulting party may terminate the transaction, or the contract may include a provision providing for automatic termination. The bankruptcy filing of Lehman Brothers Holding Inc., the parent company, was a default under most, if not all, of Lehman's derivative contracts. As a result, Lehman's contracts terminated automatically or were terminated by counterparties who had the right to seize collateral held, as their agreements provided. And just what those rights were depended on the particular terms of their individual agreements (Wiggins and Metrick, 2015).

There was such concern about the impact of Lehman's derivatives that officials at the U.S. Department of the Treasury and the Federal Reserve were strategising how to gather more information about potential exposures without spooking the markets (Parkinson et al., 2008). As Lehman's situation worsened, on September 14, 2008, a Sunday, ISDA convened a special trading session to allow counterparties to net their offsetting positions in Lehman's derivatives. (ISDA, 2008). However, there was little trading during the session as indicated by Fleming and Sarkar 2014). The Lehman parent holding company's filing for bankruptcy protection was an act of default under many of its derivative agreements, resulting in automatic termination of 733,000 transactions by November 12, 2008 (Ibid, 2014, p.12).

However, even terminated transactions had to go through a series of steps before they were finally settled: (1) all trades were reconciled between the counterparty and Lehman, (2) each transaction was valued, and (3) settlement amounts with the counterparty were negotiated before any payment was made. The process was subject to review and approval by the bankruptcy court, often resulting in a contentious and lengthy process. In light of this and the sheer volume of agreements that needed to be settled and reviewed, the Lehman estate petitioned and received approval for special settlement procedures regarding derivatives. In fact, Lehman's OTC derivatives, which constituted 96 percent of its derivatives holdings were settled along three different paths of complexity and contention.

The argument is still out regarding what part derivatives played in Lehman's demise or in the destruction of value of the estate. Summe (2011) indicates that OTC derivatives were not responsible for the collapse of Lehman Brothers. In her view, the OTC derivative arm rather added value to the company. She further argues that the bankruptcy examiner did not mention anywhere in his report explicitly that OTC derivatives were the cause of the collapse of Lehman Brothers. As cited by Wiggins and Metrick (2015), Summe (2011) argues that it was not significant—that not only did the derivatives market remain healthy after Lehman's demise, but that it was the firm's derivatives trading arm, Lehman Brothers Specialty Financing (LBSF), which added the most value to the bankruptcy estate. She argues that, within weeks of Lehman filing for bankruptcy, 80% of its derivatives contracts had been terminated. And that, derivative receivables were a primary reason for LBSF's cash increasing from a paltry \$7 million at September 14, 2008, to \$925 million at January 2, 2009 (Ibid, 2014). Summe also notes that Anton R. Valukas, the Lehman bankruptcy examiner, never mentions derivatives as a cause of the bank's failure in his voluminous investigative report (Ibid, 2014).

While Summe was entitled to her opinion as indicated above, others view these facts differently though. For instance, shortly after Lehman's bankruptcy filing, Harvey Miller, Lehman's bankruptcy counsel, testified that a "massive destruction of value" could have been averted if an automatic stay had been in place for derivatives contracts (Ibid, 2012, p. 18). Similarly, Bryan P. Marsal, the Lehman estate administrator, later asserted that as much as \$75 billion in value was lost as a result of Lehman's bankruptcy.

Systemic Impact of OTC Derivatives

Systemic risk can be defined as 'the risk that the failure of one participant in a transfer system, or in financial markets generally, to meet its required obligations will cause other participants or financial institutions to be unable to meet their obligations when due. The failure of a participant may cause significant credit or liquidity problems, putting financial markets at stake. Additionally, the above-mentioned interdependencies are increasing, owing to the globalisation effect of the world economy, boosted by the speed in advances in IT and communication means. 'Yet, tightening interdependencies have also increased the potential disruptions to spread quickly and widely across multiple systems and markets'. As a result, mitigating risks in OTC derivatives markets and improving the transparency of OTC derivatives contracts are two paramount public measures in order to improve financial markets (Benito, 2011).

In addition to the impacts that the disposition of its derivatives had on the Lehman estate, there is also evidence of negative contagion and disruption in the greater derivatives market, at least in part related to the Lehman bankruptcy and its aftermath. Former U.S. Treasury

Secretary Timothy Geithner stated that, “The market turmoil following Lehman’s bankruptcy was in part attributable to uncertainty surrounding the exposure of Lehman’s derivatives counterparties” (Summe, 2011, p 18; Wiggins and Metrick, 2015).

Former Federal Reserve Chairman Ben Bernanke also testified that the disorderly unwinding of Lehman’s derivatives had a detrimental effect that had not been fully anticipated — but obviously OTC derivatives were a problem. They may not have been a causal problem, but they transmitted shocks. There were problems with the clearing of settlement of OTC derivatives. And there were problems with the risk management, AIG being the poster child example of that (Bernanke 2009, p. 17; Wiggins and Metrick, 2015).

Additionally, in a 2010 policy paper the New York Federal Reserve (NYFED) reached a similar conclusion that, “although OTC derivatives were not a central cause of the crisis, we find that weaknesses in the infrastructure of derivatives markets did exacerbate the crisis. As a result of failures of risk management, corporate governance, and management supervision, some market participants took excessive risks using these instruments. The complexity and limited transparency of the market reinforced the potential for excessive risk-taking, as regulators did not have a clear view into how OTC derivatives were being traded” (Duffie, Liu and Lubke, 2010, p.1).

Counterparty credit risk rises to the level of systemic risk when the failure of a market participant with an extremely large derivatives portfolio could trigger large unexpected losses on its derivatives trades, which could seriously impair the financial condition of one or more of its counterparties. Systemic risk also arises when the fear of such a failure could lead counterparties to attempt to avoid potential losses by reducing their exposures to a large, weak market participant, possibly contributing to a “run” that indeed accelerates the failure of that market participant. An additional form of systemic risk that can arise from the actual or anticipated failure of a large OTC derivatives market participant is the potential for an accompanying ‘fire sale,’ which can lead to significant price volatility or price distortions (in both derivative markets and underlying asset markets) when counterparties suddenly attempt to replace their positions with the distressed firm, and otherwise attempt to sell risky assets in favor of safer assets, a ‘flight to quality.’ Through price impacts, such a fire sale or flight to quality could cause failure-threatening losses to some market participants, even those with no direct counterparty credit risk to the firm in question” (Ibid, 2012, p. 5).

Therefore, even though the derivatives market did not totally seize up after Lehman’s demise, its failure caused much disruption. As to how much can be attributed to value destruction relating to derivatives, is still being studied. Given these impacts and the recognition by some regulators that they were caught unawares of just how large, interconnected and potentially systemic the OTC derivatives market was, the OTC derivative market has seen series of regulatory reforms especially in the USA and the EU.

According to Benito (2011) the recent financial crisis, of which the Lehman Brothers collapse was the most important example, provided at least two important lessons:

1. The off-exchange markets collapsed, whereas the on-exchange markets resisted the turmoil and gave liquidity and prices to OTC markets.
2. The market infrastructures resisted the difficulties caused by the collapse of Lehman Brothers and helped intermediaries to overcome the extremely difficult situation.

Regulation of OTC Derivatives after the Crisis

Following the assertion that OTC derivatives played in the financial crisis and corporate failures in recent times as assessed above, the G20 took a lead to regulate off-exchange derivatives in order to achieve a policy targets of reduction of systemic risk, increase transparency and limited access to these derivatives. After the crisis, there was a widely held view that “regulators should not turn back the clock but should, instead, improve the stability of this interconnected financial system by minimising regulatory arbitrage and increasing transparency” (Koszner and Strahan, 2011, p. 245).

OTC derivatives, the least regulated form of financial derivatives, currently comprise about 90 percent of the global derivatives markets and, despite the post-crisis economic stagnation, the market has continued to grow, surpassing USD\$690 trillion in June 2014 (BIS, 2014a). As a result of this, the FSB and G20 have taken steps toward regulating financial operators’ use of OTC derivatives. The ongoing reforms, intending to create a more resilient and transparent OTC derivative market, have focused on: standardising OTC derivatives and promoting trading on exchanges and electronic platforms; mandating reporting to trade repositories; central counterparty (CCP) clearing; capital treatment of banks’ derivative positions; and minimum margin requirements for non-centrally cleared contracts. The main thrust of these reforms is to bring previously opaque derivative trading practices back on to transparent platforms, alongside additional prudential measures targeting financial firms and trading infrastructures (Oldani, 2015).

Acharya, Philippon, Richardson and Roubini (2009) reviewed the causes and consequences of the financial crisis and call for more transparency to reduce the counterparty risk in the OTC market. Specifically, they argue that standardisation, CCP clearing and improved accounting criteria for financial operators are the key pillars for building a new global financial architecture (ibid, 2012). Following this approach, the United States introduced the Dodd-Frank Act in 2010, the most relevant and comprehensive financial regulatory reform ever issued by Congress. It aims to reduce the risks of the financial system and enhance stability by establishing a number of new government agencies tasked with overseeing various components of the act. These agencies are the Financial Stability Oversight Council (FSOC), Orderly Liquidation Authority (OLA), Consumer Financial Protection Bureau (CFPB) and the Securities and Exchange Commission’s Office of Credit Ratings (OCR). The FSOC and the OLA monitor the financial stability of major firms — systemically important financial institutions (SIFIs) — whose failure could have a major negative impact on the economy. The CFPB should prevent predatory credit and lending, increase information available to consumers and reduce moral hazard of brokers. Since credit rating agencies were accused of giving misleading ratings that contributed to the financial crisis, the OCR should ensure that agencies provide meaningful and reliable credit ratings of the entities they evaluate. A very important piece of reform is the “Volcker rule,” named after the former chairman of the Federal Reserve System Board, Paul Volcker. It disallows short-term proprietary trading of securities, derivatives, commodity futures and options on these instruments for banks’ own accounts under the premise that these activities do not benefit banks’ customers. The Volcker rule should limit speculative trading, eliminate proprietary trading by banks and regulate financial firms’ use of derivatives in an attempt to prevent SIFIs from taking large risks that might alter the stability of the broader economy. The Dodd-Frank Act also contains a provision for regulating derivatives such as the credit default swaps.

The Over-the-Counter (OTC) derivatives market is entering an uncertain future with regulators on both sides of the Atlantic developing new regulations to reform this market in response to the direction from the G20 Summit in Pittsburgh in 2009. New regulation of the OTC derivatives markets in the USA has now become law: after President Obama put his signature on the 'Dodd-Frank Wall Street Reform and Consumer Protection Act' (the Act) that runs to over 2,000 pages. Meanwhile, the European Commission has published its new regulation on OTC derivatives, central counterparties and trade repositories, with likely changes to come on existing legislation to cover other aspects of the market including derivatives trading, capital requirements to mention but a few (de Meijer and Wilson, 2010).

OTC derivatives markets were the focus of the regulator's attention, basically due to two main aspects: (1) the bilateral management of risks did not work as expected; (2) a lack of transparency, which is the main characteristic of OTC markets, played a negative role when the financial crisis raised doubts about market participants' solvency (Binto, 2011).

Proponents applaud these new measures and rules as they will improve the robustness and efficiency of this market. It will create transparency and much needed confidence in these markets. Others, however, question the long-term future of the OTC derivatives markets. They worry that the coming measures could actually exacerbate risk and will substantially increase costs, most notably to end-users of OTC derivatives, including pension funds, with direct consequences for pensioners (de Meijer and Wilson, 2010).

In the aftermath of the financial crisis (2007—08), risk aspects have been under the spotlight of regulators, supervisors and policy makers. The over-the-counter (OTC) derivatives markets have played a significant role in spreading the turmoil from the financial world to the real economy. The collapse of the financial industry, and its lingering effects on the world's economy that will last for years, was, at least, significantly aggravated by the size OTC derivatives markets had reached in the previous few years. The lack of transparency caused regulators and market supervisors to lose control over the financial industry (Benito, 2011).

The U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act ("Dodd-Frank") is part of a global effort to meet commitments of the Group of Twenty Finance Ministers and Central Bank Governors ("G-20") on OTC derivatives regulation (Day, 2013).

To meet the G20 mandates discussed earlier, the EU on the other hand, is also proposing reforms of the OTC derivatives market. However, unlike the USA where OTC derivatives reform is being addressed holistically through a single piece of legislation, in the EU this is being achieved through a combination of new regulation and amendments to existing legislation. On 15th September, 2010, the European Commission released its formal proposal for Regulation of OTC derivatives, central counterparties and trade repositories. Representing the Commission's perspective, this regulation also will need to be approved by the European Parliament and the Council of Ministers, through the 'co-decision' process. The OTC derivatives market also will be impacted by likely changes to the Capital Requirements Directive, the Markets in Financial Instruments Directive and the Market Abuse Directive.

Regulators in various jurisdictions especially in the EU will determine which categories of OTC derivatives transactions will be subject to mandatory clearing requirements and exceptions to the mandatory clearing requirements, as well as the costs imposed on cleared and uncleared transactions. G-20 regulators have agreed in principle to harmonize their regulations to the extent appropriate. Nevertheless, there are likely to be differences among

jurisdictions as to which swaps must be cleared and the relative costs of entering into cleared versus uncleared swaps.

Dodd-Frank Act (The Act) and EU Regulatory Provisions

The Dodd–Frank Wall Street Reform and Consumer Protection Act commonly referred to as Dodd-Frank was signed into federal law by President Barack Obama on July 21, 2010, at the Ronald Reagan Building in Washington, DC in response to the perceived role played by OTC derivatives in the recent financial crisis and corporate failures. Many believed that OTC derivatives were being used as speculative rather than risk management tools thereby causing or contributing significantly to the financial crisis and hence the need to close regulatory loopholes.

However, as with other major financial reforms, a variety of critics have attacked the law, some arguing it was not enough to prevent another financial crisis or more bailouts, and others arguing it went too far and unduly restricted financial institutions which could potentially restrict economic growth.

According to the CFTC Chairman Gary Gensler

“The Wall Street reform bill will – for the first time – bring comprehensive regulation to the swaps marketplace. Swap dealers will be subject to robust oversight. Standardised derivatives will be required to trade on open platforms and be submitted for clearing to central counterparties. The Commission looks forward to implementing the Dodd-Frank bill to lower risk, promote transparency and protect the American public.”

As a result, Title VII of the Dodd-Frank Act especially addresses the OTC derivatives market. It imposes multiple new regulations on the derivatives market in general and the swaps market in particular. The legislation designed to improve oversight of, and promote greater transparency and stability in the derivatives markets is far reaching. It will drastically change the way of dealing with derivatives instruments in the USA, compared with as it has been up until now (de Meijer and Wilson, 2010).

Main Provisions

The Act includes significant requirements on certain market participants. Those market participants that fit within the Act’s definition of ‘swap dealer’ or ‘major swap participant’ (MSP) will be required to register with the US regulators’ Commodity Futures Trading Commission (CFTC) or the Securities Exchange Commission (SEC). They will have to comply with the new regulatory requirements related to capital, margin, disclosure reporting and record keeping, as well as new business conduct standards/rules.

Clearing and Trading

Dodd-Frank requires that all financial firms must use derivatives clearinghouses, where traders post capital once a contract is open to cover potential losses, thus limiting the bets a firm can make. These requirements are higher for firms with larger positions that may pose a greater systemic risk. The act also mandates that most derivatives that go through a clearinghouse must be traded through a regulated exchange or on a trading platform that meets specific requirements. This adds transparency to pricing. Rather than discussing the

price with one dealer, a trader can see the market rate for a particular contract as it used to be pre-crisis period.

Under the Act certain participants in derivatives trades could be mandated to clear many or all of their standardised swaps through a central clearing house, as well as requiring large derivative trading firms to execute transactions electronically on a registered exchange or swap execution facility (SEF). All swaps/security based swaps executed before the effective date of the clearing requirement, however, are exempted, if they are reported to a registered swap data repository or to the CFTC/SEC. Swaps that are not offered for clearing or traded on an exchange will still have to be reported to a 'swap data repository' or to the CFTC in order to enhance transparency and supervision.

Similar provisions are proposed in the EU regulation. For instance, the EC Regulation is similar to the Dodd-Frank Act in stipulating greater use of clearing by financial market participants, and setting requirements for the operation and governance of central counterparties and trade repositories. The regulation would require all 'financial counterparties', to clear 'eligible' OTC derivatives, with the authority for determining eligibility residing with the European Securities and Markets Authority (ESMA). ESMA will assess eligibility on OTC derivatives for which a CCP has been authorised to clear and also, in consultation with the European Systemic Risk Board (ESRB), classes of derivatives for which no CCP has been authorised and that would potentially be subject to the clearing obligation.

The clearing requirement generally would not apply to corporate end-users though (referred to as non-financial counterparties) unless they exceed a clearing threshold to be set by ESMA in collaboration with the ESRB and other regulators. This exemption recognises the important role that derivatives play in helping corporations hedge their commercial risk. In earlier versions the Commission stopped short of granting such exemptions, raising fears that Europe might end up with more restrictive regulations and a rift with the USA. That would have cost companies tens of billions in euros, as they would have been forced to get additional credit lines from banks to post collateral. The regulation sets requirements for financial firms and non-financial firms exceeding an 'information threshold' to provide information on centrally and bilaterally 'cleared' trades to trade repositories

Margins and Capital Requirements

Dodd-Frank Act require banks to set aside more capital against derivative positions. Both the CFTC and the SEC are authorised to write rules that will set margin and capital requirements for OTC derivatives dealers. They will have to meet capital requirements set by their regulators for various types of derivatives transactions, including uncleared swaps. Uncleared transactions to which swap dealers/major swap participants are parties will be subject to minimum margin requirements set by the regulators. On the other hand, the EU regulation similar to Dodd-Frank, the new regulation sets stringent capital and margin requirements for OTC derivatives that are bi-laterally, rather than centrally cleared. It requires the use of electronic means and the existence of risk management procedures with timely, accurate and appropriately segregated exchange of collateral and a proportionate holding of capital.

Exemptions

Not all participants in the OTC derivatives market will be ruled by these new provisions. The title provides a (narrow) exemption from the (mandatory) clearing and exchange trading requirements, for legitimate commercial derivatives end users or other non-financial entities that use derivatives to manage risks associated with their business. Parties exempt from these requirements however will have to put up collateral, or margin to protect against a default.

Non-financial firms that use derivatives to hedge business risks—like an airline that buys oil swaps to limit its exposure to fluctuating prices—are typically exempt from the above regulations.

Push-Out Provision

An important section of the Act is the so-called ‘push out’ provision. The push-out provisions as originally drafted would have forced banks to entirely spin off their derivatives operations. The final draft now says that the trading by banks of interest rate swaps, foreign exchange derivatives, bullion swaps and investment grade CDSs and instruments deemed as ‘hedging for the bank’s own risk’ will be able to be retained on their own books. Only speculative grade CDSs, equity derivatives and OTC commodities will have to be brought into separately capitalised units.

The push-out provision prohibits ‘federal assistance’ from the FED to any swaps dealer or other entity with respect to any swap or other activities of the swaps entity. The prohibition does, however, not apply to an insured depository institution engaged in hedging or risk mitigation activities directly related to its business.

Differences between USA and EU Regulations on OTC Derivatives

Divergent rules on capital, liquidity, derivatives and banking structure create regulatory misalignments that provide incentives for beggar-thy-neighbour and race to-the-bottom policies in terms of competition and price to the detriment of financial market stability (Deutsch, 2014). With respect to bank capital, the EU and the US are not on the same page on what can be considered as capital, the rules on liquidity, the liquidity coverage ratio (liquid assets that cover the 30 days net cash flow) which has not been finalised in the EU and the leverage ratio (ratio of core Tier 1 capital to bank assets both on and off the balance sheet). According to Deutsch (2014, p. 1), “Interests, institutions and ideas are the main causes of this divergence.” This, together with the lack of coordination on the role of credit rating agencies after the financial crisis, leaves room for undesirable risk-taking. A number of analysts and scholars have brought attention to the failure of the EU and US to coordinate their OTC regulatory frameworks. This remains an important issue that will require the focused attention of policy makers in the coming years. However, an issue that is often overlooked is the importance of non-financial operators and their exemption from OTC regulatory reforms in both regulatory proposals.

Scope

In the EU, the scope of the new regulation on OTC derivatives is wider than that of the Dodd-Frank Act in the USA. In the EU, centralisation of clearing would push all eligible rather than standardised OTC derivatives contracts on CCPs. The EU lays down uniform requirements covering financial counterparties as well as nonfinancial counterparties if these latter exceed

certain thresholds. In the USA, however, contracts will be centrally cleared by derivatives clearing organisations, only if both parties are swap dealers or major swap participants, and after the approval of both the SEC and CFTC.

Standardisation

Whilst in the EU, standardised products will be aligned with the definition of CCP eligible derivatives, the US proposal on the other hand, does not define when a product should be considered 'standardised'. The SEC and CFTC are tasked to build a more detailed definition of standardised products.

Reporting and Data Repositories

Both regulations mandate data repositories, but the US mandates data repositories only for non-centrally bilaterally cleared transactions, whereas the Commission states that the data repositories should be used for all OTC derivatives transactions. Derivatives clearing organisations, data repository and authorities in the USA should publicly disclose aggregate positions. Private information can only be delivered to authorities on a confidential basis. The European Commission on the other hand focuses more on transparency of prices and positions.

Critique of OTC Regulations

The new European regulatory and supervisory framework has been criticised for reducing the degree of competition in the financial system and for protecting insiders. Similarly, the Dodd-Frank Act has also been accused of being too expensive for the federal budget and also for consumers, since it cannot impede the shift of new extra costs on final customers, to the detriment of competition. The probability of achieving stronger and more stable long-run growth under the new regulatory system depends on the degree of coordination among financial systems and their ability to recognise and close the regulatory gaps seen in the recent past which contributed significantly to global financial crisis.

The BIS (2013) established a group — the Macroeconomic Assessment Group on Derivatives — to study the macroeconomic impact of the new regulatory framework for OTC derivatives. This group compared the economic costs and benefits of planned reforms, identifying the long-run benefit to be the reduced probability of economic and financial crises that positively affects growth. The short and long-term costs of planned reforms are relevant for the global financial system, but the lack of data on detailed bilateral trading exposure, together with the uncertainty over the final regulatory scenario, limit the extent of the analysis. This further restricts the ability to evaluate whether the long-run benefits of the new regulatory framework exceed the costs. Apart from the probable gains and losses associated with the post-crisis regulatory effort, an important feature has been a lack of transatlantic coordination between the United States and the European Union. Generally speaking, the US and EU are advanced in adopting new rules relative to other G20 countries, but accompanying these advancements is a detrimental inconsistency and coherence between the two systems. They are similar as far as intended goals are concerned — their priorities include increasing transparency and efficiency of financial markets, especially OTC derivative market — but they diverge in the implementation stages. Granted, one contributing factor to the divergence stems from difficulties experienced due to complexities inherent in all derivative market-related reforms (Schindelham, 2014).

Additionally, differences in reform only add to the misalignment of policies. One example is the differing stances on CCP clearing and clearing obligations: in the US, clearing requirements apply to those trading an eligible contract (certain entities, including non-financial ones, may be exempt when engaged in activities such as hedging). Differently, in the EU, exemptions are granted based on magnitude of a non-financial entity's derivatives position (Lambert et al., 2011), rather than the nature of their actions.

OTC Regulatory Gaps

Non-Financial Operators

Despite the immense progress made in improving the transparency and resilience of OTC derivative markets, there remain numerous gaps yet to be addressed by the G20 and the FSB. The focus of the majority of observers and scholars has been on the inconsistent implementation of financial standards for OTC derivative reform after the crisis. Although this continues to be a critical issue, as confirmed by G20 leaders in Brisbane, Australia, in November 2014, a still under-analyzed gap in post-crisis reforms is the regulatory issues arising from non-financial operators and their exemption from OTC derivatives reforms. The trading of OTC derivatives products by nonfinancial operators accounted for 12 percent of the total global OTC market in 2014 (BIS, 2014a), a size that recalls that of subprime mortgages in 2007. The BIS analyzed the incentives to centrally clear OTC derivatives contracts under the new regulatory system and, with respect to non-financial operators, stated that "if an end user of OTC derivatives is not subject to capital requirements for counterparty credit risk, its incentive for central clearing is reduced; if the end user is not subject to the margin requirement on non-centrally cleared derivatives, or that fall below the margin required thresholds, the impact on incentives to clear centrally is not straightforward" (BIS, 2014c, p. 19).

So far, non-financial operators' trading has been exempt from the new regulatory framework because of the relatively small size and supposed simplistic nature of their products, but the deep interconnections in the financial system can create the conditions for a domino effect, altering global financial stability. Non-financial operators include sovereigns, local administration, municipalities and non-financial firms. Sovereigns should be under scrutiny by credit rating agencies that assess creditworthiness. However, the recent financial crisis already illustrated the limits of credit rating agencies, and the small degree of coordination among countries in case of unexpected financial shocks. Several local administrations have a certain degree of freedom to engage in sophisticated financial products such as OTC derivatives — activities that should be monitored by the central state. Nonfinancial firms listed (such as on a stock exchange) or otherwise are monitored by domestic market authorities (for example, the antitrust authority or the Securities and Exchange Commission) and by the industry authority (for example, the authority of public utilities firms in Europe). However, their financial trading is under neither intense monitoring nor scrutiny (Oldani, 2015).

Implication to Research and Practice

When regulated properly, OTC derivatives are very good risks management tools used by organizations all over the world particularly in developed economies. However, regulations of the OTC markets across markets have been very opaque and lacked transparency. This permits unscrupulous corporate executives to structure OTC derivatives contracts in order to

deceive regulatory bodies to their advantage. This OTC transactions are more risky in themselves rather than being used as a tool in managing organizational risks and, its use have resulted in organizational failures. As a result, there is the need for transparency in the regulation of the OTC derivatives across the world in particular in the EU and the USA. The harmonization of OTC derivative regulations in the EU and the USA will go a long way to improving the structuring of OTC derivative transactions as risks management tools. In practice, monitoring and supervision is key even if harmonized regulation is achieved by regulators in the EU and the USA. This therefore calls for more empirical research into the trading of OTC derivatives as risks management strategies instead of OTC derivatives themselves being perceived as danger or weapons of mass destructions to organizational risks management strategies.

CONCLUSION

This study has shown that the global financial crisis that brought world economies to recession indicated that there was a combination of factors that were responsible for this unfortunate economic meltdown. The research also uncovered that there are divergent views among the academia, analysts, commentators, and other relevant stakeholders about OTC being the cause of the financial crisis on one hand, and corporate failures on the other. However, what is assertive in this research findings are that although the OTC may not be the sole cause of the financial crisis and corporate failures, but played an important role in the buildup of systemic risk in financial markets before 2007 and in spreading volatility throughout global financial markets during the crisis.

This was largely due to the opacity, size and complexity of over-the-counter (OTC) markets as they contributed so significantly in the build-up of systemic risks across the global financial system and were at the heart of the 2007–2008 global financial crisis (Perare, 2012).

The economic meltdown around the globe prompted governments particularly the G20 to find ways of preventing the crisis and to ensure that such crisis is never repeated in the future. As a result, the G20 took a lead to regulate off-exchange derivatives in order to achieve a policy targets of reduction of systemic risk, increase transparency and limited access to these derivatives. After the crisis, there was a widely held view that “regulators should not turn back the clock but should, instead, improve the stability of this interconnected financial system by minimising regulatory arbitrage and increasing transparency” (Koszner and Strahan, 2011, p. 245).

Although there are commonalities and to some extent differences in both the USA and EU, objects of these legislations are basically to reduce systemic risk, improve transparency and limited access to OTC derivatives.

Monitoring and supervision must be a priority among countries as OTC participants may want to take advantage of regulatory reforms. There should be sufficient budgets to finance monitoring by regulators.

Ongoing regulatory reform efforts, although moving in the right direction, are still filled with some holes: regulatory reforms developed by the G20 countries after 2009 failed to consider the consistency among national regulation and this poses a risk of conflict and fragmentation

in global financial markets (Eichengreen and Park, 2012). Regulations in both the EU and the USA must iron out differences in order to ensure financial stability.

Regulatory inconsistency has significant effects on growth and development for all G20 countries because of deep financial linkages. In particular, the lack of transatlantic consistency between the European complex regulatory framework and the US Dodd-Frank Act further decreased the ability to react effectively to unexpected events, but this lack of consistency can be reduced by means of greater regulatory coordination by the G20.

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APPENDIX A**Table 1: Characteristics of Common Derivatives**

Type of Derivative	Description	Underlying	Where Traded*	
			Exchange/ Regulator	OTC
Future	Provides an opportunity to purchase a certain commodity in the amounts, and at the price, stated in the agreement at a future date. Contracts are standardized to facilitate trading on futures exchange	Commodity	Yes/CFTC	No
Forward	Provides an opportunity to purchase or sell a certain commodity in the amounts, and at the price, stated in the agreement on the specified date. Highly customizable as to commodity, amount, date, and payment. Often used for hedging.	Commodity	No	Yes
Call Stock Option	Provides an opportunity to purchase a certain stock in the amounts, and at the price, specified in the contract on a future date.	Equity Stock	Yes/SEC	No
Put Stock Option	Provides an opportunity to sell a certain stock in the amounts, and at the price, specified in the contract on a future date.	Equity Stock	Yes/SEC	No
Interest Rate Swap	Provides that a party will pay the one stream of future interest rate payments in exchange for another with respect to the principal (“notional value”) stated in the contract.	Interest Rate or Index	No	Yes
Credit Default Swap	Insures a party against the risk of a company defaulting on its bonds or becoming insolvent.	Company Bond	No	Yes
Currency Swap	Provides that a party will pay the exchange rate specified in the contract with respect to the stated principle.	Currency Rate or Exchange	No	Yes

* Pre Dodd-Frank SEC – Securities and Exchange Commission CFTC – Commodities and Futures Trade Commission

SOURCE: Wiggins and Metrick (2015)