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Increasing Transparency and Mitigating Systemic Risk: Is Europe Playing Catch-up with the United States?

EMIR / MiFID II Versus Dodd-Frank

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This thesis explores and evaluates regulatory measures taken by the United States and the European Union in order to increase transparency and mitigate systemic risk in the aftermath of the 2008 financial crisis. These measures are primarily implemented through Dodd-Frank in the United States and EMIR and MiFID II in Europe. The objectives of the study were to 1) identify the importance of increasing transparency and reducing systemic risk, 2) establish both the reach and importance of the US and the EU derivatives regimes and 3) determine whether or not Dodd-Frank, EMIR and MiFID II bring the US and the EU one step closer to extending transparency requirements and reducing systemic risk. Therefore this thesis will establish whether or not Europe is playing catch-up with the United States with regard to achieving these elements of the 2009 G-20 Pittsburgh Summit commitments. This leads to the conclusion that although the United States effectively has a head start, it has more or less failed to meet these objectives, giving Europe the opportunity to outpace the United States, specifically through the upcoming revision of MiFID.

Keywords	Derivatives, Dodd-Frank, EMIR, MiFID II, Too Big to Fail, Transparency, Systemic Risk

Contents

1 Introduction

The collapse of Lehman Brothers in 2008, in addition to the financial crisis that followed, highlighted weaknesses in global financial markets that required regulatory action. The crisis had exposed significant flaws in the European regulatory framework and as a result, the European Commission launched a consultation on its proposed reforms of the Markets in Financial Instruments Directive (Directive 2004/39/EC), hereafter referred to as MiFID (European Commission, 2014a). The new framework consisting of an implementing directive and regulation, MiFID II (Directive 2014/65/EU), is set to replace the current MiFID framework in January 2018 (European Commission, 2016). The European Market Infrastructure Regulation (Regulation No 648/2012), hereafter referred to as EMIR, was designed to mitigate risk in the notoriously opaque over-the-counter (OTC) markets (European Commission, 2014b). EMIR entered into force in August 2012 (European Commission, 2014b). The European Union tends to deal with reforms in separate legislative proposals, hence its 'salami-slicing' approach to regulation (European Union Committee, 2015), consequently two regulations; MiFID II and EMIR primarily constitute the post-financial crisis derivatives oversight across the EU.

Simultaneously, regulatory action to prevent another financial crisis was taken in the United States in the form of the Dodd-Frank Wall Street Reform and Consumer Protection Act (Public Law 111-203), hereafter referred to as Dodd-Frank, which was signed into federal law in July 2010 (SEC, 2011). Standard and Poor's has estimated that the compliance costs of Dodd-Frank, the largest financial reform bill in history, for the eight largest US banks alone would cost up to $34 billion annually (McCloskey, 2012). The overhaul of regulation of derivatives markets is the most evident area of common ground between MiFID II and Dodd-Frank (European Commission, 2011). EMIR especially has a lot in common with Dodd-Frank, such as moving trading onto more transparent platforms, increasing the resilience of central counterparties and strengthening investor protection (EY, 2014).

The current regulatory limbo in the EU can be contrasted with the US where Dodd-Frank has been addressing similar issues since 2010 (Hart and Marlow, 2016). MiFID II is an ambitious directive not only for its broad scope and complexity but also for its timetable for implementation. Therefore it did not come as a surprise that in February

2016, the European Commission proposed a one-year extension to the entry into application of MiFID II, which was to be implemented in January 2017 (European Commission, 2016). The January 2018 target date would evidently mean that it has taken nearly a decade to implement the regulatory framework across the European Economic Area. An extension was regarded as necessary in order to avoid legal uncertainty and potential market disruption (European Commission, 2016). According to Sands (2016), the delay to ''impossible'' MiFID II deadline results in leaving advisers in limbo, as they are expected to prepare for the implementation of the directive while they are waiting for more information.

In contrast, global companies continue to move forward with Dodd-Frank requirements, attending to issues concerning the execution of OTC derivative contracts on electronic trading platforms in addition to post-trade transparency and position limits for commodity derivatives. MiFID II will also address these issues but not until January 2018, assuming that there are no further delays. It is therefore thought that the US has a head start, as most of the US regime will be in place prior to MiFID II whereas EMIR only addresses the regulation of derivatives, which will be further extended when MiFID II is implemented. However, the first-mover status of the US has created problems, as barely any time was given to coordination and cooperation with non-US legislators due to the speed at which the legislation was created (ISDA, 2015a). As a result, differences in both the implementation schedules and the content of the regulation across different jurisdictions have emerged (ISDA, 2015a). According to the European Commission (2011), US regulation is nevertheless more developed in areas such as the regulation of commodity derivative markets, allowing for Europe to catch up through the more detailed revision of MiFID. The ambiguity that surrounded EMIR has encouraged banks to be better informed and ready for MiFID II; however, the implementation of MiFID II is set to be a bigger challenge for the banks than either Dodd-Frank or EMIR (Bloomberg, 2015a).

Like Dodd-Frank in the US, EMIR and MiFID II are the legislative measures through which the EU implements various measures intended to meet the 2009 G-20 Pittsburgh commitment (see Appendix 1) to regulate the OTC derivatives market in order to enhance transparency and mitigate risk (PwC, 2013). In line with the G-20 commitments, MiFID II seeks to improve market transparency by moving derivatives trading from the opaque bilateral OTC market to exchange trading whereas EMIR aims to improve market stability and reduce counterparty risk in the derivatives market (Chaudhry, 2015).

This thesis will examine the measures taken by the US and the EU in their pursuit to increase transparency, with emphasis on derivatives, and to mitigate systemic risk in order to meet the 2009 G-20 Pittsburgh commitments. Furthermore, the consequences of increased regulation will be discussed in the context of EMIR, MiFID II and Dodd-Frank. The literature review in the following chapter will discuss these issues in more detail.

The following research questions have been defined for this study:

1. To identify the importance of increasing transparency and mitigating systemic risk in the aftermath of the 2008 financial crisis
2. To establish both the reach and importance of the US and the EU derivatives regimes in a global context
3. To determine whether or not Dodd-Frank, EMIR and MiFID II bring the US and the EU one step closer to extending transparency requirements and reducing systemic risk.

2 Literature Review

The main focus of this chapter is to outline the debates concerning the measures adopted by the EU and the US to increase transparency and reduce systemic risk, primarily in the context of derivatives markets. In doing so, it will demonstrate what the pursuit to meet these objectives has resulted in so far and assess whether or not these goals are realistically achievable under the current regulations. Dodd-Frank, EMIR and MiFID II, in line with the 2009 G-20 Pittsburgh commitments, have divergent implications for global markets and market players, which is why each market participant views them in a different light. Due to identical objectives but dissimilar ways to achieve them, these measures result in unintended consequences, such as regulatory arbitrage, and stand out as the key reasons to harmonise the US-EU derivatives market, which is the final theme discussed in this literature review.

2.1 Global Need to Increase Transparency

It can be argued that the financial crisis of 2008 was not merely caused by reckless lending and excessive risk taking; the fundamental problem was a lack of transparency (Denning, 2013). The crisis demonstrated that financial markets had become dangerously opaque, allowing for unnecessary risks to build and be transferred across differ-

ent financial sectors (Friedlander, 2015). Friedlander (2015) argues that few realised how concentrated the derivatives market truly was and neither market participants nor regulators were fully aware of the interconnections between the biggest banks. This view is corroborated by Denning (2013), according to whom after the collapse of Lehman Brothers, it was impossible to understand a particular bank's risks from derivative trading, hence no bank desired to lend to or trade with any other bank. Therefore, in the wake of the financial crisis, the extension of transparency stands out as a global theme. The extension of transparency in Dodd-Frank, among other related legislative frameworks, is limited to derivative markets, whereas MiFID II will introduce the extension of transparency principles that are used in quoted equity markets to nearly all OTC markets, which some market participants argue is excessive (Bloomberg, 2016). Only the EU has chosen to extend these provisions to the cash bond market, showing that Europe is going one step further in its transparency requirements. Although the idea of increased transparency is commendable, it is argued that the practicalities of not only implementing but also working with new trading models may end up being more complex and costly than originally anticipated (Achkar, 2016). Whereas previously very little reporting was necessary and post-trade activities were clearly understood in OTC trading, reporting requirements and post-trading arrangements are now ironically less clear (Achkar, 2016). To elaborate, it is now unclear where, by when, and by whom these trades will be reported (Achkar, 2016).

Furthermore, market participants in Europe fear that the more vigorous regulations of MiFID II may encourage investors to take their money elsewhere (Bloomberg, 2016). This is due to MiFID II treating various illiquid bonds as liquid, hence triggering pre-trade transparency and quote regulations (Bloomberg, 2016). Consequently it is argued that this means that trading will become more difficult. The head of fixed-income trading at Deutsche Asset and Wealth Management, Juan Landazabal, professed that transparency is a "double-edged sword" (Bloomberg, 2016). Landazabal criticised the new rule for creating situations in which promising investment opportunities have to be left behind because there is not enough liquidity to put the trades on (Bloomberg, 2015b). Landazabal also contrasts the scale of post-trade rules introduced by MiFID II with that of the US, which decided to approach the issue more gradually and does not report the full size of trades (Bloomberg, 2015b). It can therefore be argued that excessive market transparency may result in harming the very people it has been designed to protect, as too much transparency may limit competition and increase transaction costs for consumers.

Five years after its implementation, Dodd-Frank has created some level of transparency and oversight of derivatives. Standardised derivatives must now be centrally cleared and either traded on exchanges or transparent trading platforms (Friedlander, 2015). Approximately 75 per-cent of the transactions in the swaps market, measured by notional amount, are now cleared (Waters, 2015). By contrast, in December 2007 only around 15 per-cent of these transactions were cleared (Waters, 2015). According to Friedlander (2015), these reforms have increased transparency while decreasing the level of risk and unclear interconnections between companies. However, only approximately 18 per-cent of single-name credit default swaps (CDS), in terms of gross notional value, were cleared in September 2014 (Waters, 2015). Although this is an increase from 2009, when only 5 per-cent of CDS were cleared (Waters, 2015), it can be argued that this is quite poor considering that the excessively risky CDS market is supposed to be one of the most heavily regulated areas after the financial crisis. Currently there are also four swaps data repositories (SDRs) established by Dodd-Frank, which are expected to make the previously opaque market more transparent (Waters, 2015). It is also pointed out that transparency in the OTC derivatives market has not ‘’reached its full potential’’ in terms of meeting the G-20 commitments (King and Pagliocca, 2015). The primary barriers to meeting these commitments are claimed to be the lack of global cooperation, the lack of global data standards and legal barriers to global data sharing among regulators (King and Pagliocca, 2015). While global cooperation is crucial in increasing transparency, it should not stand out as the only reason as to why Dodd-Frank has failed in this respect, like the authors claim. Therefore this statement creates a strong sense of blame-shifting, regardless of the fact that global cooperation is most likely the only way to meet the global need to increase transparency.

2.2 Defining Systemic Risk

There is no universal agreement on the definition of systemic risk. However, a common factor in most definitions of systemic risk is that a trigger event, such as an economic shock or institutional failure, causes a chain of bad economic consequences, similar to the domino effect (Schwarcz, 2008). Edward Kane (2010) claims that official definitions of systemic risk exclude the role of government officials in generating it. Kane argues that official definitions lead to an insufficient diagnosis of its origin: defective risk management of ‘difficult to fail and unwind’ companies. To elaborate, the diagnosis is not sufficient because it overlooks the opportunity of exploiting gaps in policy-making and thus undermines the accountability of regulatory mistakes (Kane, 2010). Despite differ-

ences in the official definition, a systemic risk event in the financial services would undoubtedly have an unpredictable impact on the economy, which is why the threat of systemic risk receives massive attention from both regulators and governments (McConnell and Blacker, 2013). Systemic risk has been argued to be one of most important issues during and after the financial crisis because should one counterparty default on its obligations, this will have a domino effect across all counterparties in the OTC derivatives market (Jones Day, 2013). The clearing requirement of EMIR is anticipated to mitigate the risks of the domino effect through centralising risk within Central Counterparties (Jones Day, 2013).

2.3 Too Big to Fail – Too Big to Punish?

Alan Newman (2016) has stated that high levels of notional values of derivatives are equivalent to high systemic risk, and the biggest banks account for virtually all outstanding notional derivatives values. In order to mitigate systemic risk, policy-makers in both the US and the EU have started to target big banks. When Dodd-Frank was created, it was expected to end institutions from becoming "too big to fail." According to Alan Greenspan, "if they are too big to fail, they are too big" (Dealbook, 2009). However, the top five banks still constitute 92 per-cent of the US derivatives market, worth $220 trillion at face value (Levinson, 2015). In addition, evidence shows that smaller banks have suffered as a result of the legislation, which has essentially been unsuccessful in its pursuit to end institutions that are too big to fail (Lux and Greene, 2015).

According to a study conducted by Harvard Kennedy School for Business and Government in 2015, Dodd-Frank did not succeed in mitigating concerns over banking sector concentration. This study suggests that the top five bank holding companies control practically as many banking assets as they did in the fiscal quarter prior to Dodd-Frank's passage (Lux and Greene, 2015). Simultaneously community banks with $1 billion or less in assets have been in decline, as have larger community banks but to a less drastic extent (Lux and Greene, 2015). This study contained data by the FDIC's Statistics on Depositary Institutions quarterly dataset and the files were last updated in August 2014 (Lux and Greene, 2015). This study was conducted by aggregating the data at the holding company level in order to portray the total assets held by the largest financial institutions more adequately (Lux and Greene, 2015). The five biggest banks in the study refer to the five largest each quarter using overall asset size and a $10 billion total assets threshold was used to determine whether or not a bank could be classified as a community bank (Lux and Greene, 2015). Although one of the key ob-

jectives of Dodd-Frank was to end the too big to fail, there has been a sudden consolidation away from community banks post-Dodd-Frank, suggesting that this attempt has had an adverse effect. This is primarily caused by increased compliance costs incurred by a heightened regulatory burden, which larger banks are more suited to handle than smaller banks. Hence Dodd-Frank has resulted in a more concentrated financial industry with fewer banks that are no longer too big to fail, but too big to save (Lewitt, 2015). Lux and Greene (2015) argue that although Dodd-Frank intended to help consumers, it has only succeeded in achieving the opposite, as costs are passed on to consumers and consolidation has reduced both choice and proximity. Therefore, instead of providing more competition in terms of service and price, consumers have been left with fewer providers (Morrissey, 2015).

However, according to Greg Ip (2016), it should be pointed out that size leads to significant benefits in banking, such as economies of scale in technology, branding and risk management. These factors attract customers in addition to geographic and sectoral diversity (Ip, 2016). It can therefore be argued that if regulators overlook these aspects and are solely preoccupied by the danger of size; they might risk leaving the economy worse off, instead of better. A 2014 report by the Bipartisan Policy Center notes that these benefits are not insignificant and regulators should weigh the benefits of size against the risks that big banks become too big to fail (Ip, 2016). Ip (2016) also claims that while big banks make mistakes, it does not automatically mean that they are more likely to fail. In fact, size incurs greater diversification across regions, industries and business lines, and therefore less volatile revenue (Ip, 2016). It can also be debated that the American economy would not even exist without the five biggest banks given that they account for 42 per-cent of all loans outstanding in the US while the six biggest banks are in control of 67 per-cent of all banking assets (Gandel, 2013). According to SNL Financial, the six largest banks in the US hold 67 per-cent of all the assets in the financial system, which is $6.9 trillion and has increased by 37 per-cent from five years ago (Gandel, 2013).

John Riley (2016) argues that it is not only the US that is playing with fire. Deutsche Bank, the too big to fail of Germany, has approximately €55 trillion euros of derivatives according to Bloomberg and Deutsche Bank. Meanwhile Germany's GDP is "merely" €2.7 trillion, making Deutsche Bank's derivatives exposure 20 times the GDP of Germany (Riley, 2016), although Germany is supposed to represent the strongest and most stable regulatory oversight in Europe. Lewitt (2015) has even claimed that

Deutsche Bank carries the biggest systemic risk of any financial institution. Lewitt (2015) forecasts that when the next market dislocation arrives, derivatives will earn again their reputation as financial weapons of mass destruction. The situation with Deutsche Bank also raises political questions, because if Deutsche Bank were to fail and the German government bailed it out, this would be contrasted with the recent issues in Greece, Spain and Portugal. However, if the German government chose not to act on this, the whole Eurozone would be impacted.

2.4 Derivatives Markets in the US and the EU

Thirteen years ago, Warren Buffett famously described derivatives as financial weapons of mass destruction, which carry dangers that, while now latent, are potentially lethal. In 2015, Buffett reaffirmed his view but also noted that this does not mean that derivatives cannot be used intelligently, for instance, in terms of hedging input costs (Boyd, 2015). After the financial crisis, one of the most difficult tasks for market regulators has been finding an agreement on how global derivatives should be overseen across borders. According to the European Union Committee, the OTC derivatives market was too complex and opaque; and both market participants and regulators have underestimated counterparty risk in a market that is dominated by a small number of large international banks and dealers (Jones Day, 2013). According to the BIS, the total OTC derivatives notional outstanding was $691.5 trillion in 2014 (ISDA, 2015a). OTC trading is generally more popular than trading on an exchange and it allows the counterparty greater flexibility by notoriously enabling more privacy between counterparties regarding reporting requirements (Jones Day, 2013).

Europe is called the “poor cousin” of the United States in terms of exchange-traded equity derivatives, and equity derivatives trading in Europe remains relatively low, whereas the US has experienced sudden growth (The Trade, 2015). According to BIS, European exchange-traded turnover was $17 trillion in 2014 compared to $80 trillion in the US due to factors such as insufficient liquidity, market fragmentation, lower risk appetite from banks in addition to increased regulation, which have contributed to the lack of growth of European equity derivatives (The Trade, 2015). According to Lauri Rosendahl, head of European cash equities and equity derivatives, global trading and market services at Nasdaq, it is clear that the US market is more developed (The Trade, 2015). Rosendahl also claims that the US is ahead of Europe in the clearing mandate and electronic trading, both of which have supported equity derivative volumes (The Trade, 2015). Furthermore, one of the major problems restraining European

equity derivatives growth has been the fragmentation across its markets. Whereas Europe's primary derivatives exchanges, such as Eurex, Euronext, ICE Futures Europe and Nasdaq operate under different rules across the continent, the US has several venues for equity derivatives trading and users are able to trade the same instrument across all exchanges without the possibility of a currency mismatch (The Trade, 2015).

The derivatives markets have always been global markets in order to benefit end users (ISDA, 2015a). However, analysis conducted by the International Swaps and Derivatives Association (ISDA) suggests that after the Swap Execution Facility (SEF) launch in the United States in October 2013, most non-US platforms decided not to register with US regulators and these venues closed to US participants (Basar, 2016). As European dealers shifted away from the US, liquidity in the interest rate swap market fragmented geographically (Basar, 2016). By contrast, in the case of margin rules for non-cleared derivatives, a number of discrepancies have emerged in national-level proposals, which, in some cases, could put firms operating in the US at a competitive disadvantage internationally and reduce choice for US end users domestically (O'Malia, 2015). Dodd-Frank should not apply to activities outside the United States, unless those activities have a direct and significant connection with the activities in or effect on the commerce of the United States. The CFTC's cross-border guidance, however, takes a more extensive approach in order to capture activities overseas (O'Malia, 2015). Consequently, non-US companies have turned away from all trade or counterparties that would ensue them being subject to US regulatory oversight in addition to their own jurisdiction's rules (O'Malia, 2015), in order to avoid double compliance. According to ISDA research, 87.7 % of regional European interdealer volume in euro interest rate swaps was traded between European dealers in Q4 of 2014, compared with 73.4 % of Q3 in 2013 (O'Malia, 2015). This change in trading behaviour occurred when the SEF rules were introduced. As many non-US platforms did not register with the CFTC as SEFs, US traders were no longer able to access liquidity on these platforms. For instance, US entities were not able to access the most liquid pool for euro interest rate swaps, which is based in Europe and away from SEFs (O'Malia, 2015).

2.5 US-EU Harmonisation

According to interviews conducted by Deloitte (2016), asset managers fear that MiFID II may result in making the European Union less attractive for investment management activities concerning the market structure, transparency and investment research rules under the revised directive. MiFID II will essentially change how investment managers

interact with the market, as the new regulatory framework introduces the definition of an OTF for non-equities in addition to pre-and post-trade transparency requirements concerning liquid bonds (Bloomberg, 2015c). At the extreme, some investment managers believe that MiFID II will disrupt market liquidity to such an extent that it will drive investment out of the European Union, hence corporates would rather issue outside the European Union (Deloitte, 2015). With that being said, none of the companies interviewed by Deloitte are actively planning to relocate outside the European Union due to MiFID II and its requirements, although some conceded that they would keep it under consideration. Furthermore, ESMA proposes that asset managers either have to pay for research out of their own revenues or alternatively set up a specific research account for each of their clients (Bloomberg, 2015b). Asset managers have responded to this by arguing that the new measure would result in a decrease in the production of research in addition to making it impossible for smaller fund managers to access research, thus making the European Union less competitive globally (Bloomberg, 2015b). It is expected that factors such as competition and increased transparency of costs and charges will prevent investment managers from passing the costs on to investors (Deloitte, 2015). As a result, MiFID II would have the impact of increasing the costs of doing business and reducing margins. However, there is currently an abundance of fees that are not transparent to the investor, especially in the bond market. Although MiFID II will require for this information to be provided to the investor, it is highly likely that costs and charges will be passed on to consumers, as companies are not willing to reduce margins (Bloomberg, 2015c). According to PwC (2012), sell-side firms may pass on higher trading costs to buy-side firms, which will increase the cost of doing business for asset managers, unless they can pass these costs on to their clients. As a result, Europe would become less attractive to investors. Jeff Sprecher, the chief executive officer of Intercontinental Exchange (ICE), warns that the New York of Europe, London “risks losing its position as the world’s leading centre for derivatives trading amid an onslaught of new European regulations” (Jenkins and Stafford, 2015). According to Sprecher, business was already moving towards the US and Asia, and this shift would speed up unless the EU repressed its new rules, including MiFID II. Sprecher also points out that while the US the EU have similar rules on derivatives trading, MiFID II will add an additional layer of European regulation. As a result, Europe immediately becomes non-competitive, claims Sprecher.

The lack of international harmonisation of regulations between the US and the EU has resulted in regulatory arbitrage, primarily to avoid double compliance. For instance in

Spring 2015, traders and analysts in the swaps markets noticed that hundreds of billions of dollars of trades by US banks has disappeared (Levinson, 2015). In reality, the largest US banks had altered a few key words in swaps contracts in addition to shifting other trades to affiliates based in London that had a more lenient regime (Levinson, 2015). Due to a loophole in swaps regulations, these affiliates remain outside the jurisdiction of US regulators (Levinson, 2015). As a result of post-crisis regulations, the US derivatives market has shrunk although it remains large with outstanding contracts worth $220 trillion at face value (Levinson, 2015). The American and European jurisdictions account for approximately 80 per-cent of global derivatives markets (Deutsche Bank, 2013), which is estimated to be worth $553 trillion (Brush and Verlaine, 2016), making their rules extremely influential not only across the transatlantic but all over the world. Each side has argued that its rules on derivatives trading are better than the other's at fighting systemic risk while also minimising the impact on the banks' own trades (Stafford and Brunsden, 2016). According to CFTC commissioner J Christopher Giancarlo, the impasse had been contrary to the cooperative spirit of the 2009 G-20 Pittsburgh commitments, as the intent previously was to increase the regulatory jurisdiction of the CFTC rather than to insulate US markets from systemic risk (Keating, 2016).

However, traders have warned that the existing gap in financial markets regulation could potentially fracture global derivatives trading, which American and European regulators have finally agreed to close after 4 years of dispute (Stafford and Brunsden, 2016). A 2015 ISDA study has found that US-EU harmonisation of derivatives markets is crucial because divergent regulations across jurisdictions may ultimately lead to the fragmentation and regionalisation of liquidity pools (ISDA, 2015b). According to Scott O'Malia, fragmentation signifies less liquidity, less choice and, ultimately, higher costs for end users (ISDA, 2015b). Under the new deal, the US will align itself with stricter EU rules concerning rules on margin of clearing houses. By contrast, the EU has agreed that customers of clearing houses have to post more margin in order to move in line with stricter US standards (EurActiv, 2016). A common approach is undoubtedly absolutely essential as it means that EU CCPs can operate in the US markets and vice versa on a level playing field (EurActiv, 2016). Jeff Sprecher, chief executive of Intercontinental Exchange, who has previously criticised EU regulations for being too excessive, said in a statement that the agreement is a significant milestone in regulatory oversight (Brush and Verlaine, 2016). This agreement is set to end the trans-Atlantic

dispute concerning derivatives and Scott O'Malia is hopeful that this ensures that other equivalence decisions will be taken in the future (Brush and Verlaine, 2016).

2.6 Literature Summary

Having now looked at the US and the EU approaches to the post-crisis regulation of financial markets, the literature review can be summarised as follows. First and foremost, Dodd-Frank has more or less failed in its attempt to increase transparency whereas in Europe, the extension of transparency has mainly resulted in confusion rather than any measurable benefits. In addition, several views have suggested that Dodd-Frank has failed in reducing systemic risk in the context of the too big to fail banks, as they still continue to hold nearly as much notional value in derivatives as they did before Dodd-Frank was implemented. The impact of this on consumers is controversial, as Lux and Greene (2015) argued that consumers have been left with a reduction in choice and proximity. Ip (2016), on the other hand, claimed that size leads to benefits and trying to punish big banks may leave the economy worse off than it was to begin with. While Ip argued that the fact that the banks are big does not automatically mean that they are more likely to fail, if they do in fact fail, it would have a massive impact on the entire market, as the five biggest US banks control 92 per-cent of the derivatives market. Furthermore, the need for cooperation between the US and the EU regulators has been identified as a continuous theme in the literature. It is expected that the forthcoming US-EU harmonisation will improve the regulation of the derivatives market across both jurisdictions whilst reducing issues arising from divergent regimes. In the next chapter the methodology will be introduced.

3 Methodology

The literature review has clearly identified gaps in determining whether the US truly is ahead of the EU in derivatives oversight. Although the notional amount big US banks hold in derivatives was established, there was a gap in determining their individual derivatives exposure and whether or not it has changed before, during and after the implementation of Dodd-Frank. In addition, the literature review has identified a gap in the measurement of increased transparency. These issues will be looked at in the results chapter. The rest of this chapter will evaluate different methodologies and provide a justification for the one chosen for this research project in addition to describing the data collection and analysis process. Finally, limitations to the study will be outlined alongside areas for future research.

3.1 Research Approach

The deductive approach was primarily followed throughout this research project. Saunders, Lewis and Thornhill (2012) define this approach as the development of a theory that is subsequently tested through a series of propositions. The research started with theory developed from a review of academic literature, after which a research strategy was designed in order to test the theory, corroborating that this research project followed the deductive approach (Saunders et al., 2012). The deductive approach involves explaining causal relationships between concepts and variables (Saunders et al., 2012). The alternative approach would have been to begin by collecting data in order to explore a phenomenon, resulting in the formulation of a theory. This is known as the inductive approach, and it has been criticised for not allowing alternative explanations to what has happened (Saunders et al., 2012). By contrast, a deductive approach allows for other theories to be suggested. A deductive approach was decided more suitable for this particular research topic, as it involved going from the general to the specific and involved the exploration of causal relationships. Deductive reasoning often begins with an established theory and seeks to discover if the theory applies to specific instances (Hyde, 2000). This was a more suitable approach for a research topic that involved a lot of technical detail that could not have been adequately examined without seeing the bigger picture first.

Furthermore, a combination of qualitative and quantitative research methods was used in order to achieve the stated research objectives. For a research project requiring national or international comparisons, secondary data generally provides the principal source to address the research questions (Saunders et al., 2012). According to Stewart and Kamins (1993), using secondary data gives an advantage compared with researches using primary data, as the data can be evaluated prior to using it, enabling the rejection of unsuitable data sooner rather than later.

3.2 Data Collection and Analysis

Mostly secondary qualitative data was used in this research. Qualitative data sources ranging from academic journals to official publications and the financial press were used in order to capture a broad and diverse overview of the topic. The qualitative data collection process identified gaps in the research topic, which is why quantitative data was used in order to fill these gaps and meet the research objectives. Quantitative data in its raw form is not an effective measure of conveying information to the majority of

readers, which is why it is crucial to process and analyse it in order to turn it into useful information (Saunders et al., 2012). Consequently, quantitative analysis techniques, such as charts and graphs (Saunders et al., 2012), were used to present the data in a more descriptive way.

In order to test the transparency of derivatives trading and clearing, the largest derivatives exchanges in the US and the EU were identified and examined. Consequently, daily statistics for the same day disclosed by the three largest derivatives exchanges, CME Group, Intercontinental Exchange and Eurex, were used in order to test the transparency of derivatives clearing across the US and the EU jurisdictions. In the case of Eurex, the increase in the clearing of OTC interest rate swaps was calculated based on the statistical data Eurex provided on their website. In order to test the second hypothesis, OCC's (Office of the Comptroller of the Currency) Quarterly Reports on Bank Trading and Derivatives Activities between 2009 and 2015 were examined to establish the derivatives exposures of the five biggest US banks. Q4 reports with statistics as of 31 December were used for yearly comparisons. The derivatives exposure rates for the biggest US banks were calculated by dividing the total amount they held in derivatives by the total amount they held in assets. This established how many times more value they had in derivatives compared to their assets. The balance sheet and stock chart of Deutsche Bank were also examined in order to gather information on Europe's version of a too big to fail bank in terms of its derivatives exposure and market volatility. Although this is only one European bank, it was outlined as an example primarily in order to compare systemic risk between the US and the EU derivatives markets. It was tempting to extend this analysis to other European banks as well. However, this was not done because it would have strayed the focus away from the meeting the research objectives.

The data for the biggest US banks by derivatives exposure was presented using separate table charts instead of one or two collective line charts in order to ensure clarity and comparability. As the tables demonstrate, the rankings of the biggest banks changed on a yearly basis and so did their derivatives holdings. It generally would have been impossible to demonstrate changes in both rankings and derivatives exposures in a trend data chart. A collection of table charts was therefore seen as the most suitable data presentation tool in order to ensure accuracy for the kind of data that was analysed. However, the author felt that trends should also be demonstrated using the data that was collected and analysed. Bar charts are often the most accurate representa-

tions of the highest and lowest values, as the height or length of each bar can be used to represent the frequency of occurrence (Saunders et al., 2012). Therefore a bar chart was created in order to delineate the change in the derivatives exposure of Goldman Sachs, which was identified as the most systemically risky US bank based on its derivatives exposure ratio.

3.3 Limitations and Areas for Future Research

It quickly became evident that various limitations existed for this research project. First and foremost, since derivatives markets are global, disentangling the impacts of increased regulation in the US and the EU proved to be a challenge. This is due to the fact that in most statistics, the derivatives market is treated as a global entity, which is why the impacts of increased regulation cannot be viewed in isolation. Hence, factors such as trading volumes are not reported on a country-by-country basis, and are instead measured in global terms. In addition to the US and the EU derivatives markets, there are other global players, for example in the Asian and emerging markets. Although these markets are only indirectly impacted by these regulations, it means that statistical data, such as an increase in global derivatives trading volumes, does not give a specific indication as to how the US and the EU regulations have impacted the market. As a result, finding correlations was challenging.

Another major limitation identified during the research is that MiFID II will not come into effect until 2018, which is why its impacts cannot be concretely tested until a few years after its implementation. Therefore, only the immediate impacts of EMIR and Dodd-Frank could be tested whereas the impacts of MiFID II could only be forecasted and speculated. MiFID II has caused considerable uncertainty concerning how it will affect the market in practice and the initial impact will not be clear until the regulation has been implemented. If the creation of multilateral trading facilities (MTFs) for equities under the original directive is any indication, the full implications cannot be understood until years after these regulations have come into force and market participants have had the time to react to them (Achkar, 2016). With MiFID, MTFs were set up with the objective of lowering transaction costs and increasing liquidity in equity markets and however successful MTFs were at this, it was not the only impact they had on the market or its participants (Achkar, 2016). In fact, trading times and execution size plunged and variations in pricing across venues ended up being exploited, which is why it is not a huge leap to suggest that the introduction of organised trading facilities (OTFs) by MiFID II will have impacts on the same scale (Achkar, 2016). Nevertheless, the conse-

quences of MiFID II cannot be put to the test just yet, which is why this has been identified as an area for future research.

4 Results

The literature review has identified in gaps in determining the degrees of increased transparency. According to quantitative data in the literature, Dodd-Frank has significantly increased the clearing and reporting of derivatives and for instance SEFs have been created in order to extend transparency. While this indicates that Dodd-Frank has succeeded in creating some transparency, it cannot be used as the only measure to define whether or not the derivatives markets are truly transparent. Consequently this chapter will test the transparency of derivatives trading and clearing to the general public and in doing so will compare and contrast the current level of transparency in the US and the EU. Moreover, whereas the literature review mostly focused on the concentration of derivatives, this chapter will outline how exposed to derivatives the too big to fail banks are and establish trends in derivatives holdings between 2009 and 2015. This chapter will test these issues using methods outlined in the methodology chapter.

4.1 Identifying the Leading Derivatives Exchanges in the US and the EU

As the literature review has established, the US and the EU jurisdictions account for approximately 80 per-cent of the global derivatives markets. While the absolute market size for derivatives remains under debate, with estimations ranging from $553 trillion to $1.2 quadrillion, the US and the EU nevertheless account for the majority of this. Therefore their regulatory oversight has significant impacts on the entire industry, as both can be said to pave the way for global players. Hence it is crucial to determine where the most derivatives are traded by volume and how these entities have dealt with increased regulatory requirements. As Figure 1 demonstrates, Eurex Exchange is the largest European derivatives exchange by volume, with 2097.97 million contracts traded in 2014. In terms of derivatives exchanges headquartered in the US; CME Group and Intercontinental Exchange are the largest ones with approximately 3442.77 million and 2276.17 million contracts traded in 2014, respectively. CME Group, Intercontinental Exchange and Eurex constitute the top three derivatives exchanges by volume not only within the US and the EU but also globally with roughly 7820 million contracts traded. Given that these three derivatives exchanges accounted for approximately 7820 million derivatives contracts in 2014, the measures they have adopted towards increasing transparency and mitigating systemic risk can be seen as indicative for the

whole derivatives market. Figure 1 also shows the volume of other large derivatives exchanges based in the US and the EU, the majority of which are headquartered in the US. Within the context of the largest derivatives exchanges by volume, US-based exchanges accounted for 7380.77 million contracts, whereas exchanges based in Europe only accounted for 3425.46 million; indicating that the US markets are approximately double the size of those in Europe.

Largest Derivatives Exchanges in the US and Europe in 2014	Number of Contracts Traded (in millions)
CME Group (US-based)	3442.77
Intercontinental Exchange (US-based)	2276.17
Eurex (Europe-based)	2097.97
CBOE Holdings (US-based)	1325.39
Nasdaq OMX (Europe-based)	1127.13
BATS Exchange (US-based)	201.99
Euronext Derivatives Market (Europe-based)	144.06
Miami International Securities Exchange (US-based)	134.54
MEFF (Europe-based)	56.3

Figure 1 – Largest US and European Derivatives Exchanges in 2014 by Number of Contracts Traded (in millions)

4.2 Measuring the Transparency of Derivatives Exchanges

Now that the three largest derivatives exchanges by volume have been identified, it is useful to evaluate how they have succeeded in terms of risk mitigation and transparency. All transactions executed on Eurex Exchange will be cleared through Eurex Clearing, which delivers clearing services for listed products in addition to OTC. In order to increase transparency, Eurex discloses up-to-date information for markets in which Eurex Clearing acts as a central counterparty clearing house (CCP). Figure 2 shows the increase in both the notional value of interest rate swaps and in the amount of cleared trades. These are clearly correlated, with the number of cleared trades increasing as notional values go up, indicating a positive trend in both the trading and clearing of OTC derivatives. The first clearing obligation on OTC interest rate swaps was not adopted until August 2015 and did not enter into force until 21 December 2015 (European Commission, 2016). This shows that even without the obligation, Eurex has cleared trades, albeit on a very small scale.

OTC Derivatives (Interest Rate Swaps)	2011	2012	2013	2014	2015
Notional Value in EUR (in millions)	420	1970	7398	117555	303945
Cleared Trades	22	54	193	2306	7113

Figure 2 – Eurex Cleared Interest Rate Swaps 2011-2015

Eurex is not limited to only providing monthly statistics but also discloses daily statistics comprising the number of traded contracts in addition to the daily volume for both the current month and year. Furthermore, Eurex also discloses the open interest figures from the previous day. Figure 3 shows the kind of information Eurex discloses publically on a daily basis. In addition to traded contracts, open interest and volume in EUR, the daily statistics for interest rate derivatives cover traded contracts (month), traded contracts (year), traded contracts (monthly average), traded contracts (yearly average), volume in EUR (month), volume in EUR (year) and open interest rate in EUR (previous day). This kind of data is available on equity derivatives, equity index derivatives, dividend derivatives, volatility index derivatives, ETF & ETC derivatives, commodity derivatives and foreign exchange derivatives to name a few. Therefore, it can be concluded that Eurex is relatively transparent although MiFID II has not yet been implemented across the EU financial markets.

Interest Rate Derivatives					
Fixed Income Derivatives					
Fixed Income Futures			Traded Contracts	Open Interest (prev day)	Volume in EUR
	10-year Euro-Swap Futures	FSWL			
	2-year Euro-Swap Futures	FSWS			
	30-year Euro-Swap Futures	FSWX			
	5-year Euro-Swap Futures	FSWM			
	CONF Futures	CONF	349	4,033	51,173,310
	Euro-Bobl Futures	FGBM	426,316	1,023,222	55,882,740,160
	Euro-Bono Futures	FBON	338	4,176	47,252,400
	Euro-BTP Futures	FBTP	117,646	253,117	16,270,441,800
	Euro-Bund Futures	FGBL	836,495	1,423,325	135,805,398,840
	Euro-Buxl® Futures	FGBX	52,768	131,673	8,659,228,800
	Euro-OAT-Futures	FOAT	115,308	219,089	18,084,906,720
	Euro-Schatz Futures	FGBS	184,660	913,858	20,646,817,590
	Mid term Euro-BTP-Futures	FBTM			
	Mid-Term Euro-OAT-Futures	FOAM	7	721	918,750
	Short Term Euro-BTP-Futures	FBTS	27,003	91,855	3,044,858,280
	Sum	--	1,760,890	4,065,069	258,493,736,650

Figure 3 – Eurex Interest Rate Derivatives Daily Statistics 28/04/2016

The two largest US-based derivatives exchanges: CME Group and Intercontinental Exchange, however, do not publish up-to-date statistics with the same level of transparency as Eurex. Figure 4 shows that ICE only discloses the settle price and change

for the majority of futures. In some cases the daily price range, total volume and total spread were disclosed, as Figure 5 demonstrates. The total number of derivatives contracts is not published and the data that is available to the outside world is extremely scarce. For example, OTC trading is not mentioned in any shape or form in ICE's statistical data. ICE claims to clear over 6 million derivatives contracts on a daily basis and in 2013 led the CDS clearing business with $7.7 trillion in notional amount, which indicates a 25.3 per-cent rise from $6.1 trillion in 2012 (ICE, 2016). However, due to an evident lack of transparency, there is no other choice than to take ICE's word for this.

COMMODITY NAME	CONTRACT MONTH	DAILY PRICE RANGE				SETTLE		VOLUME AND OI TOTALS						
		OPEN#	HIGH	LOW	CLOSE#	PRICE	CHANGE	TOTAL VOLUME	OI	CHANGE	EFP	EFS	BLOCK VOLUME	SPREAD VOLUME
IG5 - Eris CDX IG Credit Swap Future 5 Year - IFUS - IG														
IG5	DEC--20					101.4330	-.0644	0	0	0	0	0	0	0
IG5	JUN--21					101.2604	-.1216	0	361	0	0	0	0	0
Totals for IG5:								**0**	**361**	**0**	**0**	**0**	**0**	**0**

Figure 4 – ICE Futures Daily Markets Report (for Cocoa) 28/04/2016
Source: ICE 2016

COMMODITY NAME	CONTRACT MONTH	DAILY PRICE RANGE				SETTLE		VOLUME AND OI TOTALS						
		OPEN#	HIGH	LOW	CLOSE#	PRICE	CHANGE	TOTAL VOLUME	OI	CHANGE	EFP	EFS	BLOCK VOLUME	SPREAD VOLUME
CC - COCOA FUTURES - NYCC (Cocoa)														
CC	MAY--16	3170	3170	3170	3170	3157	-13	5	47	0	0	0	0	5
CC	JUL--16	3186	3202	3164	3189	3182	-8	15,811	101,449	1,052	431	0	0	6,423
CC	SEP--16	3183	3197	3162	3185	3179	-8	7,647	58,288	-483	250	0	0	6,120
CC	DEC--16	3154	3167	3133	3157	3151	-6	3,970	35,600	837	0	0	0	3,034
CC	MAR--17	3123	3136	3104	3124	3119	-5	2,341	35,418	694	0	0	0	1,673
CC	MAY--17	3116	3119	3096	3096	3110	-4	686	5,417	263	0	0	0	112
CC	JUL--17	3094	3094	3092	3092	3103	-4	5	1,870	0	0	0	0	5
CC	SEP--17	3085	3085	3083	3083	3094	-3	6	5,850	-2	0	0	0	6
CC	DEC--17	3077	3077	3075	3075	3086	-1	3	295	3	0	0	0	3
CC	MAR--18					3076	0	0	3	0	0	0	0	0
Totals for CC:								**30,474**	**244,237**	**2,364**	**681**	**0**	**0**	**17,381**

Figure 5 – ICE Futures Daily Markets Report (for Coffee) C 28/04/2016
Source: ICE 2016

By contrast, CME Group discloses slightly more daily statistical data in terms of volume and overall combined total (see Figure 6). For instance, OTC cleared-only forward swaps statistical data is published on a daily basis. In addition, volume, open interest and change are disclosed. Although it can be argued that the information provided by CME Group is more descriptive than that of ICE, Eurex remains the only derivatives exchange out of the three that discloses the full amount of traded contracts. According to CME Group (2016), volume figures are reported across different visions in order to

provide ‘’an instant grasp of market activity.’’ ClearPort, which is CME Group’s clearing service for OTC markets, represents the total number of transactions that were completed outside of Globex, which is CME’s electronic trading platform, or Open Outcry, which is CME Group’s trading floor (CME Group, 2016). Overall, although the US financial markets are more advanced, as proven by the literature, and most of the required legislation is already in place, the US still seems to experience a continuing lack of transparency when it comes to derivatives trading and disclosing information.

	Globex	Open OutCry	Clear Port	Volume	Open Interest	Change
EXCHANGE						
EXCHANGE	13,907,441	993,714	586,511	15,487,666	109,863,083	798,501
EXCHANGE FUTURES	12,042,617	42,726	409,012	12,494,355	50,743,112	-92,114
EXCHANGE OPTIONS	1,864,824	950,988	176,281	2,992,093	59,088,077	889,730
OTC CLEARED ONLY	0	0	1,218	1,218	31,894	885

Figure 6 – CME Group Daily Exchange 28/04/2016
Source: CME Group 2016

4.3 Systemic Risk: TBTF

The threat of systemic risk is most often associated with the too big to fail (TBTF) banks, as identified in the literature review, because governments cannot allow for these banks to go bust as it would bring down the entire financial system. The literature review has determined that that high levels of notional values of derivatives equal to high systemic risk, signifying that these variables are correlated. Given that the biggest banks account for the majority of notional derivatives amounts, it is therefore crucial to examine trend data regarding their exposure to derivatives (see Figures 7-13) in order to determine if Dodd-Frank has succeeded in its stated objective.

[2009] Bank Name	Total Derivatives ($bn)	Total Assets ($bn)	Derivatives Exposure
JPMorgan Chase Bank NA	78,545,384	1,627,684	48.26
Bank of America NA	44,315,928	1,465,221	30.25
Goldman Sachs Bank USA	41,595,932	91,016	457.02
Citibank National ASSN	37,546,159	1,161,361	32.33
Wells Fargo Bank NA	4,178,720	1,118,861	3.73

Figure 7 – Derivatives Exposure of the Five Largest US Banks (in billions $) in 2009

[2010] Bank Name	Total Derivatives ($bn)	Total Assets ($bn)	Derivatives Exposure
JPMorgan Chase Bank NA	77,898,648	1,631,621	47.74
Citibank National ASSN	50,252,508	1,154,293	43.54
Bank of America NA	48,463,617	1,482,278	32.70
Goldman Sachs Bank USA	42,547,726	89,447	475.68
Wells Fargo Bank NA	3,754,683	1,102,278	3.41

Figure 8 – Derivatives Exposure of the Five Largest US Banks (in billions $) in 2010

[2011] Bank Name	Total Derivatives ($bn)	Total Assets ($bn)	Derivatives Exposure
JPMorgan Chase Bank NA	70,151,756	1,811,678	38.72
Citibank National ASSN	52,102,260	1,288,658	40.43
Bank of America NA	50,135,890	1,451,969	34.53
Goldman Sachs Bank USA	44,192,474	103,790	425.79
HSBC Bank USA National ASSN	4,321,240	206,010	20.98

Figure 9 – Derivatives Exposure of the Five Largest US Banks (in billions $) in 2011

JPMorgan Chase, Citibank (Citigroup), Goldman Sachs, Bank of America, Wells Fargo and HSBC are the six largest US banks with the most derivatives. For this study, the five biggest banks by the amount held in derivatives were examined, hence HSBC and Wells Fargo alternate for the position of the fifth largest US bank over the period studied. Figures 7-13 show how much the five biggest banks have held in derivatives and assets in addition to their exposure to derivatives. The derivatives exposure ratio was calculated by dividing the amount of total derivatives by total assets, thereby establishing how much more the banks held in derivatives compared to their total assets. The largest derivatives holder over the entire period studied; from 2009 until 2015 is JPMorgan Chase. In 2015 JPMorgan Chase held approximately $51 billion in derivatives, which is nearly 27 times its total assets (see Figure 13). Citibank National has approximately $46 billion in derivatives, meaning that it its derivatives exposure is 35 times the amount of total assets. With a significantly lower derivatives exposure rate, Bank of America has $26 billion in derivatives and a derivatives exposure rate of 16. Wells Fargo stands out as the only bank with a reasonable derivatives exposure, as the amount of total derivatives is “only” 3.6 times the amount of its total assets. However, the real focus of derivatives exposures is obviously Goldman Sachs with nearly $41 billion in derivatives, which is approximately 305 times its total assets. Moreover, Wells Fargo is clearly the least exposed of the five. However, if the other four, JPMorgan Chase, Citibank National, Goldman Sachs and Bank of America, were to fail with approximately $170 billion in derivatives, between the five banks alone, this would have

significant consequences and even the measures in Dodd-Frank most likely could not prevent the systemic collapse that would ensue if one bank went bust.

[2012] Bank Name	Total Derivatives ($bn)	Total Assets ($bn)	Derivatives Exposure
JPMorgan Chase Bank NA	69,003,973	1,896,773	36.38
Citibank National ASSN	55,402,433	1,313,401	42.18
Bank of America NA	42,479,208	1,474,077	28.82
Goldman Sachs Bank USA	41,197,310	118,536	347.55
HSBC Bank USA National ASSN	4,666,226	186,794	24.98

Figure 10 – Derivatives Exposure of the Five Largest US Banks (in billions $) in 2012

[2013] Bank Name	Total Derivatives ($bn)	Total Assets ($bn)	Derivatives Exposure
JPMorgan Chase Bank NA	70,088,625	1,945,467	36.03
Citibank National ASSN	62,247,698	1,346,747	46.22
Goldman Sachs Bank USA	48,611,684	105,616	460.27
Bank of America NA	38,850,900	1,433,716	27.10
HSBC Bank USA National ASSN	5,404,721	179,772	30.06

Figure 11 – Derivatives Exposure of the Five Largest US Banks (in billions $) in 2013

[2014] Bank Name	Total Derivatives ($bn)	Total Assets ($bn)	Derivatives Exposure
JPMorgan Chase Bank NA	63,683,309	2,074,952	30.69
Citibank National ASSN	56,295,836	1,356,781	41.49
Goldman Sachs Bank USA	46,778,625	118,214	395.71
Bank of America NA	36,726,319	1,574,093	23.33
Wells Fargo Bank NA	5,368,592	1,532,784	3.50

Figure 12 – Derivatives Exposure of the Five Largest US Banks (in billions $) in 2014

[2015] Bank Name	Total Derivatives ($bn)	Total Assets ($bn)	Derivatives Exposure
JPMorgan Chase Bank NA	51,139,448	1,914,658	26.71
Citibank National ASSN	46,400,256	1,299,801	35.70
Goldman Sachs Bank USA	41,041,336	134,695	304.70
Bank of America NA	25,669,494	1,639,305	15.66
Wells Fargo Bank NA	5,732,768	1,610,580	3.56

Figure 13 – Derivatives Exposure of the Five Largest US Banks (in billions $) in 2015

Goldman Sachs has been identified as the bank with the highest derivatives exposure rate between 2009 and 2015, as Figures 7-13 indicate. In 2009, its exposure rate was 457, which increased to 476 by the next year, which is when Dodd-Frank was implemented. In 2011, Goldman Sachs held $44.2 billion derivatives, which is 426 times its total assets, marking a slight increase from the two previous years. In 2012, the derivatives exposure rate dramatically decreased to 348. The 2010-2012 period captures the initial impact of Dodd-Frank and increased scrutiny towards derivatives concentration, which most likely explain the decrease. However, in 2013, the exposure rate increased

to 460. The exposure to derivatives of Goldman Sachs has nevertheless decreased since then, and was the lowest in 6 years in 2015. It can therefore be concluded that while Goldman Sachs is headed in the right direction, as demonstrated by Figure 14, its derivatives exposure is dangerously high especially compared to the other large banks in the US. In the context of derivatives exposure, Goldman Sachs is still too systemically important both globally and within the US, signifying that Dodd-Frank has failed in this respect. As the trend data over the studied period indicates (see Figures 7-13), Dodd-Frank has done very little in order to reduce derivatives concentration and big banks control virtually as much derivatives as they did prior to Dodd-Frank.

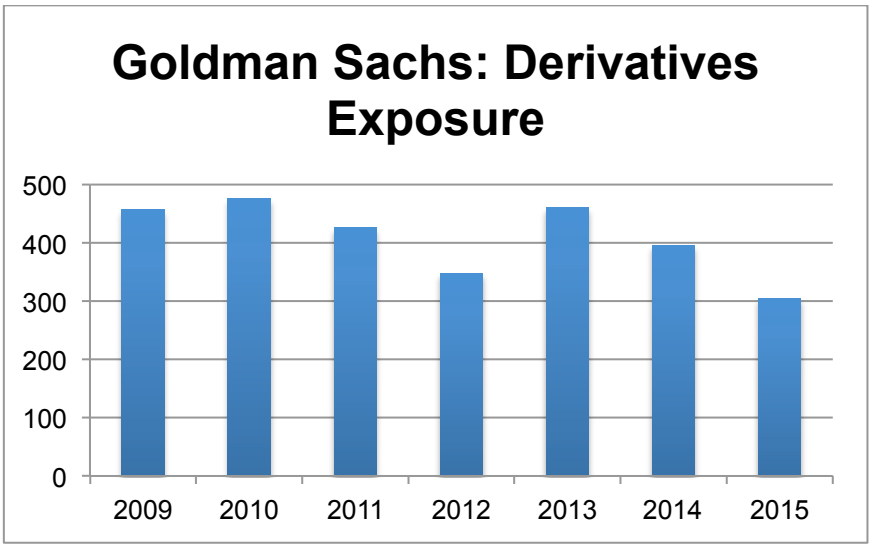

Figure 14 – Goldman Sachs Derivatives Exposure 2009-2015

In the literature review, Deutsche Bank was identified as Europe's version of the too big to fail, and JPMorgan and Deutsche Bank account for approximately 20 per-cent of global derivatives exposure. In 2014 the overleveraged Deutsche Bank had approximately €52 trillion in derivatives (see Figure 15), rivalling JPMorgan for the largest notional value in derivatives. The exposure to derivatives these two banks have along with the other too big to fail can undoubtedly be associated with systemic risk. Systemic risk can especially be viewed as a threat in Europe considering the economic situation across the continent and the state of European banks post-crises. Furthermore, figure 16 delineates the stock price for Deutsche Bank over the past 5 years, from 2012 until 2016. While Deutsche Bank has not experienced a vast amount of volatility in this respect its stock price has significantly gone down from 2012. In fact, Deutsche Bank's stock price is now the lowest it has been in the past five years and meanwhile it has a high exposure to derivatives. While this does not singlehandedly mean that the bank is

on its way to a bailout, it signifies that the combination of precarious market conditions and being overexposed to derivatives does not contribute to mitigating systemic risk.

Notional amounts and gross market values of derivative transactions

Dec 31, 2014	Notional amount maturity distribution						
in € m.	Within 1 year	> 1 and ≤ 5 years	After 5 years	Total	Positive market value	Negative market value	Net market value
Interest rate related:							
OTC	16,193,068	13,319,460	8,081,916	37,594,443	439,519	413,696	25,823
Exchange-traded	3,253,648	841,043	714	4,095,406	152	152	(1)
Total Interest rate related	19,446,716	14,160,503	8,082,630	41,689,849	439,671	413,849	25,822
Currency related:							
OTC	4,783,759	1,307,251	609,549	6,700,559	130,775	134,567	(3,792)
Exchange-traded	12,428	103	0	12,531	55	106	(51)
Total Currency related	4,796,187	1,307,354	609,549	6,713,090	130,829	134,673	(3,844)
Equity/index related:							
OTC	1,203,958	203,328	35,678	1,442,964	27,404	31,949	(4,545)
Exchange-traded	499,899	71,213	4,240	575,353	7,406	7,230	176
Total Equity/index related	1,703,857	274,542	39,919	2,018,317	34,810	39,179	(4,369)
Credit derivatives	337,245	935,967	119,549	1,392,760	25,370	23,074	2,296
Commodity related:							
OTC	13,708	2,549	7,115	23,371	2,030	1,804	226
Exchange-traded	89,656	22,218	66	111,939	605	697	(92)
Total Commodity related	103,364	24,766	7,181	135,311	2,635	2,501	134
Other:							
OTC	34,340	8,945	0	43,285	1,017	1,929	(912)
Exchange-traded	9,186	1,037	0	10,223	28	60	(32)
Total Other	43,526	9,982	0	53,509	1,045	1,989	(944)
Total OTC business	22,566,078	15,777,500	8,853,806	47,197,384	626,115	607,019	19,096
Total exchange-traded business	3,864,818	935,614	5,021	4,805,453	8,246	8,246	0
Total	26,430,896	16,713,114	8,858,826	52,002,836	634,361	615,265	19,096
Positive market values after netting and cash collateral received					49,416		

Figure 15 – Deutsche Bank Notional Amount of Derivatives 2014 (in €)

Source: Deutsche Bank AG 2015

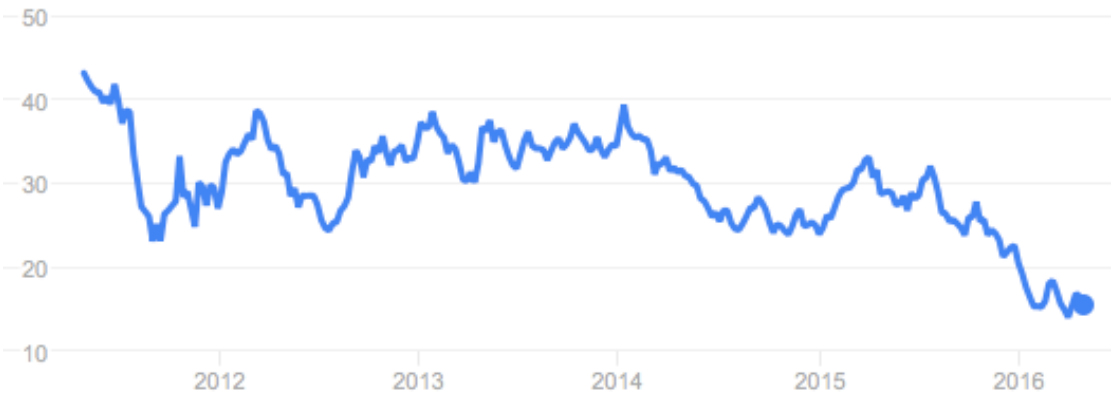

Figure 16 – Deutsche Bank AG Stock Chart (5 years)

Source: Google Finance / Yahoo Finance / Reuters (April 2016)

4.4 Summary

The aim of this chapter was to fill gaps identified in the literature review on how the US and the EU have increased transparency and mitigated systemic risk. Based on the data analysis, it can be concluded that the US has more or less failed in both respects although change for the better can be observed. Europe has proven to be relatively transparent although MiFID II will not be implemented until 2018 and most of EMIR has only been in force for a few years. However, Europe too has been unsuccessful in reducing systemic risk effectively. This chapter thus corroborates the view gathered from the literature review, which is that while the US is ahead of the EU in several regulatory aspects after the 2008 financial crisis, it has not necessarily succeeded in practice. The following chapter will contain more discussion and the final concluding thoughts around this topic.

5 Conclusions and Discussion

This thesis set out to determine if the US is ahead of the EU in terms of increasing transparency and reducing systemic risk in the post-financial crisis derivatives market. The 2008 financial crisis highlighted the opacity of OTC derivatives markets in addition to the excessive and insufficiently restricted derivatives concentration and exposure of the too big to fail banks. Although MiFID II will not come into force until 2018 and EMIR is relatively new, evidence has found that Europe; even with an incomplete derivatives regime, can be concluded to be more transparent than the US, where Dodd-Frank has been in force for as many as six years. As both the literature review and data analysis have demonstrated, US-based derivatives exchanges are not required to report the full size of trades. Reporting the full size of trades should be a relatively elementary and straightforward way to increase transparency, which is why it stood out as a key issue to be tested. It is argued that the US is therefore approaching this issue more gradually than the EU. Nevertheless, it should not be too demanding to disclose this information to the general public and it would significantly support the extension of transparency. However, even without MiFID II in place, Eurex, the leading Europe-based derivatives exchange, reports the full size of trades along with a significant amount of more information about its trading and clearing activities than the two global leaders, CME Group and Intercontinental Exchange, which are both based in the US. There are clearly other existing factors that have not yet been investigated but this analysis would suggest that

US derivatives exchanges are not sufficiently transparent and therefore have not succeeded in increasing transparency.

It has been argued that systemic risk is one of the most crucial issues during and after the financial crisis due to the domino effect across all counterparties should one counterparty default on its obligations. However, both the US and the EU have more or less failed to reduce systemic risk. One of the stated objectives of Dodd-Frank was to address the too big to fail banks. However, this study has demonstrated that there has virtually been no real impact on reducing the derivatives concentration and exposure. EMIR too aims to prevent systemic risks in the financial markets and the clearing requirement of EMIR is anticipated to mitigate the risks of the domino effect through centralising risk within Central Counterparties. However, the derivatives exposure of Deutsche Bank would suggest that the EU has failed to reduce systemic risk. Although there are other banks that have not yet been investigated, the derivatives exposure of Deutsche Bank alone is sufficient to conclude that the EU has been unsuccessful at mitigating systemic risk. Although centralising risk within Central Counterparties undoubtedly means that the EU recognises the risk and aims to mitigate it, one can make the case that this measure is not effective enough on its own. Therefore it is not far-reaching to suggest that the EU's lack of regulatory action towards excessive derivatives exposure may encourage other European banks to become extremely exposed to derivatives as well. This could therefore result in a similar situation to the one in the US with a massive concentration of derivatives held by big banks that are essentially too big to punish.

The US effectively has a head start, and is ahead of Europe in the clearing mandate and electronic trading, both of which have significantly supported equity derivative volumes. However, it has been argued that the US has been unable to capture the benefits of its first-mover advantage due to a lack of harmonisation and cooperation with the European Union. While this is certainly one contributing factor, it is not the primary cause for the failure of Dodd-Frank. Furthermore, the harmonisation of the US and the EU regimes should improve transparency considerably whilst bringing an end to both regulatory arbitrage and double compliance. As long as significant differences between the US and EU regulators persist, there will always be a race to the bottom. When Dodd-Frank's regulatory requirements were too much, investors went to Europe. With MiFID II, investors have an incentive to go to the US where the regime is more lenient than in Europe. With the harmonisation of the US-EU derivatives oversight, both re-

gimes are expected to benefit from increased clearing and trading in addition to market transparency.

This thesis has established that the global reach and importance of the US and the EU derivatives markets is notable, as the top three global derivatives exchanges are in the US and the EU, and the American and European jurisdictions account for approximately 80 per-cent of global derivatives markets. Although differences in the US and the EU derivatives regimes have resulted in regulatory arbitrage, market fragmentation and the threat of double compliance, the harmonisation of both oversights is expected to end the trans-Atlantic dispute concerning derivatives and pave the way for other areas of regulatory harmonisation. The US-EU harmonisation is generally expected to have positive outcomes for market player, however, without knowledge of further detail or the initial impact, this cannot be tested. This can therefore be identified as an area of future research.

This thesis aimed to determine whether or not Dodd-Frank, EMIR and MiFID II have the potential to bring the US and the EU one step closer to extending transparency requirements and reducing systemic risk. There are clearly different views as to what extent Dodd-Frank has failed in the US but it has been established that it more or less has. By contrast, in the EU, EMIR has generally made progress towards meeting the 2009 G-20 Pittsburgh commitments. However, this study has established that the measures introduced by EMIR are not fully able to meet these objectives. Nevertheless, the introduction of MiFID II in 2018 is expected to introduce a more rigorous and demanding regulatory regime across Europe. Therefore the EU has the potential to outpace the US in achieving these objectives. Although the EU is playing catch-up with the US in increasing transparency and mitigating systemic risk, this study has established that the EU is not as far behind as one would initially assume.

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Appendix 1 – G-20 Leaders Statement: The Pittsburgh Summit September 24-25, 2009

Strengthening the International Financial Regulatory System

13. As we encourage the resumption of lending to households and businesses, we must take care not to spur a return of the practices that led to the crisis. The steps we are taking here, when fully implemented, will result in a fundamentally stronger financial system than existed prior to the crisis. If we all act together, financial institutions will have stricter rules for risk-taking, governance that aligns compensation with long-term performance, and greater transparency in their operations. All firms whose failure could pose a risk to financial stability must be subject to consistent, consolidated supervision and regulation with high standards. Our reform is multi-faceted but at its core must be stronger capital standards, complemented by clear incentives to mitigate excessive risk-taking practices. Capital allows banks to withstand those losses that inevitably will come. It, together with more powerful tools for governments to wind down firms that fail, helps us hold firms accountable for the risks that they take. Building on their Declaration on Further Steps to Strengthen the International Financial System, we call on our Finance Ministers and Central Bank Governors to reach agreement on an international framework of reform in the following critical areas:

- *Building high quality capital and mitigating pro-cyclicality: We commit to developing by end-2010 internationally agreed rules to improve both the quantity and quality of bank capital and to discourage excessive leverage. These rules will be phased in as financial conditions improve and economic recovery is assured, with the aim of implementation by end-2012. The national implementation of higher level and better quality capital requirements, counter-cyclical capital buffers, higher capital requirements for risky products and off-balance sheet activities, as elements of the Basel II Capital Framework, together with strengthened liquidity risk requirements and forward-looking provisioning, will reduce incentives for banks to take excessive risks and create a financial system better prepared to withstand adverse shocks. We welcome the key measures recently agreed by the oversight body of the Basel Committee to strengthen the supervision and regulation of the banking sector. We support the introduction of a leverage ratio as a supplementary measure to the Basel II risk-based framework with a view to migrating to a Pillar 1 treatment based on appropriate review and*

calibration. To ensure comparability, the details of the leverage ratio will be harmonized internationally, fully adjusting for differences in accounting. All major G20 financial centers commit to have adopted the Basel II Capital Framework by 2011.

- *Reforming compensation practices to support financial stability: Excessive compensation in the financial sector has both reflected and encouraged excessive risk taking. Reforming compensation policies and practices is an essential part of our effort to increase financial stability. We fully endorse the implementation standards of the FSB aimed at aligning compensation with long-term value creation, not excessive risk-taking, including by (i) avoiding multi-year guaranteed bonuses; (ii) requiring a significant portion of variable compensation to be deferred, tied to performance and subject to appropriate clawback and to be vested in the form of stock or stock-like instruments, as long as these create incentives aligned with long-term value creation and the time horizon of risk; (iii) ensuring that compensation for senior executives and other employees having a material impact on the firm's risk exposure align with performance and risk; (iv) making firms' compensation policies and structures transparent through disclosure requirements; (v) limiting variable compensation as a percentage of total net revenues when it is inconsistent with the maintenance of a sound capital base; and (vi) ensuring that compensation committees overseeing compensation policies are able to act independently. Supervisors should have the responsibility to review firms' compensation policies and structures with institutional and systemic risk in mind and, if necessary to offset additional risks, apply corrective measures, such as higher capital requirements, to those firms that fail to implement sound compensation policies and practices. Supervisors should have the ability to modify compensation structures in the case of firms that fail or require extraordinary public intervention. We call on firms to implement these sound compensation practices immediately. We task the FSB to monitor the implementation of FSB standards and propose additional measures as required by March 2010.*

- ***Improving over-the-counter derivatives markets: All standardized OTC derivative contracts should be traded on exchanges or electronic trading platforms, where appropriate, and cleared through central counterparties by end-2012 at the latest. OTC derivative contracts should be reported to***

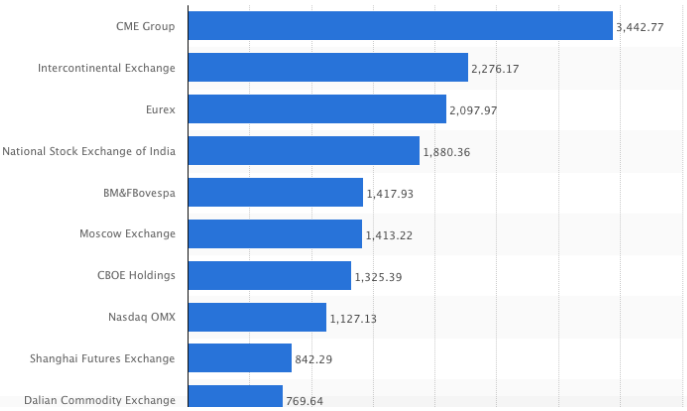
trade repositories. Non-centrally cleared contracts should be subject to higher capital requirements. We ask the FSB and its relevant members to assess regularly implementation and whether it is sufficient to improve transparency in the derivatives markets, mitigate systemic risk, and protect against market abuse.

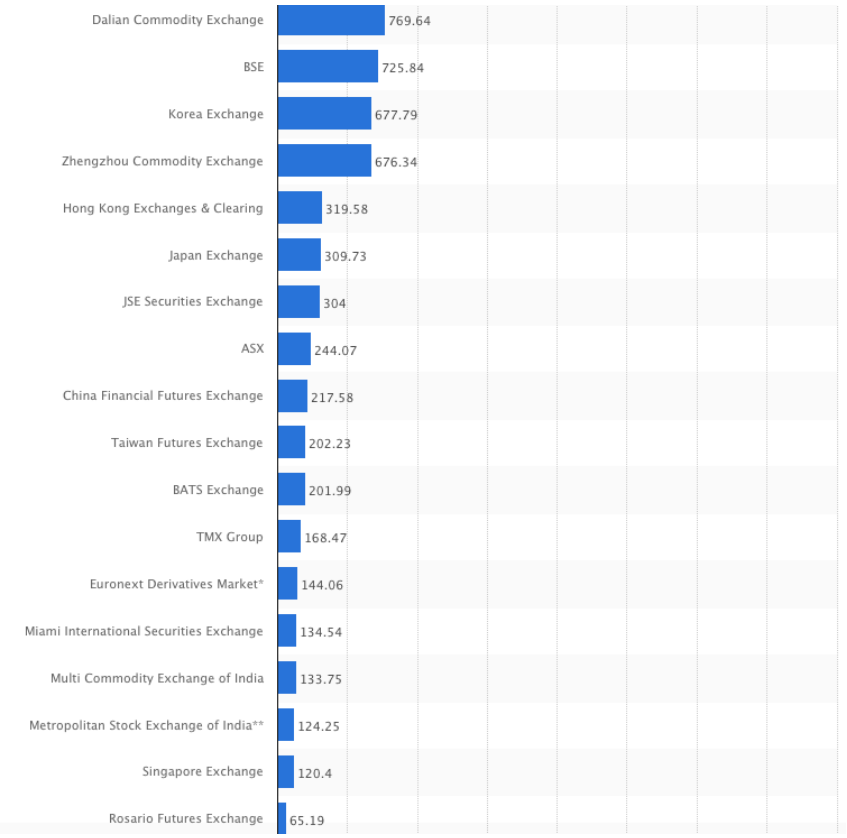
- ***Addressing cross-border resolutions and systemically important financial institutions by end-2010: Systemically important financial firms should develop internationally consistent firm-specific contingency and resolution plans. Our authorities should establish crisis management groups for the major cross-border firms and a legal framework for crisis intervention as well as improve information sharing in times of stress. We should develop resolution tools and frameworks for the effective resolution of financial groups to help mitigate the disruption of financial institution failures and reduce moral hazard in the future. Our prudential standards for systemically important institutions should be commensurate with the costs of their failure. The FSB should propose by the end of October 2010 possible measures including more intensive supervision and specific additional capital, liquidity, and other prudential requirements.***

Appendix 2 – Statista: Largest Derivatives Exchanges Worldwide in 2014, by Number of Contracts Traded

Largest derivatives exchanges worldwide in 2014, by number of contracts traded (in millions)

The statistic presents the world's leading derivative exchanges in 2014, by number of contracts traded and/or cleared. CME Group, incorporating Chicago Mercantile Exchange, Chicago Board of Trade and New York Mercantile Exchange, proved to be the largest derivatives exchange operator in 2014, with approximately 3.44 billion of contracts traded.





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