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The Role of Credit Default Swaps on Financial Market Stability

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Abstract

The role of credit default swaps (CDS) in the financial crisis has been debated among regulators, market participants and academics since early 2008. CDSs are derivative instruments which enable market participants to transfer or redistribute credit risk. However, the size of the CDS market, combined with its structural opacity, concentration and interconnectedness, may be a sign that the CDS market also poses a systemic risk to financial market stability. The purpose of the article is to investigate the role of credit default swaps on financial market stability. The impact of credit default swap markets on financial market stability crucially depends on market mechanisms, and capital- liquidity requirements in financial markets.

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1. Introduction

In the past nine years, the CDS market has grown into a multi-trillion dollar national market with participants from nearly every sector of the financial world. The popularity of CDSs created about \$60 trillion market [1]. The role of credit default swaps (CDS) in the financial crisis has been debated among regulators, market participants and academics since early 2008.

CDSs are derivative instruments which enable market participants to transfer or redistribute credit risk. Given the liquid nature of the CDS market, it is also a useful source of information on the price of credit under normal circumstances. However, the size of the CDS market, combined with its structural opacity,

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concentration and interconnectedness, may be a sign that the CDS market also poses a systemic risk to financial market stability.

The ongoing financial market turmoil has highlighted the importance of counterparty risk in the over-the-counter (OTC) derivative markets, as shown by the acute difficulties experienced by major dealers and other market participants, such as Bear Stearns, Lehman Brothers and AIG. These cases have highlighted the typically opaque linkages within the OTC markets, which have created a situation where market participants may be too big or interconnected to fail [2].

The purpose of the article is to investigate the role of credit default swaps on financial market stability. This article proceeds in the following manner. Firstly, we provide an overview of credit default swaps. Secondly, we give the size of credit derivative market and growth in financial markets. Thirdly, we highlight the relevant issues dealing with the role of credit default swaps on financial stability. Finally, we present concluding remarks.

2. An overview of credit default swaps

A CDS is a privately negotiated bilateral contract in which one party A, usually known as the protection buyer pays a fee or premium to another B, generally referred to as the protection seller to protect himself against the loss that may be incurred on his exposure to an individual loan or bond as a result of an unforeseen development. This development is usually known as a ‘credit event’, indicating that the on which the CDS has been written is unable to pay its debts. If a credit event occurs, the seller of protection will make a payment to the buyer of the contract. CDS can differ in the specification of the default payment. Possible alternatives are following: physical delivery of one or several of the reference assets against repayment at par, notional minus post-default market value of the reference asset (Cash Settlement) and a pre-agreed fixed payoff, irrespective of the recovery rate (Digital CDS) [3].

The first CDS products were relatively simple transactions in which a protection buyer would make payments to a protection seller in exchange for the right to receive a payment upon the occurrence of certain credit events with respect to a specified corporate, the transaction being akin to insurance against credit risk. [4].

CDS transfer the risk that a certain individual entity defaults from the “protection buyer” to the “protection seller” in exchange for the payment of a premium. They are the most frequently traded credit derivative. Commonly, CDS have a maturity of one to ten years with most of the liquidity concentrated on the five year horizon [5].

There are three main types of CDS. First, the “single-name CDS” offers protection for a single corporate or sovereign reference entity. Second, CDS indices are contracts which consist of a pool of single-name CDSs, whereby each entity has an equal share of the notional amount within the index. Market participants have come to view the CDS indices as a key source of price information. Third, basket CDSs are similar to indices, as they relate to portfolios of reference entities, which can comprise anything from 3 to 100 names. However, basket CDSs may be more tailored than index contracts and are more opaque in terms of their volumes and pricing [2].

CDSs can be used to hedge the credit risk of on-balance sheet assets (e.g. corporate bonds or asset-backed securities) by acquiring CDS protection on them. Such protection provides capital relief and insures the acquirer of protection against credit losses (assuming the terms of the CDS contract provide for perfect hedging). Commercial banks and other lenders are natural buyers of CDS protection for such purposes, while highly rated dealers, insurance companies, financial guarantors and credit derivative product companies were the typical protection sellers prior to the financial crisis[2].

They can also be used to hedge counterparty exposure. As part of their daily trading activities, dealers take on unsecured exposures to other financial institutions. Credit default swaps provide a mechanism for the hedging of such counterparty exposures and are highly sought after by market participants during

periods of considerable market distress. They provide protection by producing a gain if credit spreads on their counterparties widen [2].

A key difference between a CDS and an insurance policy is those buying a CDS can trade in and out of their contracts in a way that is not possible in the insurance market [3]. Insurance policies (such as health insurance or auto insurance) are generally required by the government to be sold by regulated entities, and those purchasing insurance must own the underlying asset. This gives the investor a lot of leeway when it comes to the application of the CDS [6].

A CDS provides insurance against losses arising to creditors from a firm's default and the CDS market quote is the cleanest available measure for the market price of corporate default risk [5]. The credit default swap market is also one of the purest and most responsive indicators of corporate financial health. They offer a great deal of information that can be profitably used by asset managers. If properly used, the data on CDS spreads for reference entities can alert regulators to problems at individual banks, securities firms, or insurance companies. Even more important, it can assist investors and creditors in exerting market discipline over financial institutions. In light of the general failure of regulation for controlling risk-taking, the enhancement of market discipline is extremely important [7]. Moreover, they provide liquidity and allow managers to match risks to their strongest views. CDS returns come with minimal additional risk: a balanced long-short portfolio using CDS has a lower VaR than a traditional long-only cash portfolio [3]. CDSs are increasingly used as price indicators for other markets, including loan, credit and even equity markets. Thus, these instruments are playing a broader role in the determination of prices.

The recent financial crisis has focused the world's attention on CDS transactions. In particular, as part of the re-assessment of risk in the credit markets, concerns have been expressed about the CDS market's largely unregulated environment and opaqueness. In the midst of the turmoil in the financial markets, regulators have become increasingly concerned with systemic and counterparty risk and also with the perceived lack of transparency, liquidity and efficiency in the CDS market [4]. When protection sellers are inadequately capitalised, over-the-counter CDS markets may act as channels for contagion and systemic risk. If a CDS protection seller has insufficient reserves to cover CDS liabilities, the underlying credit event also results in the default of the protection seller, thus widening the scope for contagion. Using a network-based measure of systemic risk, a research shows that a CDS market where protection sellers may lack liquidity for CDS default payments leads to an increase in default contagion and systemic risk [8]. On the other hand, a CDS market where all major dealers participate in a central clearing facility with adequate reserves can actually contribute to mitigating systemic risk [9].

CDSs are not only risk management tools for banks but also contribute to the completeness of the market, by providing market participants with a possibility to take a view on the default risk of a reference entity, on a company or a sovereign borrower [2].

Following table indicates the basis effects of CDS in terms of positive and negative size. While positive effects includes delivery option, issuance of new bonds, short selling abilities and repo specialness, the negative effects focuses on counterparty risk, bond illiquidity and funding risk.

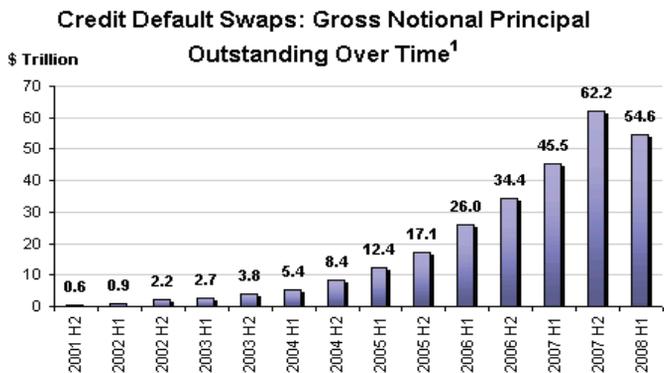
Table 1. Basis Effects of CDS

Positive	<p>Delivery option The protection buyer has the choice to deliver any acceptable bond and receive par value.</p> <p>Issuance of new bonds Pushes up demand for insurance, resulting in a higher price of protection.</p> <p>Short selling abilities In the case the issuer's credit standing deteriorates, CDS spreads react more quickly as demand for insurance increases.</p> <p>Repo specialness Repurchase agreements on certain bonds that are deliverable will increase CDS spreads as such bonds will not be available.</p>
Negative	<p>Counterparty risk Premium compensating for the risk that the protection seller defaults.</p> <p>Bond illiquidity Although the effect can be ambiguous, illiquid paper mostly trades at higher spreads and therefore reduces the respective basis.</p> <p>Funding risk The protection seller does not incur funding risk like he would have when replicating the swap by buying the underlying with funds borrowed at the risk-free rate.</p>

Source: Andritzky and Singh, 2006

3. The size of credit default swaps

The following figure shows that the size of the CDS is markedly increasing since 2001. The volume of CDSs exploded from \$1 Trillion in 2001 to \$54.6 Trillion in 2008. The size of the CDS rose more than 50 times.



Source: ISDA

Following figure also shows the CDS as a notional amounts. According to figure 2, the notional amounts of CDS started to decline since the mid of the 2008 because of the global financial crisis. Similarly, the gross market values of CDS started to diminish at the end of the 2008 (Figure 3).

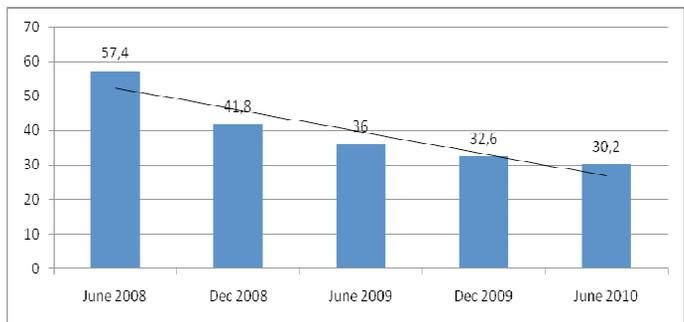


Fig. 2 Notional Amounts of CDS, trillion dollar (Source: BIS.)

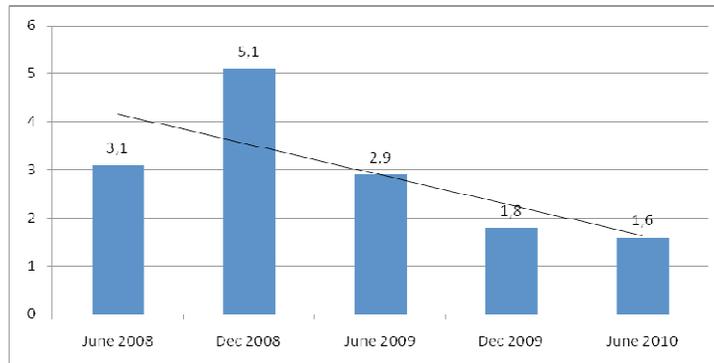


Fig. 3 Gross Market Values of CDS, trillion dollar (Source: BIS.)

4. The role of credit default swaps on financial market stability

The credit default swap market has grown much faster than other derivatives markets since its inception. Even though it is dwarfed by the interest rate derivatives market, which is eight times larger, its growth has affected the stability of the financial system. CDS were originally designed as a risk transfer tool to allow investors to hedge their position in the debt of a reference entity, but much of the activity in this market is also speculative [10].

Credit default swaps have been blamed for financial instability and generating systemic risk. Much of the blame has to do with the supposed role of speculative credit default swaps in pushing up CDS spreads of entities in distress, thus making it harder for them to access the debt markets. Statesmen have been quoted as blaming CDS markets as responsible for the deterioration of their sovereign debt, the most recent example being Greece. No empirical evidence has been offered to back such anecdotal claims. According to figures from the Depository Trust and Clearing Corporation, CDS positions on Greece amounted to USD 9.2 billion in March 2010, up from USD 7.4 billion in 2009, less than 2.5% of the Greek government bond market, which exceeds USD 400 billion. One might argue that it is a case of informational contagion, where CDS markets generate a panic in the debt market. In fact, in the case of Greece, CDS spreads have closely tracked bond spreads in 2010, showing no evidence of one leading the other in a significant way. Finally, there is no evidence that BaFin's May 2010 ban on 'naked CDS' has had any stabilising effect on the sovereign debt market [9].

A number of lessons have been learned from a steady string of credit events since the onset of the crisis. These lessons apply both to the exposure of market participants and to the resilience and robustness of the CDS market. The Lehman Brothers default illustrated the problems caused by the lack of information available to individual participants before a credit event occurs. Initial media estimates suggested that total gross insurance claims would amount to USD 400 billion, much higher than Lehman's bond debt of USD 150 billion or less. But preliminary estimates from ISDA, based on the auction, give a net figure of USD 7 billion only. According to DTCC, USD 72 billion in CDS was settled normally through the automatic settlement procedure on 21 October 2008, without incident. This made it possible to calculate the funds transferred from net protection sellers to net protection buyers at just USD 5.2 billion, or 7% of the notional amount. As a result, fears of serial default among protection sellers unable to settle their claims proved baseless [11].

Looking at the auctions held since the crisis began, it can be seen that funds transfers arising from reference entity defaults have been fairly small. According to DTCC data, the ratio of gross notional CDS amounts to net funds transfers has rarely topped 10% (Table 2). Furthermore the credit events that

occurred in 2008 and 2009 were handled smoothly, thus demonstrating the efficiency of the auction protocols, with a participation rate in excess of 95%. [11].

Table 2. Most Recent Credit Events

Reference Entity	Affected transactions	Settlement date	Gross Notional (USD Equiv)	Net funds Transfers (USD Equiv)
Fannie Mae Freddie Mac Tembec	Single Name and index	15 October 2008	99 billion	0.43 billion
Lehman Bros. Inc	Single Name	21 October 2008	72 billion	5.2 billion
Washington Mutual	Single Name	7 November 2008	41 billion	1.4 billion
Landsbanki, Glitnir, Kaupthing	Single Name	20 November 2008	71 billion	4.65 billion
Tribune Company, Index	Single Name	16 January 2009	24.9 billion	2.65 billion
Republic of Ecuador,	Single Name Index	23 January 2009	2.6 billion	0.3 billion
Lyndell Chemical Millennium America Equistar Chemicals	Single Name, Index	10 February 2009	7.8 billion	0.45 billion
Nortel Networks	Single Name, Index	18 February 2009	5.6 billion	0.52 billion
Smurfit	Single Name, Index	26 February 2009	4.3 billion	0.44 billion

Source: Duquerroy et. al., 2009.

CDS markets have come to play an informational role in credit markets, where CDS spreads are widely regarded as a market consensus on the creditworthiness of the underlying – corporate or sovereign-entity. This is also reflected in the market practice of computing the *implied default probability* of an entity from its CDS spreads and using such default probabilities for the pricing of credit derivatives. A study indicates implied survival probabilities for Lehman Brothers implied from CDS quotes on September 8, 2008, shortly before Lehman’s default. The Lehman Brother’s case should temper any wild claims as to the “forward-looking” nature of the CDS spreads. Moreover, the implied default probabilities and hazard rates depend on the assumption used for recovery rates, which are themselves subject to a large uncertainty. Nevertheless, CDS spreads are useful indicators of credit risk, especially in contexts where the underlying debt markets are less liquid [9].

The volatility of CDS premia during the crisis has affected risk assessment on other markets. The reason for the market’s rapid expansion is that CDS, like all derivatives, are not used solely for hedging purposes; investors also use them as trading instruments and hold them in the trading book. Transactions aimed at generating a direct profit from trading strategies are partly responsible for the liquidity of this market and also its volatility. This is significant because movements in the CDS market are not without consequence: when CDS premia fluctuate, market participants revisit their default probability expectations for reference entities. For example, the recent sharp rise in sovereign CDS premia in Europe, the United States and Japan is likely to produce default probabilities that bear little relation to these countries’ economic fundamentals. Between early 2008 and end-September 2008 the CDS of the highest-rated and reputedly safest countries, including Germany and France, traded at a premium of several basis points. Premia for lower rated countries such as Greece, Spain and Italy amounted to some tens of basis points. Following the collapse of Lehman Brothers most developed countries introduced plans to shore up

their financial systems. As a result of these programmes, which consisted in taking stakes in the largest ailing banks or guaranteeing some of their liabilities, risk was transferred from the banking industry to governments. This prompted market participants to review their expectations for sovereign default probability. The premia on these countries' CDS soared, creating fresh opportunities in a market that had not been actively traded so far [11].

In addition, the emergence of the developed sovereign CDS market has implications for the economy as a whole. CDS are seen as a bellwether for risk pricing, and the correlation between sovereign CDS premia rose sharply post-Lehman to reach a level comparable to that between the premia on bank CDS. This reflects a disconnect between the market and the economic fundamentals of each developed country, which differ structurally. So although notional CDS volumes are small in relation to sovereign debt, the increase in sovereign risk evidenced in CDS premia affects the financing of the economy and sends out a negative signal for the future ratings of developed countries [11].

Researchers examine sovereign CDSs, which have attracted attention since the emergence of the fiscal deficit problem in Greece, with particular focus on the expansion of the sovereign CDS market, the relationship between CDS premiums and fiscal risk variables, and the international co-movement of CDS premiums. Their analysis reveals the following: (1) CDS transaction volume has recently expanded rapidly, mainly reflecting the significant increase in fiscal expenditure in some countries and the heightened awareness of European sovereign risk; (2) however, the degree of interrelation between CDS premiums and actual fiscal risk varies by country; and (3) concerns over sovereign risk in some continental European countries may have spilled over to other countries, as seen in the increase in the international co-movement of CDS premiums among major countries [12].

The changes in Greek sovereign CDS premiums have been caused largely by idiosyncratic factors. In a situation where market participants are aware of the deterioration in the fiscal situation of some countries, Greek sovereign CDS premiums have widened further due to idiosyncratic factors such as the significant upward revision of the outlook for Greece's fiscal deficit in 2009. As for sovereign CDS premiums for other European countries and major countries, an upward trend of the idiosyncratic factors is observed while recently other factors have operated more strongly. Other factors have played a significant role particularly in the United States and Germany. As sovereign risks have attracted attention since the emergence of the fiscal deficit problem in Greece, market participants have begun to increase their speculative purchases of sovereign CDS protection for countries other than Greece and conduct arbitrage transactions [12].

A more serious concern is the counterparty risk generated by the default of large protection sellers, as exemplified by the failure of AIG (to pay margin calls on its CDS positions). In a concentrated dealer market such as the CDS market, the default of a dealer can affect many market participants and generate domino effects and default contagion. In presence of a CDS market, the default of an entity incurs losses not only for its counterparties but also for protection sellers in credit default swaps written on this entity. If a CDS protection seller has insufficient reserves to cover CDS liabilities, the underlying credit event also results in the default of the protection seller, thus widening the scope for contagion [9]. One study shows that a CDS market where protection sellers may lack liquidity for CDS default payments leads to an increase in default contagion and systemic risk [8]. Interestingly, whether a CDS is 'speculative' or not is irrelevant here: this is determined by whether the protection buyer is exposed or not to the underlying bond, whereas counterparty default occurs if the protection seller lacks adequate reserves for paying the default leg of the CDS. A key issue therefore seems to be not the distinction between speculative and non-speculative CDS but the adequate management of counterparty risk in the CDS market [9].

Another study [13] shows that in Asia, CDS trading has had positive impacts on bond market development in terms of lowering average spreads and enhancing the market liquidity before and in the early stage of the recent international financial crisis. This finding supports the diversification and information hypotheses, and justifies continued development of active CDS markets in the region [13].

5. Conclusion

This article concludes following results. The CDS market has experienced phenomenal growth that has attracted the interest of dealers, investors, and regulators. It is critical to understand the potentials for loss before embarking on CDS trading strategy. However, the information and opportunity provided by the CDS markets is increasingly vital to survive financial institutions. The impact of credit default swap markets on financial market stability crucially depends on market mechanisms, and capital- liquidity requirements in financial markets. CDS will likely continue to change the landscape of credit markets through the recovery process.

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