

Credit Default Swaps (CDS)

The significant development and growth in the financial markets over the past years gave rise to a number of new financial instruments. The instruments mentioned and discussed the most are credit default swaps (CDS). They are blamed for contributing widely to the global financial crisis. The purpose of this report is to give an overview of what CDS contracts are, how they are traded and what one should consider before investing in this type of instrument.

Description

A CDS is a contract whose buyer makes regular payments to the seller and in return gets a lump sum in the event that the issuer defaults on an underlying instrument (typically a bond or a loan) or is subject to restructure. A CDS contract typically consists of three elements:

- the reference, which is the underlying credit instrument that is to be insured by means of a CDS contract;
- the buyer who wishes to protect against the risk of the reference being unable to repay the loan;
- the seller who, in the event of default on the reference, must pay the principal to the buyer.

A CDS is thus comparable to an insurance because the buyer pays a premium and receives a lump sum if a certain event occurs. Yet there are a number of points on which a CDS differs from a traditional insurance policy:

- the buyer of a CDS need not own the underlying instrument or have any other form of exposure to the reference; in connection with traditional insurance, the buyer is required to have some form of exposure to the insured asset;
- the seller of a CDS need not be a regulated or registered entity;
- the seller of a CDS is not required to put aside any amount to pay the buyer in case of a credit event; but the biggest traders in CDS contracts are often banks which are subject to capital adequacy requirements;
- traditional insurance companies handle risk by putting aside capital on the basis of probability calculations, whereas CDS dealers hedge risk on other dealers and transactions in underlying bond markets.

Overleaf is an illustration of a typical CDS contract:

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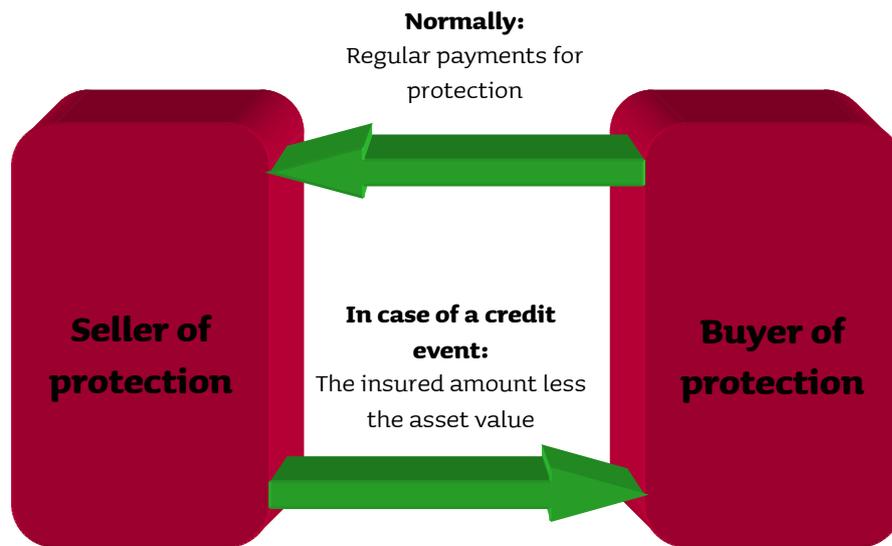
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As mentioned above, a CDS contract must be closed if a credit event as defined in the contract occurs. When the event occurs, the buyer of the contract must receive the difference between the actual value of the reference asset and its face value. Closure of the contract can take place in either of two different ways. One of them is physical settlement meaning that the buyer must deliver the reference asset physically to the seller who must then pay the face value of the asset. The other is cash settlement meaning that the seller pays the difference between the face value of the asset and the value after the occurrence of the credit event.

Spreads

To find out how much it costs to buy a CDS on a given reference, you will have to find the spread. The spread is the number of base points to be paid to the seller of the CDS contract in relation to the face value of the contract. If the spread is 100 bp, the regular payments to the seller will be 1% of the total insured amount. The spread at which a given CDS contract trades reflects the market participants' view on the risk of default on the part of the reference issuer. CDS spreads thereby also reflect the credit rating of the reference company, so a liquid CDS market should give an indication of whether a company is likely to be up- or downgraded by the rating agencies.

CDSs on indices

Just as you can buy and sell CDS contracts on individual references, there are contracts which cover a mixed group of references and also standardised indices of references. The most widely-used indices are CDX and iTraxx which come in a number of variants consisting of 25-125 reference companies. If you have bought a CDS contract on an index, and a credit event occurs for one of the relevant companies, the seller of the contract must pay the respective issuer's weighting in the index times the insured amount to the buyer of the contract. Then the insured amount (the principal) is reduced by the same percentage, and the contract continues as before except that the regular payments will be nominally smaller, since the buyer only has to pay the spread times the new principal.

Standardisation

CDS contracts in the form in which we know them today were first 'invented' by people at JPMorgan Chase who sold its credit risk on Exxon on to the European Bank of Reconstruction and Development. The market for these contracts grew drastically over the following years. The contracts were not traded in a decidedly open market, but individual contracts were made for each deal, which was often made via the phone between two banks. This meant that every time a certain credit risk was traded, a new contract was created with a new spread. The outcome was that the outstanding contracts could not be matched against each other, so it became well-nigh impossible to see who owed whom money in case

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of default. The growing trade in those contracts in combination with the fact that a new contract was created for every deal took the gross value of the CDS market in 2007 to no less than USD 45bn, although the real net worth must have been much lower once all the extra contracts were offset.

In 2003 the International Swaps and Derivatives Association (ISDA) issued a number of standards of how CDS contracts should be formulated; clear definitions of credit events; and protocols for how contracts should be settled in practice. ISDA's objective was to standardise the CDS market more and render it more transparent for investors. The newest initiative of ISDA was implemented in April 2009. It introduced firm standards which make it possible to trade CDS contracts without generating new contracts for every deal. Earlier it was a problem that the spread at which buyers and sellers wished to deal on a certain day was not necessarily the same as for the original contract. Therefore it was necessary to create a new contract tailored for each deal. This has been changed so that the CDS contracts can only be made at spreads of 100 or 500 bp in North America, while in Europe they can be made at spreads of 25, 100, 500 and 1000. If, for instance, you wish to enter a contract at 128 bp, you use a 100-bp contract and pay the remaining 28 bp to the seller up front. This means that a contract can be traded several times, since the market price is reflected in the amount paid when the deal is struck instead of being included in the spread.

Usage

Like most other financial instruments, CDSs can be used for three purposes by investors:

- speculation
 - CDS contracts let investors speculate in changes in credit risk for individual issuers or market indices, such as the North American CDX or the European iTraxx indices. If an investor finds that the prices of a company's CDS and its underlying bond are in disequilibrium, he can benefit from this by entering what is called a CDS basis trade which combines a CDS with an ordinary bond and an interest-rate swap. Or he could speculate in whether an issuer's credit rating changes, since the CDS spread tends to rise if the rating is lowered and to fall if the rating is raised. If you expect an issuer to be about to have its rating upgraded, you could sell protection on the issuer's issues and afterwards profit on the fact that the spread contracts.
- Hedging
 - The original purpose of CDS contracts was to create the possibility of managing credit risk. The borrower or the holder of a corporate bond risks a loss if the borrower defaults. That risk can be hedged by entering into a CDS as a buyer of protection. Then the lender is certain of the loan being repaid even if the borrower should go bankrupt.
- Arbitrage
 - Capital structure arbitrage means benefiting from market inefficiency between the various parts of a company's capital structure. The technique rests on the assumption that a company's share price and CDS spread should theoretically correlate negatively, i.e. if the prospects of a company improve, the share price will rise, whereas the CDS spread will contract as the risk of the company going bankrupt declines. If adverse news is distributed about a company and results in a share price fall, while the CDS spread does not move, there will in theory be an arbitrage opportunity in buying CDS protection as well as the underlying share at the same time. The buyer would subsequently be able to take profit if the CDS spread widened afterwards as expected.

Central clearing

As mentioned above, one of the biggest problems involved in CDS trading was the fact that the contracts were not registered centrally, and that it was therefore impossible to offset the contracts against each other. The new ISDA standards were implemented with the purpose of securing central

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registration and set-off. Standardisation and central registration of the contracts will involve many advantages, including the following:

- counterparty risk can be reduced sharply – almost out of existence; the registration house will act as a central counterparty which offers security for all open positions through all its members, and it will be possible to set off claims between all counterparties of CDS contracts; the central registration houses will be guaranteed collectively by the entire market and should not carry any significant risk themselves, if things function as planned;
- independent daily valuations of all open positions will be possible, which would enhance market transparency significantly;
- operation efficiency and early order execution would reduce costs of entering the market, which would increase liquidity.

Before the system can become reality and be fully implemented, however, contracts must necessarily be standardised as described above. That is why holders of existing contracts are urged to adapt contracts to fit the new standards or simply replace them with new contracts. Conversion to one of the fixed spreads can in some instances make a biggish cash payment necessary, for instance where the old contract had a spread of 400 and will have to be converted into one with a spread of 300 and cash payment of the remaining 100 bp. This exercise can, however, be avoided by creating two new contracts, each for half the overall amount and with spreads of 300 bp and 500 bp, respectively.

Calculation of up-front payments

For most CDS contracts, pricing will be made via Bloomberg or a similar tool that has been developed for the purpose. The following example is based on Bloomberg's pricing tool, which embraces the new standards.

Deal Information		Spreads	
7)Reference:TDC A/S	RED Pair:KTD999AA1	Curve Date: 9/28/09	Date
Counterparty:	Deal#:	Benchmark: S261 Mid	
Ticker: /	Series:	EU ISDA Fixing Swap Crv	
Business Days: 5D	Settlement Code: EUR	6) 5yr Fix Diff: -2.43bp	
Business Day Adj: 1 Following	Currency: EUR	Pricing Curve: Fixing	
BUY Notional: 10.00 MM	Contract: E STEC	Sprds: C Contributor AAsk	
Effective Date: 7/30/09	First Accrual Start: 9/21/09	120307 EUR Senior IMMI	
Maturity Date: 12/20/14	Day Count: ACT/360	CDS Spreads Default	
Payment Freq: Q Quarterly	First Cpn: 12/21/09	Flat: Y (bps) Prob	
Pay Accrued: T True	Next to Last Cpn: 9/22/14	6/20/10	
Curve Recovery: T True	Date Gen Method: I IMM	12/20/10	
Recovery Rate: 0.4000	Debt Type: Senior	12/20/11	
Deal Spread: 100.000bps	9) Pts Upf (%) 1.087641	12/20/12	
Calculator Mode: 2 Input Upf		12/20/13	
Valuation Date: 9/28/09	Model: 1 ISDA Std Upf	12/20/14	122.970 0.1026
Cash Settled On: 10/1/09		12/20/16	
Price: 98.91235853	Sprd DV01: 4,687.28	12/20/19	
Principal: 108,764	IR DV01: -28.06	Frequency: Q Quarterly	
Accrued: -2,222	Days: 8	Day Count: ACT/360	
Cash Amt: 106,542		Recovery Rate: 0.4000	

The screen dump shows Bloomberg's credit default swap valuation page (CDSW) and refers to a 5-year CDS contract for TDC, which at the time of writing traded at 122.9 bp. The screen shows that the duration is almost EUR 4,687.28 per bp, so when the contract trades at 22.97 bp above par, those points must be paid up front at $22.97 \times \text{EUR } 4,687.28 = \text{EUR } 107.667$ corresponding to a little more than 1%

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of the insured sum (shown at “Pts Upf”). To arrive at the final up-front payment, accrued interest should be deducted. In this case, accrued interest for eight days should be deducted, since it is a very short time since coupon payment was made. Accrued interest is calculated as $100 \text{ bp} \times \text{EUR } 10,000,000 \times 8/360 = \text{EUR } 2,222$. This brings the total up-front payment for this CDS to EUR 106,542.

When the figures of the calculation are not quite identical to the Bloomberg figures, this is because the Bloomberg calculation of up-front points is reached by ‘bootstrapping’ – i.e. the same calculation is repeated until you get sufficiently close to the right value. This is necessary because the duration declines in step with the widening of the CDS spread.

Auctions

As mentioned earlier, CDS contracts can be settled in two ways if a credit event occurs: in physicals or in cash. In case of settlement in physicals, the real value of the underlying bonds is not of great importance, because the seller of the CDS contract has to pay the full stated value. In case of settlement in cash, however, it is necessary to know the market value of the underlying reference asset to find out how much is to be paid. This is achieved by means of an auction (a credit-fixing event). The objective of holding auctions is to settle a large number of contracts at the same time. Auctions are held by Creditex and Markit which have developed the protocols for the purpose in collaboration with ISDA and a number of investment banks. In practice, a number of the organisation’s members (typically investment banks) all state bid and offer prices for the assets in question. On the basis of those prices, and several more steps, the final price is reached which can be used in connection with cash settlement of CDS contracts.

Conclusion

Looking back, the market for CDS contracts has until very recently been characterised by a lack of general rules, regulation or any possibility of controlling the volume of contracts or counterparty risk. This meant that up to and about the collapse of Bear Stearns there was widespread panic among the big players in this market. However, in the course of 2009 the market has developed extensively which has rendered it much more transparent, and more improvements in the near future will be forthcoming, particularly with regard to registration and set-off. This is important for making the market safe and accessible to the investors while liquidity is improved thanks to the standardisation of the contracts.

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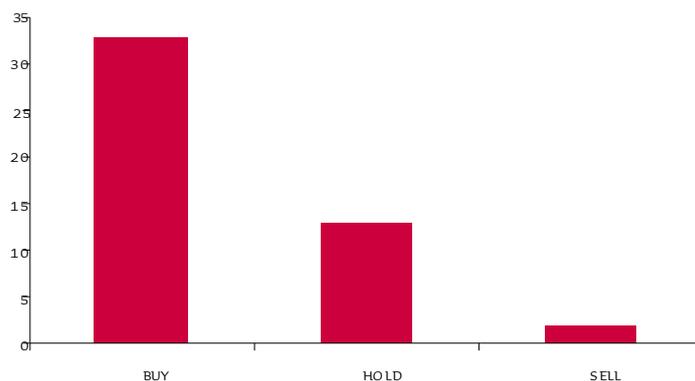
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Breakdown of recommendations, corporate bonds (number)



Source: Jyske Bank

Financial models

Jyske Bank uses mainly Credit Edge from Moody's.

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Update of the research report

The planned update of the report will be prepared immediately upon the release of the company's financial statements.

See the front page for the initial date of publication of the report.

All prices stated are the latest trading prices at the time of the release of the research report, unless otherwise stated.

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The future and historical returns estimated in the research report are stated as returns before costs since returns after costs depend on a number of factors relating to individual customer relations, custodian charges, volume of trade as well as market-, currency- and product-specific factors.