## Annex to chapter I

# CREDIT DEFAULT SWAPS

A credit default swap (CDS) is a derivative financial instrument in which one party buys protection against the default on a given debt instrument. This annex describes the main characteristics of CDSs and discusses their potential costs and benefits.

The origin of the CDS market dates back to the early 1990s when, in the aftermath of the Exxon Valdez oil spill of March 1989, the United States bank, JP Morgan, bought protection against a possible Exxon default from the European Bank for Reconstruction and Development (EBRD). This contract reduced JP Morgan's exposure to Exxon and increased the return on EBRD reserves that could only be used to lend to high rated borrowers (Tett, 2009).

In the second half of the 1990s, regulators and internal risk managers agreed that CDSs were an effective means of dispersing risk, and allowed banks to use these instruments to reduce their capital. As a result, the CDS market started to grow very rapidly: in 2005, the notional value of all CDSs tracked by the Bank for International Settlements (BIS) was about $10 trillion, and by the end of 2007 it had surpassed $58 trillion (about $3 trillion higher than the world GDP in that year).

Before the latest financial crisis, many regulators, especially in the United States, were enthusiastic about the risk diversification properties of CDSs. For instance, in 2006 Alan Greenspan argued that what CDSs did was "lay-off all the risk of highly leveraged institutions … on stable American and international institutions" (quoted in Das, 2008). However, many of these institutions did not turn out to be as stable as expected and are now either bankrupt or in life support. As a consequence, many observers now share UNCTAD's original scepticism on the social value of innovative financial instruments (*TDR 2009*) and the regulation of CDS and other derivative instruments plays a prominent role in the global debate on financial reform.[1]

### Description and terminology

In a CDS, the *buyer* makes periodic payments (*the spread*) to the *seller* in order to be protected against default (*credit event*) on a debt instrument (the *reference obligation*) by a given borrower (the *reference entity*). The difference between a bond spread and the CDS spread is usually referred to as the *basis*.[2]

The reference entity can be a corporate borrower or a sovereign State. CDS contracts written on sovereign States are usually referred to as sovereign CDS. A CDS contract on a corporate borrower can be triggered by the bankruptcy of the reference entity. As the concept of bankruptcy does not apply to sovereign States, a sovereign CDS can only be triggered by one of the following three events: (i) failure to pay the interest or principal on a bond or loan; (ii) an announcement of the intention to suspend payments (moratorium); or (iii) a change in the contractual terms in a way that puts creditors at a disadvantage

(for instance, a change in the currency of denomination of the debt instrument or an extension of the maturity of the debt instrument).

If a credit event does take place, the CDS can be settled either by physical delivery or in cash. When settling by physical delivery, the buyer delivers the defaulted debt instrument to the seller and receives a payment equal to the face value of the instrument (this is the *notional principal* of the CDS). When settling in cash, the seller makes a payment to the buyer equal to the difference between the par value and the market price of the reference obligation. CDS contracts specify how the market price of the reference obligation is to be measured. Originally, CDS contracts were tailored to the specific needs of their buyers and sellers; now most CDS contracts follow standard forms designed by the International Swaps and Derivatives Association.

When a CDS is used to hedge or transfer an existing credit risk, the party that buys protection eliminates (or reduces) its credit risk and the party that sells the CDS increases its total credit risk. By contrast, a naked CDS is a contract which is not matched by the underlying credit risk. After the transaction, the buyer is short on credit risk and the seller is long on credit risk. Naked CDSs are normally used to short the underlying instrument with the aim of making a profit if the value of the instrument decreases or a default does indeed happen.

### CDS and insurance contracts

Insurance and CDS contracts are similar in the sense that in both cases the buyer makes a periodic payment and receives a much larger sum of money if a given event takes place.

Even though CDSs operate like insurance contracts, they are not classified as insurance and thus escape regulation.[3] CDS contracts are thus exempt from regulation that requires the presence of an insurable interest (which would make naked CDSs illegal) and that the insurer holds adequate reserves based on actuarial risk. Since unregulated sellers of CDSs do not need to hold reserves and do not use actuarial models to price their instruments, they try to hedge their risk with other market operations, and price and value CDS contracts on a mark-to-market basis by using arbitrage relationships with other market instruments. However, CDS contracts can transfer but cannot eliminate credit risk. Therefore, the credit risk remains in the system but it becomes more difficult to track and identify. Consequently, CDSs may reduce transparency and amplify counterparty risk and price volatility especially because fluctuations in CDS spreads feed back into market prices leading to a vicious circle of high volatility.

### CDS price and default risks

There are several problems with the assumption that market signals like CDS spreads (or bond spreads) are good measures of default risk. The most basic problem is that spreads are too volatile to reflect changes in slow moving fundamentals.[4] Price volatility is driven jointly by changes in the expected loss from default and changes in the overall risk premiums, with the latter factor accounting for approximately four fifths of the volatility of all spreads (Remolona, Scatigna and Wu, 2007). In the case of sovereign debt, risk premiums are driven mainly by global factors and have little to do with domestic fundamentals (González-Rozada and Levy Yeyati, 2008). Therefore, it is hard to conclude that sovereign spreads are a good measure of default risk.

Moreover, price discovery in the CDS market is limited by the fact that trading in this market tends to be thin. Even though arbitrage imposes a tight long-run relationship between CDS spreads and bond spreads, the short-run relationship between these two spreads (as measured by the basis) is far from being stable; it is affected by liquidity in the two markets and by contractual details (such as the definition of the trigger event and the deliverable obligation). Based on the observations that CDS spreads are more volatile than spreads in the cash markets, and that the volume of activity on the CDS markets is correlated with the level of the spreads, a recent study by Barclays Capital (2010) concludes that CDS spreads are dubious indicators of default risk.

That CDS spreads are not a good measure of default risk is evident on examining sovereign CDSs for the United Kingdom or the United States. These CDSs had a positive value in February 2009 (when

the spread on United Kingdom sovereign CDSs peaked at 175 basis points and that for United States CDSs peaked at 100 basis points) indicating that there were economic agents willing to pay up to $17,500 each year for a contract that would deliver $1,000,000 if the Government of the United Kingdom defaulted. However, since almost all debt of the United Kingdom is denominated in pound sterling, which that country's Government can print, the probability that the United Kingdom will default is basically zero. (In the worst-case scenario, the country can inflate away its own debt; however, a devaluation of the currency is not considered a credit event.) In the United States, the fact that spreads on its sovereign CDSs have a positive value is even more puzzling. In this case, not only is the probability of a credit event negligible, but also the counterparty risk is close to being infinite. If the United States were to default on its debt, the ensuing financial calamity would probably lead to a general state of default throughout the world. CDS contracts would become completely worthless because no seller of CDSs would be able to deliver on its obligation.[5] To sum up, markets are giving a positive value to an instrument that is supposed to deliver a payment if a near-zero probability event occurs in the full knowledge that if the event were to occur the counterparty would not honour its obligation to make the payment. Even the shadiest Las Vegas casino seems to offer better odds!

As the fundamental value of an asset is the expected net present value of the income stream of the asset, sovereign CDSs for the United States should have zero value. And yet in February 2009 they were trading at a spread of 100 basis points. How is this possible? While there are theoretical models that justify rational bubbles in which assets are priced well above their fundamental value (Blanchard, 1979), these models require a certain degree of uncertainty at the precise moment when the asset will reveal its true value. In the case of a CDS contract with no fundamental value, such uncertainty does not exist because all players know that the true value will be revealed on the day the CDS expires. It is then legitimate to ask why investors are willing to pay a positive price for an asset with zero value.

The answer to this puzzle lies in the fact that most banks have internal regulations aimed at limiting their exposure to corporate and country risk. A European bank with a large exposure to the United States corporate sector can reduce its exposure by buying corporate CDSs, but it also needs to buy sovereign CDSs in order to reduce its exposure to the overall United States risk. Even though these sovereign CDSs are completely useless (for the reasons explained above), the bank will buy them anyway in order to satisfy its own internal rules and reduce the need to hold internal reserves.[6] This suggests that the demand for high-rated CDSs is purely due to the presence of (internal) regulatory arbitrage.[7] Once the demand for these types of instruments becomes established, market participants have an incentive to start trading them and making bets on their short-run movements. In fact, the popularity of naked CDSs indicates that the huge success of the CDS market is not due to the need to cover a certain exposure, but to the desire to bet on the short-term volatility of country spreads.

Valuation problems are even more acute for certain classes of corporate CDSs. In these cases, both the CDS and the reference obligation (which may also be a derivative instrument like a collateralized debt obligation) are thinly traded or not traded at all. Consequently, prices are fully model driven, without price discovery but with large, self-reinforcing and destabilizing feedback amplified by the fact that, in many cases, the notional value of CDS contracts on a given instrument is a multiple of the face value of the reference obligation.

Summing up, CDS spreads overreact to information and market sentiments, and are more likely to amplify fluctuations than to provide accurate information on default risk.

### *Are CDSs socially useful?*

The credit crisis triggered a debate on the social benefits of financial innovation (*TDR 2009*), and CDSs have been at the very centre of that debate. While most economists agree that there are several problems with the current structure of the CDS market (especially with its lack of transparency and centralized clearing), they are divided on the issue of the social benefits of CDSs, especially naked CDSs. Both sides started from the observation that a naked CDS is the best instrument for market participants interested in shorting an asset.[8] Those who emphasize the benefits of CDSs argue that the possibility to go

short facilitates price discovery and may either prevent bubbles or make bubbles burst earlier (Zingales, 2010). They liken CDSs to medical tests, which may reveal painful news, but the sooner one knows, the better. Those who emphasize the costs of naked CDSs argue that these instruments increase volatility and make coordinated runs, speculative attacks and "bear raids" easier (Portes, 2010; and Soros, 2010). As CDS spreads are mostly driven by short-term market sentiments and appear to do a poor job at discovering and measuring default risk, the latter view seems to be more appropriate than the former.

Moreover, while CDSs are often praised for increasing market liquidity, there is evidence that at times of widespread financial distress, speculators become users rather than providers of liquidity (Das, 2010). For all these reasons, in an analysis which applies network theory to financial markets, Haldane (2009) points out that CDSs are akin to horizontal networks that are known to increase interconnectedness and reduce the stability of the system.[9]

While most of the current discussion has focused on the alleged costs and benefits of naked CDSs, there are also potential problems with CDSs used for hedging purposes.

Litan (2009) argues that these derivative instruments provide several advantages in terms of risk sharing, as they allow banks to reduce credit concentration without severing their relationships with well-established customers. While there is some merit to this argument, one should also consider that banks tend to have a large amount of information on their customers, and, when a bank makes a loan and then buys a CDS, the bank is effectively transferring the risk to a party that has less information than the bank (Baker, 2010). This looks more like insider trading than like a transaction with the potential to increase economic efficiency and risk sharing.

CDSs may also be a source of moral hazard. One of the pitfalls of the "originate and distribute" model is that banks that do not plan to keep a credit on their books have limited incentive to invest in credit screening procedures and their lending standards may be more lax (*TDR 2009*). The same applies to lenders that decide to use CDSs to transfer their credit risk to non-regulated third parties. Consequently, CDSs issued for hedging purposes may lead to systemic problems through three channels: (i) an increase in total risk taking; (ii) the transfer of risk to less informed, less regulated and, possibly, less capitalized players; and (iii) an increase in opacity.

Finally, CDSs may increase instability because, in case of default, insured creditors do not have the incentive to avoid socially costly, value destroying liquidation of the collateral.

## Notes

1 For instance, the G-20 Declaration on Strengthening the Financial System of 2 April 2009 includes a commitment to "promote the standardization and resilience of credit derivatives markets, in particular through the establishment of central clearing counterparties subject to effective regulation and supervision." However, the G-20 effort has yet to produce any concrete results, especially as global coordination has since given way to uncoordinated national initiatives.

2 If the risk-free rate on 5-year loans is 5 per cent and 5-year bonds issued by reference entity *x* pay 7 per cent, the bond spread for entity *x* is 2 per cent. If the 5-year CDS spread for reference entity *x* is 2.3 per cent, the basis for reference entity *x* is 0.3 per cent. The basis is not fully arbitraged because of counterparty risk, liquidity and investor preferences. There are in fact instances in which the basis widens because bond spreads and CDS spreads move in opposite directions.

3 The financial services industry lobbied against any attempt to extend insurance regulations to the CDS market or have CDSs regulated by any other body. The market for these instruments expanded very rapidly after the United States Commodity Futures Modernization Act of 2000 exempted them from regulation and supervision by the United States Securities and Exchange Commission.

4 Shiller (1981) was the first to demonstrate that stock prices exhibit greater volatility than the present value of realized dividends.

5 Nassim Taleb put it well in an interview with the *Wall Street Journal* (Heard on the Street, 17 May 2004) when he said that buying sovereign CDSs for the United States is like buying insurance on the Titanic from someone on the Titanic.

6 Alternatively, consider the case of a bank that is exposed to a distressed United States company which is considered too big to fail. It is likely that CDSs on this distressed company will have high spreads. But if the company is indeed too big to fail, internal risk managers may consider a much cheaper sovereign CDS to be equivalent to the more expensive corporate CDS.

7 Basel II regulations do not affect the demand of CDSs for highly rated sovereign debt because there is no capital charge for the debt of highly rated sovereigns.

8 Without CDSs, shorting assets becomes complicated and requires capital. A CDS allows shorting an asset by simply paying the CDS spread.

9 The bankruptcy of the car parts maker Delphi offers a good example of these network effects. At the time of default, Delphi's debt was approximately $4 billion and CDS contracts on Delphi's debt were estimated to range between $20 and $30 billion. A centralized clearing house would have solved some of the problems associated with the large gross CDS positions.

## References


Baker D (2010). Financial innovation: What is it good for (II)? Credit default swaps. TPM blog, 11 March.

Barclays Capital (2010). Sovereign CDS. The canary or the cat? Barclays Capital Global Rates Strategy, 15 February.

Blanchard OJ (1979). Speculative bubbles, crashes and rational expectations. *Economics Letters*, 3: 387–389.

Das S (2008). CDS market may create added risk. *Financial Times*, 5 February.

Das S (2010). Swap tango, a derivative regulation dance. *Eurointelligence*, 3 March.

Haldane A (2009). Rethinking the financial network. Speech delivered at the Financial Student Association, Amsterdam, April.

González-Rozada M and Levy Yeyati E (2008). Global factors and emerging market spreads. *Economic Journal*, 118(533): 1917–1936.

Litan R (2009). In defense of much, but not all, financial innovation. Washington, DC, Brookings Institution.

Portes R (2010). Ban naked CDS. *Eurointelligence*, 18 March.

Remolona E, Scatigna M and Wu E (2007). Interpreting sovereign spreads. *BIS Quarterly Review*, March: 27–39.

Shiller R (1981). Do stock prices move too much to be justified by subsequent changes in dividends? *American Economic Review*, 71(3): 421–36.

Soros G (2010). America must face up to the dangers of derivatives. *Financial Times*, 22 April.

Tett G (2009). Fool's Gold. New York, NY, Free Press.

UNCTAD (2009). *Trade and Development Report*. United Nations Publication. New York and Geneva.

Zingales L (2010). Credit default swaps on trial. Project Syndicate, 19 April. http://www.project-syndicate.org/commentary/zingales2/English.