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# Credit Default Swap as an instrument for risk management

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**Abstract**

The growing market economy poses new challenges in economics and management. Risk is one of the fundamental problems that has long troubled researchers, practitioners and ordinary investors. A concept so complex and ambiguous that it has not been possible for centuries to develop its single objective definition. Credit instruments are a relatively new branch of derivatives on the credit risk trading market. Financial markets have developed credit default swaps as a flexible investment risk hedge instrument that can be traded. The increasing use of CDS in determining investment risk associated with debt has raised concerns about the speculative nature of this financial instrument and the impact it may have on financial markets. The purpose of the article is to explain the basics of the mechanism of functioning of credit default swap as a modern financial instrument which, in addition to its advantages, may also have disadvantages.

***Keywords:*** *credit default swap, financial risk management, swap*

## I. INTRODUCTION

The dynamic development of financial engineering, which took place at the beginning of the 21st century, resulted in the creation of many new instruments that had a significant impact on the functioning of global financial markets. The most important of them can certainly include credit derivatives, which due to the financial crisis have recently become in the center of public attention. Their creation was directly related to the need to develop new and effective risk mitigation methods, which were generated by the growing number of various types of debt instruments. Although the assumptions about their functioning were correct, they also brought many threats that materialized during the recent financial crisis. The most important instruments from this group are CDS (Credit Default Swaps) contracts, which were created to protect bond buyers from the bankruptcy of their creditors. Performing the function of a kind of insurance policy, they contributed to the development of the corporate bond market, MBO (Mortgage Backed Obligations) as well as national bonds (sovereign bonds). Undoubted benefits associated with their existence have been offset by the fact that with the increase in popularity of these instruments began to be used contrary to their intended purpose. This was a direct threat to the stability of the entire financial system, as exemplified by the problems of the world's largest insurer AIG (American International Group), which in order to avoid uncontrolled bankruptcy in 2008 was nationalized by the US government [1]. Following these events, activities aimed at introducing new regulations and closer supervision on the market of credit derivatives, which were traded mostly on OTC (Over the Counter) markets directly between interested parties, were intensified. The problem of the lack of control over such instruments and the ineffectiveness of the tools that could provide it were diagnosed as a serious threat to the proper functioning and security of financial markets in the future. The consequence of these assumptions are the proposals for new regulations, which, however,

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encounter serious resistance from the most important institutions that would be subject to them.

## II. CREDIT DEFAULT SWAP (CDS) –INSTRUMENT CHARAKTERISTICS

CDS contracts are one of the instruments belonging to the group of credit derivatives. They are currently the most popular derivative instrument used to reduce credit risk. As a result of concluding the CDS contract, the protection buyer makes periodic payments (usually expressed in percentage points on the swap's nominal amount) to the security seller (portection seller) until the end of the CDS contract or until a credit event occurs. In exchange for a periodic payment, the collateral seller undertakes to disburse the collateral buyer if a credit event occurs. This contingent payment is most often calculated in a way that reflects the losses suffered by creditors in the event that the borrower ceases to pay his debts [2]. Settlement of CDS transactions can take place as a physical delivery of the underlying (if, for example, bonds are hedged) or as cash settlement [3]. The cash flow of the CDS contract is shown in Fig.1.

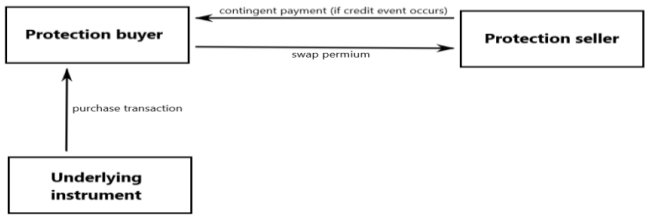


Figure 1. Mechanism of credit swap operation

The figure above illustrates how cash flows occur between both parties to the contract and in what situations they occur. In the absence of a credit event, the only payments that follow are premium payments from the buyer to the seller, which are usually on a quarterly basis. However, in a situation where a credit event occurs, the seller is obliged to pay the nominal amount of the contract to the buyer, in exchange for which the buyer provides specific receivables. The parties may also agree that the settlement will take place only in cash, without the need to provide the seller with the bond. In this case, the so-called recovery rate, which is offset against the nominal value of the contract. This means that the buyer receives from the seller an amount that is the difference between the denomination of the contract and the real value of the bonds involved in the credit event. Due to the complex legal process related to the recovery of receivables from holding bonds, companies that went bankrupt, companies such as Markit and Creditex organize special auctions. Buyers and sellers of the above-mentioned bonds meet there, as a result of which the recovery rate is used to settle CDS contracts in cash. Such auctions are held mainly for large credit events (eg Lehman Brothers), and their course is regulated by the ISDA (International Swaps and Derivatives Association) [4]. The most important parameter of each CDS contract is the fee (premium) that the buyer is obliged to pay to the seller for each year of the contract. It is commonly called spread. Its quotes are given in base points, denoting the percentage of the nominal value of the entire contract. The spread size for CDS contracts is calculated on the basis of various types of models (e.g. Merton Model), but in each case this value depends on several basic factors, which are [5], [6]:

- probability of a credit event occurring;
- the length of the period during which the swap applies;
- recovery rate;
- risk-free rate;
- currency;
- the frequency of making payments;
- probability of default of the swap seller (counterparty risk).

When concluding a CDS contract, please specify the following:

- features of reference assets (eg nominal value of the loan or covered bonds, credit spread);
- define a credit event, ie an event that gives rise to an obligation to pay collateral;
- the compensation that the collateral seller will pay to the collateral buyer if the credit event specified in the contract occurs;
- settlement method - will there be a settlement in cash (then the seller of the collateral pays the buyer an amount corresponding to the nominal

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value of the collateral minus the recovery rate) or physical delivery of the financial instruments specified in the contract.

A credit event (often equated with insolvency) most often relates to the occurrence of such phenomena as: bankruptcy (when the company becomes insolvent or unable to pay its liabilities), cessation of the required obligations by the reference entity, refusal to pay the debt, bankruptcy of the reference entity, restructuring [7].

The selection of an appropriate credit risk model and determining the appropriate recovery rate in the event of a credit event plays a key role in the CDS valuation.

## III. CDS AND THE AIG CASE

The growing importance of CDS contracts significantly increased the interdependence between financial institutions that were active dealers on the market of these instruments. The increase of this negative tendency meant that the problem of entities that were not considered key to the market in terms of their exposure could have caused complete destabilization of the financial system. Such a case was AIG, which according to Fitch in 2006 was only in 20th place among the largest participants of the CDS market. The institution's nominal exposure amounted to 493 billion dollars and constituted only one-tenth of the value of the leader of this classification. Nevertheless, the characteristic feature was that the exposure was one-sided, which means that AIG was a net seller of CDS contracts. Considering the net nominal value of concluded contracts, this sum amounted to 372 billion dollars. This figure in 2008 was more than twice the aggregate net exposure of all other dealers reported by DTCC (Depository Trust and Clearing Corporation). It can therefore be concluded that the estimation of the nominal volumes of CDS contracts is not an effective measure for assessing the institution's financial stability risk. However, it should be added that net values were not available in statistics published before the outbreak of the crisis. AIG's largest partners included such banks as Société Générale, Goldman Sachs, Deutsche Bank, Merril Lynch and UBS, as well as many other smaller financial institutions. Therefore, it can be concluded that AIG generated systemic risk due to the very large network of connections with other entities present on the market. At the time of bankruptcy by Lehman Brothers bank, the procedure of disbursements under concluded CDS contracts took place, of which AIG was the largest issuer. For this reason, the US Treasury department decided to save this institution from collapse by completely nationalizing. One of the reasons for AIG's problems was also improper risk management policy, which did not provide for setting adequate financial collateral in the event of CDS contracts being carried out. When the company's credit rating was at AAA level, the company decided that there was no need to allocate any additional funds as a security deposit under the concluded contracts. After the collapse of Lehman Brothers, the largest rating agencies lowered AIG's creditworthiness by 3 degrees, as a result of which AIG had to find $ 20 billion due to an increase in the level of required deposits for concluded CDS contracts. In a situation where liquidity on the market became very limited, obtaining additional funds was very difficult. Within fifteen days of the downgrade, AIG accepted claims from buyers of its contracts for USD 32 billion [8]. In order to avoid massive sale of the company's assets on the market, the US government together with the Federal Reserve decided to launch credit lines that allowed the initial liabilities to be met. Subsequently, the company was nationalized and all its commitments were taken over by the United States government. The above example illustrates how much risk has been accepted by the management board of AIG, which considered the unrealistic bankruptcy scenario of one of the largest investment banks in the world.

## CONCLUSION

CDS contracts perform a very important function in the global financial system. They mainly serve as an effective tool for transferring the risk related to the borrower's insolvency to other entities. This allows financial institutions to manage their debt portfolios more efficiently. As a result, banks do not have to maintain excessive provisions for loans already granted, as the risk of default is transferred to another entity. Thanks to this, it is possible to increase liquidity on the market and increase the number of loans granted. It is worth emphasizing that in

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emerging economies the CDS market reacts faster [9] to new information than in developed economies - the phenomenon is presented in the Fig. 2 below.


Figure 2. Time-Varying Price Measures of Sovereign Credit Default Swaps (SCDS)

The vertical lines in Fig. 2 indicate important events related to the global financial crisis. Mean:

1. Bear Sterms collapse (March 14, 2008)

2. Lehman Brothers Bankrupcy (September 16, 2008)

3. EU debt crisis intensifies in October 2010 ahead of Ireland's financial aid request.

Fig. 2 clearly shows that the first fluctuations in the CDS market associated with the global financial crisis appeared already in mid-2007 in emerging economies and then again in the most recent period. The CDS market responds faster to new information than bond markets during periods of turbulence. Listings of this type of swaps have also become a valuable indicator of credit risk for both borrowers and lenders.

On the other hand, however, the threats that result from the expansion of the CDS market should be emphasized. The most important of these is the reduction of interest in monitoring credit risk by banks due to their transfer to external entities. In addition, the possibility of purchasing CDS contracts without having receivables in reference bonds is purely speculative, which has contributed to the destabilization of the entire system. It can be said that it was a kind of gambling game with unclear principles (moral hazzard), because the buyer of the naked CDS contract *de facto* depended on the deterioration of the situation of the issuer of bonds. In this situation, there could have been many abuses and attempts to artificially cause adverse effects on market participants. For this reason, the European Union has banned the purchase of bare CDS contracts. An additional problem is the very high concentration of trading in these instruments, which takes place between only a few of the largest financial institutions in the world, resulting in very high systemic risk in the event of problems affecting only one of these entities. The scale of risk is illustrated by the collapse of Lehman Brothers, which was one of the ten largest dealers on the CDS market. According to empirical research, it was not found that the availability of CDS contracts reduced the cost of financing debt, which was often cited by supporters of these instruments. Recent studies show that fully secured collateralized CDS are not without investment risk [10]. This proves, therefore, that not all theoretically correct statements find their confirmation in the real market, which in fact should be the most important measure of their truthfulness and adequacy.

Although the CDS market was not the main cause of the financial crisis and the visible tendency to debt in the world economy. It should be emphasized, however, that excessive liberalization and lack of adequate control over its activities have contributed to the creation of very large losses in the global financial system. The assessment of threats and imperfections resulting from the use of various types of derivatives should be one of the basic aspects in risk management at every financial institution. It is important, therefore, that governments, managers and supervising institutions draw appropriate conclusions and introduce tools that will protect or even minimize the risk of similar events in the future. It will depend on their responsibility and professionalism whether adverse phenomena on the market will continue to be tolerated or fought with full determination. When the current activities of all parties are observed, this question remains unanswered.

## REFERENCES

[1] M. R. Greenberg, L.A. Cunningham, "The AIG story", pp. 243-261, 2013.
[2] M. Choudhry, "The Credit Default Swap Basis", pp. 1-10, 2006.
[3] Hull J.C., "Options, Futures and Other Derivatives", Pearson Prentice Hall, pp. 765-779, 2009.

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*ISSN: 0193 - 4120 Page No. 7424 - 7428*

[4] M. Avellaneda, T. Rama, "Transparency In Credit Default Swap Markets", Finance Concepts, pp. 1-10, 2010.
[5] M.J.P Anson, F.J. Fabozzi, M.Choudhry, R.R. Chen, "Credit Derivatives: Instruments, Applications and Pricing", John Wiley & Sons Inc., pp. 223-255, 2004.
[6] R. Jarrow, S. M. Turnbull, "Financial Derivatives Pricing: Selected Works of Robert Jarrow", World Scientific Publishing Co, pp. 377-409, 2008.
[7] O'Kane D., "Modelowanie kredytowych instrumentów pochodnych", Oficyna Wolters Kluwer Business, pp. 423-430, 2011.
[8] European Central Bank, "Credit Default Swaps and Credit Counterparty", pp. 29-30, 2009.
[9] International Monetary Fund, "Global Financial Stability Report. Old Risks, New Challenges", World Economic and Financial Surveys, pp. 68-71, 2013.
[10] A. White, "Pricing Credit Default Swap Subject to Counterparty Risk and Collateralization", pp. 1-25, 2018.