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Credit Default Swap Spreads as an Indicator of Credit Risk

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ABSTRACT: The purpose of this thesis is to explore the ability of CDS spreads working as risk indicators. Furthermore, this thesis aims to examine how CDS spreads compare to other credit risk assessment metrics. CDS spreads are not traditionally known to be a risk metric but are very much informative. Previous research suggests that CDS spreads contain information that other metrics do not capture. However, as they have advantages, they also contain disadvantages.

By researching empirical evidence and data, this thesis investigates the factors that drive CDS spreads and how they differ in functionality and outcomes when compared with bond market metrics and credit ratings. It focuses into their real-time sensitivity to market shifts and their ability to reflect perceived default probabilities. Existing literature underscores that while bond yields and credit ratings provide valuable insights into long-term stability, CDS spreads excel in capturing rapid changes in credit risk during periods of volatility.

This research highlights the complementary nature of CDS spreads, suggesting that they work well together with traditional credit risk assessment by providing more dynamic and market driven risk signals. The findings of this study are relevant for investors, financial institutions, and regulators seeking to improve credit risk management strategies and early warning systems for financial instability.

KEYWORDS: Credit default swap, credit risk, CDS spread, markets, liquidity

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1. Introduction

In today's financial markets, credit risk management remains a fundamental concern for institutions, investors, and regulators alike. Credit risk, which is defined as the risk of loss due to a counterparty's failure to meet contractual obligations, has significant implications for financial stability. Over recent decades, the network of global financial systems and the rapid growth of different financial products have amplified both the prevalence and complexity of credit risk, which has resulted in potential systemic risk, where the default of one can be catastrophic. The 2008 financial crisis highlighted the importance of identifying early signals of rising systemic risk, resulting in renewed interest for tools and indicators that can provide timely insights into market sentiment and financial stability. Among these tools, credit default swaps (CDS) have gained considerable interest, both as instruments for managing credit risk and as indicators of the market's perception of creditworthiness.

The relationship between CDS spreads and credit risk is of particular interest in financial research due to its capabilities for alternate risk assessment in its own. Thus, the scope of the thesis will be to study this relationship. As CDS spreads react to new information about the creditworthiness of reference entities, one could think they can serve as real-time agents for credit risk sentiment in the market. This responsiveness to market conditions positions CDS spreads as potentially suitable indicators of broader risk, especially during periods of financial distress. Observing the patterns in CDS spreads across various economic phases offers a window into the ways market participants assess risk under different conditions, thereby enhancing the understanding of market dynamics and credit risk perception. (Fu, Li & Molyneux, 2021)

Examining the role of CDS spreads as indicators of market credit risk is valuable for several reasons. First, as financial markets are increasingly interconnected, it is subject to systemic risk. This risk is rather problematic as it cannot be diversified. Thus, the ability to detect early signals of credit risk is essential for institutions seeking to mitigate potential losses and maintain stability. Second, understanding the behavior of CDS

spreads in response to economic shifts could inform regulatory practices aimed at safeguarding financial markets. Lastly, a comprehensive analysis of CDS spreads and their relationship with market credit risk contributes to the broader discourse on credit risk management, offering insights that could refine risk assessment practices and improve the resilience of financial systems in the face of future disruptions. (Terzi & Uluçay, 2011)

1.1. Purpose of the Study

As previously said, this study aims to investigate the connection between CDS spreads and market credit risk, particularly how CDS spreads may serve as indicators of market stability and investor sentiment regarding credit risk. By treating CDS spreads as a metric for credit risk, this research intends to highlight their responsiveness to shifts in economic conditions and financial disruptions. Given the critical importance of credit risk in guiding the decisions of investors, institutions, and regulators, understanding how CDS spreads capture changes in market sentiment could improve the precision and effectiveness of risk management practices. This led to the first hypothesis, which is the following

H1 = CDS spreads are an effective indicator of changes in overall market credit risk.

The second hypothesis is aimed to examine deeper into the effectiveness of CDS spreads as indicators. If CDS spreads effectively capture shifts in overall market credit risk, they could potentially serve as effective complements to traditional risk metrics. By identifying patterns or sharp movements in in the market before traditional indicators respond, CDS data may offer investors and regulators a valuable window to detect and prepare for major disruptions. Thus,

H2 = CDS spreads serve as a well-suited complement with other traditional risk indicators.

1.2. Structure of the Study

This thesis is structured into five chapters. The first chapter introduces the study, its purpose, and research hypotheses followed by chapter focusing on understanding CDS, its markets and factors influencing the spreads. Chapter three outlines the theoretical part, discussing efficient market and credit risk theory. analyzes CDS spreads as credit risk indicators, comparing them with bond markets and credit ratings. Finally, Chapter 5 concludes the study, summarizing the findings and proposing areas for further research.

2. Credit Default Swaps

First introduced in 1994 by JPMorgan, CDS contracts are regarded as the most common credit derivative. It is a financial instrument, which enables the transfer of credit risk between market participants, promoting more efficient pricing and a way to mitigate risk. At its base, a CDS is an agreement where a protection buyer pays regular payments, known as the CDS spread or premium, over a specified period (maturity or term), typically measured in years. In return, the protection seller agrees to provide a payment if a pre-specified event occurs, called the reference entity. (Bomfim, 2022)

In general, CDS premiums are paid quarterly and calculated in basis points (bps) of the total coverage amount, referred to as the notional amount of the contract. For example, let's say the notional amount of a CDS-contract is that of $10 million and the spread is indicated as 500 basis points. This means that the buyer is obligated to pay $500 000 in periodic payments, as 100 basis points reflects one percent of the notional amount. CDS contracts usually have terms ranging from one to ten years, with the five-year term being relatively common. (Bomfim, 2022)

In simple terms, the way CDS contracts work is that if no default occurs during the contract period, the seller retains the premium payments; however, in the event of a default by the reference entity, the seller becomes responsible for covering the difference between the face value of the entity's debt and its recovery value, with it being called a credit event. Settlement can occur either physically, where the buyer delivers defaulted assets to the seller in exchange for their full-face value, or in cash, where the seller compensates the buyer for the shortfall between the face and recovery values. Modern settlements often occur via auctions, which establish a standardized recovery rate for cash settlements, reflecting evolving market practices since 2009. (Bomfim, 2022)

2.1. CDS Markets

The CDS market is widely regarded as a clear and accurate reflection of corporate default risk. It serves as one of the many reliable indicators of corporate financial stability, offering valuable information that entities can use effectively. When analyzed properly, CDS data on reference entities can help regulators identify potential issues within individual banks, specific firms, or insurance companies. Moreover, CDS spreads play an essential role in enforcing market discipline among financial institutions, especially as traditional regulations have often fallen short in managing risk-taking behaviors. (Terzi & Uluçay, 2011)

Since its introduction, the CDS market experienced rapid growth, reaching over $60 trillion in notional size financial crisis. However, following the crisis, the market downshifted significantly, stabilizing at around $10 trillion in market value a decade later. Participants such as banks and hedge funds use CDS contracts to hedge or speculate on the creditworthiness of corporations and governments. CDS contracts operate over the counter (OTC), meaning they are privately negotiated, giving flexibility in contract terms. (Malhotra & Corelli, 2018)

The CDS market has grown significantly in liquidity and efficiency due to the adoption of standardized documentation facilitated by the International Swaps and Derivatives Association (ISDA). These agreements define critical terms, including what constitutes a credit event, such as bankruptcy, failure to pay, or debt restructuring. Contracts can also specify unique conditions, which are often included in CDS agreements referencing sovereign debt. While the five-year maturity is standard, CDS agreements can be terminated before their maturity, enabling participants to adjust their positions and capture market value. This flexibility, combined with the operational ease provided by ISDA master agreements, has enhanced the CDS market's role in managing credit risk globally. (Bomfim, 2022)

2.2. CDS spreads

As mentioned earlier, a CDS spread represents the premium that a CDS buyer pays to a seller in exchange for protection against a potential default by a specified entity, such as a corporation or government. Malhotra & Corelli (2018) determine that the size of the spread signals the market's view of the entity's default risk. Higher risk perceptions lead to wider spreads and on the contrary lower risk results in narrower spreads. This spread functions as a measure of credit risk, with real-time fluctuations reflecting changes in the perceived creditworthiness of the underlying asset. Unlike traditional credit ratings, which update periodically, CDS spreads respond quickly to market conditions, offering an alternative view of changes in credit risk and market sentiment. (Malhotra & Corelli, 2018)

The determination of CDS spreads involves various factors, including the credit reports of the entity, default risk, the economic landscape, and the liquidity within the CDS market itself. This is important to address in this thesis, as the reader should be understanding what affects the spread so that it can work as a risk indicator.

For example, a downgrade in credit rating or heightened financial instability for an entity typically leads to wider spreads, as more investors seek protection against default. In contrast, improved credit outlooks, such as stronger financial performance or favorable policy changes, can narrow spreads. CDS spreads thus integrate information from multiple sources and respond to broader economic trends, such as interest rates, inflation expectations, and political events. Besides their use as a credit risk indicator, CDS spreads also serve speculative purposes, as investors can buy or sell protection based on their expectations of credit conditions, adding complexity to the market dynamics. (Malhotra & Corelli, 2018)

2.2.1 Factors influencing CDS spreads

This chapter and its subchapters will constitute of addressing more in depth the common factors of CDS spreads. It introduces the most important factors, such as credit rating, default risk, macroeconomic and market liquidity.

2.2.2 Credit ratings

Based on existing literature, an important driver of the spread of CDS are credit rating agencies (CRAs), who play a critical role in financial markets transparency by providing independent and transparent assessment of the creditworthiness of corporations, governments, and other debt-issuing entities. CRAs assign credit ratings based on detailed analysis of an entity's financial condition, operational stability, and macroeconomic environment, offering a valuable metric to measure credit risk for investors, governments, issuers, and borrowers. CRAs such as Standard & Poor's, Moody's, and Fitch are widely recognized and trusted globally. Their ratings impact borrowing costs and the broader perception of risk in financial markets. Typically, ratings are categorized into investment-grade and speculative-grade tiers, reflecting varying degrees of credit risk. Despite criticisms of their subjectivity and lag in reflecting real-time risk, CRAs are crucial to financial stability, influencing investor decisions and regulatory frameworks. (Karagozoglu & Jacobs, 2010)

The rating system of the three most known CRAs are very similar. For instance, as S&P rates their best rating, which is given to bonds that are considered to have the lowest probability of default in the near future, an AAA while Moody's rates their best at Aaa. In contrary S&P and Moody's rate their worst rating with CC/D and C respectively, which indicates a bond that is highly vulnerable or already in default. What is also worth mentioning is that their credit rating system is divided into investment-grade and speculative-grade ratings. (Hull, Predescu & White, 2004)

Some of the existing literature mention that the influence of credit ratings on CDS spreads is significant, as these credit ratings reflect the risk of the reference entity. Based

on this, it could mean that CDS spreads and the credit rating of the referred entity should have some sort of correlation. (Karagozoglu & Jacobs, 2010)

A downgrade by a CRA typically leads to an immediate reaction in the market. In CDS markets, CDS spreads begin to widen, indicating a rise in default risk premiums demanded by market participants. This responsiveness comes from the role of credit ratings as benchmarks for market sentiment, even if CDS markets often incorporate risk signals earlier than CRAs. Furthermore, CDS spreads tend to anticipate rating downgrades or upgrades, informing market participants of changes in credit quality.

Nonetheless, CRAs provide a structured and comparative framework that complements the dynamic, market-driven insights offered by CDS spreads. This ensures that while CDS spreads provide real-time adjustments to credit risk, CRAs offer a more stable, long-term perspective critical for various market participants. (Karagozoglu & Jacobs, 2010)

2.2.3 Default risk

The default risk of the referred entity is another attributor affecting the spread of a CDS contract. As mentioned earlier in this thesis, default risk reflects the likelihood and severity of potential default, influencing the price of protection against such a credit event. CDS spreads are ultimately a measure of the cost to insure against the failure of the underlying reference entity, with the cost directly tied to the risk-neutral probability of default. When default risk is perceived as high, the spreads widen to reflect the increased premium required to compensate for the heightened risk of loss. The spread also incorporates the expected recovery rate, which is the proportion of the bond's value that is anticipated to be recovered in the event of default. As the distance-to-default, which is a metric derived from the difference between a firm’s asset value and its liabilities narrows, the perceived risk increases, causing CDS spreads to rise. (Kitwiwattanachai & Pearson, 2015)

It is worth noting that the models assume the asset value follows a stochastic process, and default is triggered when the asset value breaches a predefined default boundary. This approach captures the probabilistic nature of default and provides an analytical framework to estimate the default probability over a given horizon. Additionally, the probability of default is often expressed in terms of risk-neutral probabilities, which integrate market expectations, including asset price fluctuations and recovery rates. (Kitwiwattanachai & Pearson, 2015)

However, accurately estimating default probabilities or the parameters of models predicting default is challenging because actual default events are infrequent, particularly among investment-grade entities, where defaults are exceedingly rare. (Kitwiwattanachai & Pearson, 2015)

Additionally, it is worth taking account how agency problems further influence the default risk by creating conflicts of interest between stockholders and bondholders. Management, acting in shareholders' interests, may engage in actions such as asset substitution or underinvestment, increasing the firm's risk profile. Longer CDS contract maturities amplify these issues, as extended time horizons provide more opportunities for managerial discretion to affect bondholder payoffs. This dynamic is reflected in CDS spreads, which incorporate premiums for the additional risks associated with these conflicts. (Tang & Yan, 2010)

2.2.4 Macroeconomic factors

The macroeconomic landscape plays a crucial role in translating broader economic changes to the market. Changes in the macroeconomic landscape has the influence of directly impacting the credit risk of the underlying reference entity of the CDS contract. Existing literature has been focusing on understanding how different players such as GDP growth, market volatility, interest rates and economic phases and uncertainty affect the spreads of CDS contracts. (Alqaralleh, 2024)

To start, changes in GDP growth reflect shifts in economic stability and the broader business environment, which in turn impact the credit risk associated with firms and sovereigns. In periods of strong GDP growth, CDS spreads generally narrow, indicating reduced perceived risk as companies and governments benefit from improved economic stability, higher revenues, and stronger fiscal conditions. Contrarily, during periods of slower or negative GDP growth, CDS spreads often expand, indicating increased default risk concern as firms face revenue challenges and governments encounter fiscal pressures. (Kim, Park, & Park, 2017)

Interest rates, particularly those managed by central banks, influence CDS spreads by affecting the cost of borrowing across the economy. The common conclusion from existing literature is that when interest rates rise, the financial burden on borrowers increases, which can strain both corporate and governmental balance sheets. This heightened financial strain is often translated to wider CDS spreads as markets adjust for the increased likelihood of credit risk. In addition, expectations of future interest rate changes play a role in CDS pricing, where anticipated rate hikes may lead to preemptive adjustments in spreads as market participants factor in the potential for higher credit costs and debt-servicing difficulties. (Malhotra & Corelli, 2018)

As for market volatility, the most common metric to evaluate it is the VIX. As mentioned earlier the correlation between market volatility and CDS spreads is positive as it further influences CDS spreads, with high volatility financial markets often widening spreads due to increased uncertainty and cautious investor behavior. Elevated volatility suggests a higher probability of credit events, leading CDS providers to demand greater premiums and to use CDS contracts for hedging purposes. This effect is especially evident during financial stress, where CDS spreads respond to sharp volatility shifts in interconnected markets like equities and bonds. Research indicates that such volatility often precedes adjustments in CDS spreads, as CDS pricing incorporates risk signals from other assets, underscoring the link between volatility and liquidity adjustments. (Fu, Li & Molyneux, 2021)

Additionally, it is worth mentioning that certain level of macroeconomic uncertainty is an additional factor affecting CDS spreads, as it influences market sentiment and perceived credit risk beyond what is indicated by traditional economic measures. Unlike direct economic indicators such as GDP growth or interest rates, macroeconomic uncertainty captures fluctuations in the stability of these indicators, highlighting periods where economic forecasts are less reliable. This added layer of risk sensitivity is important for understanding CDS spread behavior, as heightened economic unpredictability leads investors to reevaluate creditworthiness of firms and sovereign entities with a greater degree of caution. Consequently, when economic conditions appear volatile or less predictable, CDS spreads tend to widen to compensate for this increased risk, even if baseline indicators like GDP growth remain stable. (Baum & Wan, 2010)

Furthermore, macroeconomic uncertainty interacts with firm-specific characteristics to amplify credit risk perception. For instance, during uncertain economic periods, firms operating in highly leveraged or cyclical industries may face particularly pronounced changes in CDS spreads as investors seek additional protection against potential default risks. This effect is also more prominent in firms with specific governance structures or financial policies that may be viewed as less resilient under volatile conditions. Macroeconomic uncertainty, therefore, not only affects the broader market but also drives a more nuanced response within CDS markets by impacting spreads according to sectoral vulnerabilities and firm-level attributes, making it a complex but essential factor in credit risk analysis. (Baum & Wan, 2010)

2.2.5 Market liquidity

Previous literature indicates that the liquidity of the market influences CDS spreads. This liquidity contributes uniquely to CDS spread variation, as it shapes the risk premiums that market participants demand in different scenarios. Limited liquidity heightens trading costs for credit risk, prompting wider spreads as investors require compensation for potential exit challenges. This liquidity impact intensifies in times of financial

instability, where low trading volumes increase price sensitivity and expand spreads. Consequently, the liquidity premium in CDS spreads becomes crucial in evaluating market credit risk during periods of restricted liquidity. (Tang & Yan, 2008)

Furthermore, there is evidence that liquidity risk in the CDS market involves more than just liquidity level. CDS spreads include a "liquidity premium" that compensates for systematic liquidity risks, particularly during broad market liquidity shocks. Their findings indicate that CDS spreads are not only sensitive to direct liquidity costs, such as bid-ask spreads, but also to search frictions and inventory constraints in the OTC market. These factors create cross-sectional variations in liquidity premiums, where lower-liquidity contracts are associated with higher spreads due to increased adverse selection and trading difficulty. This demonstrates that CDS spreads are inherently responsive to both liquidity and its associated risks, where it can be seen as metric of market sentiment during volatile conditions. (Arakelyan & Serrano, 2016)

3. Efficient market and credit risk theory

This chapter will address key finance theories: efficient market theory and credit risk theory. In the context of this thesis, these theories are important as they address in theory how markets implement information and credit risk to CDS spreads.

3.1. Efficient market theory

First made know by Eugene Fama, “efficient market” is a term that represents a financial environment in which asset prices fully reflect all available information. For example, in an efficient market, if new information signals increased risk to a certain asset, the price should adjust to reflect this shift. This concept underpins the efficient market hypothesis (EMH), which suggests that in an efficient market, securities are accurately priced at any given moment, leaving no opportunities for arbitrage based on available free information and zero transaction costs. Furthermore, EMH consists of three primary forms of market efficiency: the weak form, where prices incorporate all historical price data; the semi-strong form, where prices adjust rapidly to publicly available information; and the strong form, where prices reflect all information, both public and private. The theory is foundational to financial economics and understanding how information dissemination impacts asset prices and, in this context, CDS spreads. Based on the theory alone, CDS spreads should adjust promptly in response to new credit-related data. This adaptability of prices plays a critical role in assessing the validity of CDS spreads as indicators of credit risk under varying market conditions. (Fama, 1970)

While the efficient market hypothesis provides a structured way to understand how markets should incorporate information, it remains, fundamentally, a theoretical construct. In practice, markets may not always operate under perfectly efficient conditions. Various factors, such as information asymmetry, investor behavior, and market sentiment, can prevent asset prices from fully or immediately reflecting all relevant data. Consequently, while EMH serves as a useful framework, real-world

deviations highlight the limitations of relying solely on this theory to explain asset price movements, especially during periods of market stress or uncertainty. (Malkiel, 2003)

3.2. Credit Risk

Credit risk has become a key focus for both academics and finance professionals, as it closely impacts the financial stability of banking systems worldwide. Financial institutions and regulatory bodies are deeply engaged in efforts to effectively manage credit risk, whether it pertains to individual borrowers or portfolios of credit exposures. This management process considers crucial factors such as the likelihood of default, potential losses in the event of default, and the expected recovery rate. (Malhotra & Corelli, 2018)

Unlike the EMF, credit risk theory is not necessarily constituted by a single person, but rather evolved through various contributions from the field of economics and finance by developing models to understand and quantify credit risk. Early foundations were laid by Robert C. Merton in 1974, who created the Merton Model, which applied option pricing models to assess the risk of corporate debt default. Further advancements in credit risk theory have come from “reduced-form” models by scholars like Darrell Duffie and Kenneth Singleton, who developed frameworks that focus on default as an unpredictable, probabilistic event. This approach has been widely used in modeling credit risk for bonds and CDS, aligning with real-world observations of default as a random event influenced by macroeconomic conditions and firm-specific factors. (Dionne, 2005)

4. Credit Default Swap Spreads as a Credit Risk Indicator

Previous studies have widely examined the role of CDS spreads as indicators of credit risk, making it a key topic in financial research. While some argue that CDS spreads are accurate measures of credit risk, others believe they can be influenced by market conditions and speculative activity. This chapter consists of gathering previous literature and reviewing them.

4.1. CDS spreads and bond markets

Prior literature argues that there are advantages in the CDS markets compared to bond markets, in reflecting credit risk. Stulz (2010) emphasizes that CDS spreads are, in selective scenarios, better indicators of creditworthiness compared to bonds, due to their only focus on expected default losses, independent of bond-specific contractual complexities such as covenants, maturity, or coupons. This singled out focus enables CDS markets to provide a different point of view when measuring reference entity's credit risk.

The findings of the author are backed by empirical studies that are made by Blanco, Brennan & Marsh (2005), which used CDS prices and bond yield data that focused on 5-year maturities. It shows that information flows largely from CDS spreads to bond prices, which can reinforce the role of CDS as a suitable indicator in credit markets, further backing our hypothesis.

Stulz (2010) also adds that the liquidity of CDS markets often surpasses that of bond markets, as bonds are constrained by funding requirements and market frictions. And as we previously disclosed in this thesis, market liquidity affects the spreads of CDS contracts. This higher liquidity allows CDS markets to respond more rapidly to new information, from which one could conclude that CDS spreads are a rather effective tool for measuring credit risk

Additionally, the structural characteristics of CDS markets enable them to incorporate emerging risks more efficiently than bond markets. For instance, CDS contracts allow for short selling, providing investors with the means to speculate on potential defaults or hedges against adverse credit events. This flexibility accelerates the market's response to changes in creditworthiness, contributing to faster price adjustments and somewhat faster risk assessment.

Stulz (2010) further argues that the existence of short-selling mechanisms within the CDS market enhances market efficiency by encouraging quicker assimilation of new information. These features position CDS spreads as critical indicators not only for evaluating individual credit risks but also for understanding broader market dynamics, which also adds backing to our hypotheses.

Other studies on the relationship of CDS spreads and bond yield are evaluated by Ismailescu & Phillips (2015), who conduct an empirical analysis using an event-study framework to examine the impact of CDS trading initiation on sovereign bond markets. They evaluated data from 41 countries, both developed and emerging markets, to view how CDS trading affects sovereign bond price efficiency and borrowing costs. The authors found that CDS trading initiation is associated with significant improvements in the efficiency of sovereign bond price discovery, particularly in countries with high default risk.

The conclusion of these benefits could be tied to the risk mitigating and liquidity-enhancing functions of CDS markets. CDS trading allows for a broader set of investors to participate in sovereign debt markets by providing opportunities for hedging and speculation, which increases overall market liquidity. Ismailescu & Phillips (2015) further add that CDS contracts expand the risk-to-return space for investors, thus attracting participants with heterogeneous risk preferences and improving price informativeness in sovereign bond markets. Additionally, the ability of CDS contracts to facilitate risk management and provide hedging opportunities for high-risk countries underscores their value as a financial innovation.

However, it is to be noted that both also highlights the potential negative implications of regulatory constraints on CDS markets, such as the bans implemented in parts of the Eurozone, which could negate these positive outcomes.

Giannikos, Guirguis, and Suen (2012) investigate the price discovery process among CDS spreads and bond spreads for major U.S. financial firms during the 2008 financial crisis. Using daily data for 10 large U.S. financial institutions from January 2005 to December 2008, the study applies vector autoregression and Granger causality tests to determine the leading indicators of credit risk during periods of financial distress. The results show that before the crisis, stock prices acted as the dominant source of credit risk information, while CDS spreads trailed. However, during the financial crisis, CDS spreads became the primary driver of price discovery, reflecting worsening credit risk conditions more promptly than bond spreads or stock prices.

They further highlight that CDS spreads widened significantly in response to credit events such as Lehman Brothers' collapse and AIG's near-default. The authors found results that CDS spreads increased by an average of 350–450 basis points across the observed institutions at the height of the crisis, signaling a rapid reassessment of default probabilities. The evidence demonstrates that CDS markets were more efficient in incorporating new information about credit deterioration compared to bond markets, where spreads adjusted with a noticeable lag. These findings emphasize the role of CDS spreads as forward-looking indicators of systemic risk during periods of market instability, particularly when traditional credit signals failed to capture the magnitude of financial distress in real time.

4.2. CDS spreads and credit rating agencies

Kiesel and Spohnholtz (2017) examine the relationship between CDS spreads and credit ratings, with the objective to present an alternative metric to measure credit worthiness. This was conducted by developing a Credit Rating Score (CRS) model based on logarithmic CDS spreads, highlighting a linear relationship between CDS spreads and

credit ratings assigned by agencies. Their empirical study analyzes data from 310 European and US non-financial corporates, using Fitch Ratings to compare their ratings made by the CRS. This approach provides a market-driven alternative for assessing creditworthiness, which is independent from the subjectivity inherent in traditional credit rating agencies (CRAs).

What is notable from their work is that their CRS model often anticipates agency downgrades, suggesting that CDS spreads incorporate emerging credit risk signals more swiftly than traditional rating systems. Also, their CRS model's performance, particularly in volatile market conditions, reflected the dynamic nature of CDS spreads as opposed to the relatively static ratings issued by CRAs. While credit ratings provide long-term evaluations, CDS spreads continuously adjust to real-time market developments, making them a valuable substitute or complement to traditional risk assessment metrics.

Kiesel and Spohnholtz (2017) further illustrate the broader implications of this relationship, emphasizing the efficiency of CDS markets in aggregating and reflecting market sentiment. This dynamic responsiveness is particularly relevant during periods of heightened economic uncertainty, where traditional metrics may be slow to indicate emerging risks.

However, it is worth mentioning that Kiesel and Spohnholtz (2017) emphasize the importance of CRAs, as they were also needed for their CRS model. Although credit ratings have criticism and subjective methodologies, CRAs still provide valuable long-term stability and context valuable for the credit risk market.

Karagozoglu and Jacobs (2010) also explore the relationship between CDS spreads and credit ratings and find similar advantages of CDS spreads as an indicator. Their empirical study is a data collection of market volatility, interest rates, and credit ratings, aiming to quantify the factors influencing CDS spreads. The data analyzed is gathered from 391 five-year CDS contracts from 2003 to 2008. Noteworthy from their study is that while CDS spreads are correlated with credit ratings, substantial variation persists, which

cannot be fully explained by market or entity-specific variables, but rather with micro and macro factors. This variance highlights the limitations of traditional credit ratings in capturing the nuanced credit risk reflected by CDS spreads. Furthermore, Karagozoglu and Jacobs (2010) investigate the sensitivity of CDS spreads to credit events, finding that CDS spreads more accurately predict negative credit events such as downgrades or defaults compared to positive events like rating upgrades.

Similar conclusions are found by Flannery, Houston, and Partnoy (2010) about the advantages of CDS spreads as indicators of credit risk. By evaluating different credit rating categories of CDS spreads for 15 major financial institutions from 2006 to 2009, they found that CDS spreads began to reflect heightened systemic risk exposures before credit ratings adjusted. Their analysis revealed that while credit ratings remained relatively unchanged during critical periods, CDS spreads rapidly incorporated new information about the deteriorating financial conditions, providing a real-time measure of risk.

Further research form Flannery, Houston and Partnoy (2010) highlights that during the financial crisis, CDS spreads not only informed about the increasing systemic risk but also captured firm-specific credit risks with precision. For example, CDS spreads for institutions like Lehman Brothers widened significantly as early as mid-2007, reflecting the market's anticipation of default risks that were not yet evident in their credit ratings.

What could be concluded from their findings is that the spread on CDS's reflect responsiveness to worsening credit quality. This provides market participants a faster risk signal than agencies do, making CDS spreads a valuable complement to traditional credit ratings, particularly during periods of economic uncertainty. This further backs the hypothesis of CDS spreads as effective indicator of credit risk. But what is worth noting is the conclusion on the importance of credit ratings from of both Kiesel & Spohnholtz (2017) and Karagozoglu & Jacobs (2010). The information they relay to the credit risk market is crucial for even CDS spreads to work as credit risk indicators.

Lee, Naranjo, & Sirmans (2021) focus on the informational advantages of CDS markets, compared to the slow credit rating upgrades, and how it creates distortions in information efficiency. They investigate it through the concept of CDS “momentum", with a notable return yield of up to 7.1% p.a. Their data is gathered from 871 U.S. firms from 2003 to 2015, demonstrating that CDS spreads reflect momentum effects that predict future credit rating changes with further influence on stock and bond returns, generating an alpha of 10.3% and 7.3% respectively.

Furthermore, they document that CDS spreads anticipate rating downgrades and upgrades months in advance, indicating their utility as forward-looking indicators. Notably, the study highlights that these momentum effects are stronger in more liquid CDS contracts.

In addition, Lee, Naranjo & Sirmans (2021) reveals cross-market spillover effects from the CDS market to bond markets. Their findings demonstrate that past CDS performance informs future bond returns, particularly for firms with low credit ratings or highly traded CDS contracts. This provides further backing for the CDS market’s central role in price discovery and its ability to translate information faster than traditional credit rating processes.

There are studies conducted with data gathered from the 2008 U.S financial crisis that is worth to mention. For instance, Stamatiou (2011) examines the role of CDS spreads as their notional values reached record highs prior to the crisis. The study utilizes a historical and empirical approach, focusing on key market developments such as the collapse of Lehman Brothers and the bailout of AIG. CDS spreads are shown to reflect growing counterparty risk concerns, particularly during the liquidity crisis that ensued following Lehman's bankruptcy. Using market data, Stamatiou (2011) highlights that while CDS contracts were not the primary cause of the crisis, they added fuel to the fire on market instability by amplifying credit risk signals, especially for firms heavily exposed to subprime mortgage securitizations.

A crucial finding relates to the short-term liquidity stress within the CDS market. The empirical analysis from Stamatiou (2011) reveals that CDS spreads widened significantly during the crisis, driven by rising uncertainties over counterparty solvency and collateral requirements. For instance, AIG's downgrade from AAA to AA triggered a liquidity event as CDS sellers faced immediate collateral calls, leading to systemic distress. This demonstrates how CDS spreads responded rapidly to credit events, surpassing traditional risk measures in their timeliness, which adds backing to our hypotheses.

5. Conclusions

The purpose of this thesis is to conduct research on CDS spreads and if they can be regarded as a purposeful metric to indicate credit risk. More precisely, this thesis aims to highlight the valuable information that CDS spreads may contain. This thesis first introduced the concept of CDS in a theoretical framework, its market and the factors that determine how the spreads move. To find the results of this research and to test our hypotheses, the information of CDS spreads is examined and compared to two other risk indicator metrics, the bond market and credit rating agencies.

Although CDS spreads are not the usual metric to measure credit risk, previous studies have backed both H1 and H2, highlighting the value of information that other metrics do not capture. Gathered empirical evidence and theoretical foundations support this, as CDS spreads consistently responded to both macroeconomic shocks and specific credit events. Thus, it can be said that the ability to quickly capture changes in credit risk comes from their sensitivity to market conditions and direct relationship to the perceived default probabilities of underlying entities. The real-time factor of assessment on creditworthiness, macroeconomic and market sentiment that CDS spreads contain supports this conclusion.

Secondly, this thesis found evidence that CDS spreads could provide better credit risk assessment when combined with other metrics, such as credit ratings and bond markets. Even though it was addressed above that CDS spreads are a valuable metric, this thesis does not imply that CDS spreads are better than other metrics. But rather each metric has its strengths combined with their weaknesses. CDS spreads contain aspects that the compared metrics do not, but the same thing goes the other way. For example, credit ratings provide long-term stability but lack responsiveness to sudden market shifts, while bond yields reflect market sentiment but are vulnerable liquidity factors. CDS spreads fill these gaps by capturing real-time changes and being less sensitive to liquidity changes.

As financial institutions continue to integrate CDS spreads into their risk models, they can achieve greater accuracy in forecasting credit events and mitigating exposure to default risks. Regulators may benefit from incorporating CDS data into their monitoring frameworks, improving their ability to detect risks early and provide more effective financial regulations. With the ability to reflect market sentiment dynamically, CDS spreads will likely continue to play a critical role in shaping the evolution of credit risk management strategies.

With all that is said, although this thesis highlights the value of CDS spreads, the complexity of these metrics in real markets calls for further study. Further research on the relationship and limitations of CDS contracts is crucial to enhancing credit risk assessment and strengthening financial stability.

References

Alqaralleh, H. S. (2024). From volatility to stability: understanding the role of macroeconomic factors in sovereign CDS spreads. Eurasian Economic Review, 14(3), 665–707. https://doi.org/10.1007/s40822-024-00274-y

Arakelyan, A., & Serrano, P. (2016). Liquidity in Credit Default Swap Markets. Journal of Multinational Financial Management, 37/38, 139–157. https://doi.org/10.1016/j.mulfin.2016.09.001

Baum, C. F., & Wan, C. (2010). Macroeconomic uncertainty and credit default swap spreads. Applied Financial Economics, 20(15), 1163–1171. https://doi.org/10.1080/09603101003781455

Blanco, R., Brennan, S., & Marsh, I. W. (2005). An Empirical Analysis of the Dynamic Relation between Investment-Grade Bonds and Credit Default Swaps. Journal of Finance (Wiley-Blackwell), 60(5), 2255–2281. https://doi.org/10.1111/j.1540-6261.2005.00798.x

Böck, M., Feldkircher, M., & Raunig, B. (2021). A view from outside: Sovereign CDS volatility as an indicator of economic uncertainty. Working Papers, 233, 1-22. https://research.ebsco.com/c/slwlh3/viewer/pdf/ajs3wzwnnr

Bomfim, A. N. (2022). Credit Default Swaps. Credit & Financial Management Review, 28(2), 15–41. https://doi.org/10.17016/FEDS.2022.023

Dionne, G. (2005). Credit Risk: Pricing, Measurement, and Management. Journal of Risk & Insurance, 72(1), 177–182. https://doi.org/10.1111/j.0022-4367.2005.120_1.x

Fama, E. F. (1969). Efficient capital markets: A review of theory and empirical work. The Journal of Finance, 25(2), 383-417. https://research.ebsco.com/c/slwlh3/viewer/pdf/n6c43uvop5

Flannery, M. J., Houston, J. F., & Partnoy, F. (2010). Credit Default Swap Spreads as Viable Substitutes for Credit Ratings. University of Pennsylvania Law Review, 158(7), 2085–2123.

Fu, X., Li, M. C., & Molyneux, P. (2021). Credit default swap spreads: Market conditions, firm performance, and the impact of the 2007–2009 financial crisis. Empirical Economics, 60(5), 2203–2225. https://link.springer.com/article/10.1007/s00181-020-01852-0

Giannikos, C., Guirguis, H., & Suen, M. (2013). The 2008 Financial Crisis and the Dynamics of Price Discovery among Stock Prices, CDS Spreads, and Bond Spreads for U.S. Financial Firms. Journal of Derivatives, 21(1), 27–48. https://doi.org/10.3905/jod.2013.21.1.027

Hull, J., Predescu, M., & White, A. (2004). The relationship between credit default swap spreads, bond yields, and credit rating announcements. Journal of Banking & Finance, 28(11), 2789–2811. https://doi.org/10.1016/j.jbankfin.2004.06.010

Ismailescu, I., & Phillips, B. (2015). Credit default swaps and the market for sovereign debt. Journal of Banking & Finance, 52, 43-61. https://doi.org/10.1016/j.jbankfin.2014.10.015

Jongsub Lee, Andy Naranjo, Stace Sirmans. CDS Momentum: Slow-Moving Credit Ratings and Cross-Market Spillovers. The Review of Asset Pricing Studies, 11(2), 352–401. https://doi.org/10.1093/rapstu/raaa025

Karagozoglu, A. K., & Jacobs, M. Jr. (2010). Measuring credit risk: CDS spreads vs. credit ratings. ResearchGate. https://www.researchgate.net/publication/228231806

Kim, T. S., Park, J. W., & Park, Y. J. (2017). Macroeconomic conditions and credit default swap spread changes. Journal of Futures Markets, 37(8), 766–802. https://research.ebsco.com/c/slwlh3/viewer/html/a3k3dujtk5

Kitwiwattanachai, & Pearson. Inferring Correlations of Asset Values and Distances-to-Default from CDS Spreads: A Structural Model Approach. The Review of Asset Pricing Studies, 5(1), 112–154. https://doi.org/10.1093/rapstu/rav001

Malhotra, J., & Corelli, A. (2018). The determinants of CDS spreads in multiple industry sectors: A comparison between the US and Europe. Risks, 6(3), 89. https://research.ebsco.com/c/slwlh3/viewer/pdf/xme3vbnnfb

Malkiel, B. G. (2003). The Efficient Market Hypothesis and Its Critics. Journal of Economic Perspectives, 17(1), 59–82. https://doi.org/10.1257/089533003321164958

Paulos, M., Sultanum, B., & Tobin, E. (2019). CDS auctions and price manipulation. Economic Quarterly, 105(2), 105-132. https://research.ebsco.com/c/slwlh3/search/details/gndfkmwwnr?isDashboardExpanded=true&limiters=None&q=CDS%20Auction%3A%20An%20Overview

Stamatiou, T. (2011). The role of credit default swap contracts in the 2008 US crisis and the 2010 Greek sovereign debt crisis. Eurobank Research. https://ssrn.com/abstract=4879451

Stulz, R. M. (2010). Credit Default Swaps and the Credit Crisis. Journal of Economic Perspectives, 24(1), 73–92. https://doi.org/10.1257/jep.24.1.73

Tang, D. Y., & Yan, H. (2007). Liquidity and credit default swap spreads. Capital Markets: Market Microstructure. https://www.bankofcanada.ca/wp-content/uploads/2010/09/tang.pdf

Tang, D. Y., & Yan, H. (2010). Market conditions, default risk and credit spreads. Journal of Banking & Finance, 34(4), 724–734. https://doi.org/10.1016/j.jbankfin.2009.05.018

Terzi, N., & Uluçay, K. (2011). The role of credit default swaps on financial market stability. Procedia - Social and Behavioral Sciences, 24, 983-990. https://www.sciencedirect.com/science/article/pii/S1877042811015941