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MACROECONOMIC DETERMINANTS OF CDS: THE CASE OF EUROPE

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Abstract: The aim of the this study is to analyze the impact of the macroeconomic sphere on the dynamics of European sovereign swaps in following period 2003-2016 for seven European countries (Bugaria, Romania, Portugal, Italy, Ireland, Greece and Spain). Eurozone membership is a variable that has a significant impact on the spreads of debt swaps.
Keywords: Credit Default Swaps, Macroeconomic determinants, OLS regression

МАКРОИКОНОМИЧЕСКИ ДЕТЕРМИНАНТИ НА CDS: ПО ПРИМЕРА НА ЕВРОПА

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Резюме: Целта на настоящето изследване е посредством иконометрично моделиране, прилагайки МНМК, да се установи влиянието на макроикономическата сфера върху динамиката на европейските суверенни суапове в следните седем европейски държави (България, Румъния, Португалия, Италия, Ирландия, Гърция и Испания) за периода 2003-2016 г. Членството в еврозоната е променлива, която оказва значително влияние върху спредовете на суапите за дългово неизпълнение.
Ключови думи: Суапи за дългово неизпълнение, макроикономически променливи, МНМК.

INTRODUCTION

In the global world, the main reason for being a country of economic development and prosperity is a risk factor, which is an important element of the free market economy. It is of great importance to manage risk well and to make the right decisions in crisis situations in order to be able to survive and grow into developing economies. The high- risk indicators of international investment instruments are often directed by investors as a leading indicator from time to time in today's markets. The need to issue credit demand and securities on the financial markets has also improved, improving credit markets, which has also affected demand for credit derivatives. The most widely traded instruments of credit derivatives on financial markets are credit default swaps (CDS).

Business related to finance, trade and trade, credit risk is very important and can be shown as the most important type of risk. CDS can be defined as insurance contracts created by private companies against the default risk.

The importance of CDS after the global crisis has increased steadily. The possibility of responding to the need for measurement at the right time of the CDS spreads is increasing day by day. A foreign investor is primarily involved in credit default swaps (CDS) within the financial data that it will primarily analyze when it invests in a country.

In this study, it is aimed to contribute to the investments and strategies that can develop in this direction by examining the European examples of macroeconomic determinants of the Credit Default Swap contracts. The distinguishing features and contributions of this study from other studies investigating the effects of Credit Default Swap can be summarized as follows:

- The other literature study is generally conducted in a single country and at a limited level of criterion, in this study, European countries have been examined on a general basis and all possible criteria have been considered.
- In other studies, the results of credit default swaps are simply stated. In this study, various suggestions and predictions were made with findings from European data.

Persons, institutions and organizations that want to invest in overseas markets. It is necessary to estimate the risk premiums of the countries they want and to make investment decisions accordingly. The main purpose of working within this scope is; To ensure that country risk premiums are correctly identified in the financial decisions of international investors and to enable cross-country comparisons. In the study, macroeconomic determinants and more dynamic and more widely used CDS premiums were discussed.

In this study, industry indicators were also included to investigate the determinants of European macroeconomic credit default swaps for a given period. In this study, firstly literature search, then data set used in analyzes and econometric method are introduced and the findings obtained within the scope of analyzes are introduced. Finally, the results and suggestions are listed.

In this paper we focus on the sovereign credit default swap market. In the case of sovereign CDS, the country’s credit risk should be transferred between CDS buyers and CDS sellers. During the financial crisis and the sovereign debt crisis, many European countries have been under pressure to raise funds to finance fast growing fiscal deficits, so this provoked many investors to insure against losses on holding sovereign debt. This mechanism has turned CDS into an important tool for risk management and reduces the probability for Bulgaria and Romania to become Euro zone members.

This paper is exploring the macroeconomic determinants of sovereign credit defaultswaps in seven European countries for the following time period: 2003- 2016 (it includes pre- crisis period, crisis period and post- crisis period). *The aim of this paper* is to reveal which macroeconomic determinants has stronger influence on sovereign credit default

swap spreads in seven European countries (Bulgaria, Romania, Portugal, Italy, Ireland, Greece and Spain).

Restrictive conditions of this research are determined in the following aspects:

- Time range-this research is restricted in the time interval from 03.03.2003 – 30.06.2016;
- Methodological restrictions –they are set by the statistical properties of the researched data imposing the application of specific econometric tests and models giving an opportunity for the reflection. The proposed and used methodology does not claim to be the only possible and applicable when inspecting and proving the research thesis of this study.
- Place restrictions – the analysis and the inspection of the research thesis are concentrated on specific markets.

Due to the aforementioned facts, conclusions drawn from this research do not engage processes and circumstances of other markets of the category of members and candidate-members of the Euro zone.

LITERATURE REVIEW

Understanding and defying determinants of credit spreads is vital for successful credit risk management by financial analysts, financial traders and economic policy makers. In the literature several methods which are focused on revealing determinants of credit default swap spreads are explored.

Understanding and defying determinants of credit spreads is vital for successful credit risk management by financial analysts, financial traders and economic policy makers. In the literature several methods which are focused on revealing determinants of credit default swap spreads are explored.

The structural approach, used by Merton (Merton,(1974)), Black and Cox (1976), Longstaff and Schwarts (1995) and Zhou (2001), has defined default as an increasing function of leverage. O'Kane and Turmball (Lehman Brothers, (2003)), today's structural models are based on Merton's invented in 1974. For default estimation, Merton has used asset value and asset volatility. According to structural approach default may be defined as a function of leverage, volatility, risk- free- rate and firm's assets.

On the other hand reduced form model defines default as an unexpected and unpredictable event. Jarrow and Turnbull (1995), Jarrow et al (1997) and Duffie and Singleton (1999) consider that default is the result of a random jump process without a specific reason for it. According to reduces form models, credit spread may be considered as a function of the following variables: probability of default, recovery rate and risk- free asset's yield.

Some researchers consider that both structural and reduced approaches have failed to fully reveal all the credit spread variations. (Dufresne, C. and Goldstein (2001,p 1931), Huang and Huang (2003,p.4)) Nevertheless CDS is considered as an indicator of country's sovereign credit risk (OECD). There are many studies in the literature on credit default swaps (CDS) and financial markets and macroeconomic variables. In the research done, the sample, the method of analysis and the date range change, but the variables are similar. In this context, related studies and results in the literature can be summarized as follows:

Edward (1984) the probabilities of the countries' defaults for the sovereign credit, macroeconomic determinants of sovereign defaults been examined. It is foreseen by various studies that macroeconomic determinants can be effective in the payment of the country's debts. Edwards (1984) has related country's probability of default to their sovereign credit spread by exploring macroeconomic determinants (Debt/ GNP; Reserves/ GNP; Investments/ GNP; Current account/ GNP; Growth and Inflation levels).

There are many studies in the same direction as Edward's work. the new potential determinants of the empirical model sovereign credit spread are added. In these studies, the number of sample groups increased and the time period examined is longer. It exists several researches based on Edwards' research, namely Boehmer and Megginson (1990), Beck et al. (2005), Dailami et al. (2008), Baldacii et al. (2011) and Beirne and Fratzeler (2013) – they have extended Edward's model by adding new macroeconomic determinants of sovereign CDS during different time periods by various econometric models.

New econometric techniques have also been used(Boehmer and Megginson, 1990; Cantor and Packer, 1996; Min, 1998; Eichengreenand Mody, 1998; Kamin and von Kleist, 1999; Arora and Cerisola, 2001; Baek et al., 2005; Dailami et al., 2008; Hilscher and Nosbusch,2010; Baldacci et al., 2011; Aizenman et al., 2013; Beirne and Fratzscher, 2013). The macroeconomic determinants of sovereign credit is useful for better understanding of the prevalence of sovereign credit, it can be said that the use of sovereign credit is slient in a certain period of crisis.

There are various literature studies examining credit default swaps. Among these studies, Duffie (1999) stated that CDSs are risk-free floating interest rate bonds with a risky variable interest rate. Gruber et al. (2001) and Collin-Dufresne et al. (2000) examined the dynamics of the difference in returns between private company treasuries and state treasuries. As a result of the research, they found that a large part of the difference can not be explained by the changes in the expected default risk of the institutions.Skinner and Townend (2002) find that the five basic factors of option pricing, which can be seen as a sell option on the securities on which the CDS are referenced are the risk- free rate, , The remaining days to the transaction and the price of the application) can also be used in the calculation of the CDS premium.

Houweling and Vorst (2002) and Hull et al (2004) reported that when the USD swap rate is used as risk-free interest rate, the price differentials between bond interest spreads and CDS spreads are very small in short and long term. Neftci, Santos and Lu (2003) concluded that the CDS market supports the possibility of default. Longstaff et all. (2003) noted that there may be statistically significant differences between the spread between bond yields and CDS spreads. Chan-Lau (2003) reviewed the equilibrium price relationship between CDS, bond and stock prices. Brazil, Bulgaria, Colombia, Russia and Venezuela have a strong correlation between CDS and bond premiums.

Houweling and Vorst (2003) indicate that market players use the LIBOR "swap rate" instead of the US Treasury bond rate as the risk-free interest rate for CDS pricing. In his work with Kim (2004), Chan Lau emphasized that credit risk has some advantages over bond premiums for CDS premiums. Zhu (2004) found that there are small differences in CDS ratios and bond yields in the short run. In Lau's study with Kim (2004), it is emphasized that credit risk has some advantages over bond premiums for CDS premiums.

Blanco et all. (2005) investigated the dynamic relationship between investment grade and CDS. 119 CDS and bond notes belonging to European and American companies were used. CDS prices lead to bond prices. Daniels and Jensen (2005) point out that CDS and corporate monies price credit risk differently, indicating that the correlations between them are equal but not equal. They showed that the CDS market responded more quickly than the villains, indicating that the credit ratings and macroeconomic variables were statistically significant. Byström (2005) found that the surge in stock prices was significantly related to the CDS spreads, and that as the volatility in CDS spreads increased, the fluctuations in stock prices also increased. Fabozzi et all. (2006) In explaining the basic variables that determine the CDS spread, explanations of the risk-free interest rate, sector, credit rating, and liquidity variables were examined using a linear regression model. When all the variables had a meaningful effect, they could not reach a negative relationship between liquidity and CDS

spread between bond and liquidity. Other findings are that banks' CDS spreads are lower than company CDS spreads, and there is a negative correlation between risk free interest rates and CDS spreads.

Soultanaeva (2008) showed that during the 2001-2003 period, domestic and foreign (excluding Russia) political news decreased the risk of the stock market of Riga and Tallinn in its study of stock index indices of three Baltic countries. Norden (2008) examined how public disclosure of confidential information is reflected in credit risk or CDS spreads. By taking the key importance of the credit note as a foreground, it examined the announcements and expected effects using variables that also affect hidden information. The Realdon (2008) study identified and estimated a CDS pricing model. Empirical results have been obtained in support of the validity of the relationship between stock prices and non-fulfillment of the obligation in a sample of large firms. In the empirical study, stocks and CDSs traded on the stock exchange for 963 days (British Airways traded 844 days) from 1 January 2003 to 31 June 2006 were used as data. Alexander and Kaeck (2008) examined the effect of theoretical determinants on the iTraxx European index in their work with 750 observations. ITraxx has shown that the European index is more sensitive to stock swings than stocks. Fung et all. (2008) examined market-wide implications of the US stock exchange and credit default swap (CDS) market. Findings of the study show that the forward-return relationship between the US stock market and the CDS market depends on the credit quality of the emphasized reference asset. It has been determined that while the study directs the level of investment in the CDS index during the exchange pricing process, it provides important information feedback between the stock exchange and the high yield CDS market in terms of pricing and volatility. Imbierowicz (2008) As the subprime credit crisis caused severe price movements in all asset markets, the CDS market bubble was examined and the price band that occurred in 2002 - April 2008 period was analyzed by dynamic panel data regression. The reasons for deviations in different CDS pricing models have been examined using more than 650 company data from North America, Europe and Asia. While inflation and projected volatility affect CDS spreads in North America and Europe, leading indicators in Asia are noteworthy.

Fontana and Scheicher (2010), in their studies examining the Euro Zone CDS market in a comprehensive way; The risk appetite of investors has a strong influence on the borrowing costs of countries. Decreased risk appetite can cause considerable increases in CDS premiums. Zhang, Yau and Fung (2010) studied the relationship between the CDS premiums and the foreign exchange market during the 2007-2008 crisis period. North American CDS indices (CDX) of Australian currencies, euro, pound, and Japanese yen currencies have been examined in relation to European CDS indices (iTraxx) of euro currencies of the same currencies. In the study of the VAR model and the Granger Causality Test, we have come to the conclusion that the CDS market leads the foreign exchange market with a strong price.

CDS spread of one country can be seen as an indicator of the credit risk of that country (OECD, 2012).For ensure diversity of data for an accurate result, empirical studies involving the potential determinants of dominant CDS spread and financial indicators can be examined(Pan and Singleton, 2008; Fontana and Scheicher, 2010; Longstaff et al., 2011; Dieckmann and Plank, 2011; Fender et al., 2012).

Norden and Weber (2009); The relationship between CDS, bonds and stock markets has been examined using the vector autoregressive model (VAR). According to the results, stock exchange causes changes in CDS and bond spreads. From the CDS spreads, a relationship has been established that will lead to Granger causality towards bond spreads. CDS market movements are most sensitive to movements in the stock market.

Brandorf and Holmberg (2010); The effects of macroeconomic variables (GDP growth rate, inflation rate, unemployment rate and gross debt stock) on CDS premiums were

investigated using data from Portugal, Italy, Ireland, Greece and Spain. It is stated that the variable which is the biggest effect on the CDS in the data obtained from the regression analysis is the unemployment rate. Another result from the analysis that the variable with the least effect on CDS premiums is the inflation rate.

Heinz and Sun (2014) investigated the factors that determine the CDS premiums of the countries in question with the model they created using the CDS data of 2007-2012 period of Central, Eastern and Southeastern European countries. As a result of the analysis made with the GLS error correction model, it was determined that factors affecting CDS data of these countries are international investor sentiment, macroeconomic factors and liquidity conditions of CDS market.

Fonseca and Gottschalk (2012), Australia, Japan, Korea and Hong Kong have examined CDS markets. Fluctuations in stock returns and stock swings affect CDS spreads. Arce, Mayordomo and Pena (2013) tested the way in which the CDS and bond markets priced the same information during the European debt crisis. The price mechanism has changed on a country basis; The country's risk, the volatility in the stock market, and the agreements banks have made with regard to Greece's treasuries have destroyed the leadership influence of the CDS market; Funding costs, borrowing volumes, etc. have affected the effectiveness of the bond market and have reached empirical results. Pollege and Posch (2013) examined 13 European countries and tested whether the CDS premium gave the necessary signals to manage the bond portfolio. In the study of the period from May 2000 to December 2010, the results of the investment decisions taken on the basis of the CDS bond basis between the day the bond announcement was made and the borrowing took place were examined. In the case of a positive base, we found that the strategy of selling bonds and acquiring new bonds was successful in nine countries other than Finland, Ireland, Portugal and Sweden. Ratner and Chiu (2013) have examined the impact of CDS on the level of risk in the US stock market in their 2004-2011 study. CDS provides effective protection for all stock markets. Eyssell, Fung, Zhang (2013) 2001: 01 - 2010: 12 studies on factors affecting CDS spreads in their studies on China. According to the findings, in the first years of the period included in the study, China's local economic factors were effective on the CDS market, but global factors became effective in the following years, especially in crisis periods. The findings also Show that the change in CDS spreads affects stock returns.It is predicted that real-time macroeconomic data will include data on the past, and financial indicators could provide information about future macroeconomic dynamics(Collin-Dufresne et al., 2001; Dieckmann and Plank, 2011; Koop and Korobilis, 2014).

The need for a different medium to substitute credit ratings as a credit risk indicator has led to a growing emphasis on the credit risk assessment as an alternative to CDS credit ratings(Mora, 2006:9).

The approaches put forward regarding the country risk are expressed as structuralist approach. Structural approach is expressed as they argue that credit risk arises from structural problems and credit risk is based on three structural problems (leverage, volatility of asset value and risk-free interest rate)(Merton, 1974; Black and Cox, 1976; Longstaff and Schwartz, 1995; Zhou, 2001; Iwai, 2011:3).

Model parameters are estimated from the market values of CDSs(Jarrow et al. 1997; Duffie and Singleton 1999; Jarrow 2001; Das and Sundaram, 2007).

GDP growth rate, current account balance / GDP, exports / GDP, import / GDP, interest rates, debt / GDP, real exchange rate, external debt level, unemployment rate, inflation rate, share of the factors that affect the credit risk are analyzed. Variables such as the returns of bonds are used(Sand, 2012: 19).

Zhou (2004) used a vector error correction model and panel data analysis to make a comparative analysis of bond market and CDS credit risk premiums. It is stated that long-term

bond risk premiums and CDS premiums should be considered together and that the relationship between bond risk premiums and CDS premiums in the short term may vary depending on the market situation. It is stated that the amendment is caused by the different response of the two markets to the credit conditions.

Vashkevich and Lions (2013) used the Granger causality and VAR analysis to investigate the relationship between the CDS and the stock markets in their study for the period 2007-2011. As a result of the study, Asian countries have been found to have a negative relationship between credit default risk and stock market. Hassan et al. (2013) examined the determinants of CDS premiums in the US, Europe and Asia-Pacific markets using linear regression. According to the study, findings from the United States and other countries have shown that the CDS confirms the significant relationship existing between the actual market valuation and the theoretical determinants of default risk. Hilscher, Pollet, Wilson (2015) noted that stock returns affect CDS spreads as a result of their work.

RESEARCH METHODOLOGY AND HYPOTHESIS

The dataset consists of seven European countries: Bulgaria, Romania, Greece, Portugal, Italy, Ireland and Spain- some of the countries are members of the Eurozone (Greece, Portugal, Italy, Ireland and Spain), some of them are not (Bulgaria and Romania). We observe these European countries, because their nationaleconomies during the observed period, are characterized with high credit risk, high CDS spreads and increasing bankruptcy level. These seven European countries represent Euro zone country- members (Greece, Portugal, Italy, Ireland and Spain) and countries which are trying to enter the Euro zone (Bulgaria and Romania). We use panel data with monthly frequencies, starting from March 2003 until June 2016. The dependent variable is CDS spread, denoted in Euro, obtained form Thomson Data Stream.

Country- specific macroeconomic variables:

Inflation- it is one of the main variables with great importance in determining default risk. Inflation may be used as an indicator for economic stability, namely high levels of inflation indicate macroeconomic instability. Aizenman (2013) has explored the macoreconomic influence on sovereign and government default probability andhis results reveals that inflation affects on CDS spreads variation. The variable that we use for inflation is CPI (Consumer Price Index). It is obtained from Eurostat on a monthly basis. The expected sign of influence on CDS spread is positive because the higher inflation is, the higher default probability is.

Debt/ GDP- Based on the approach of Gapen et al. (2005), we have used Debt as a ratio of GDP as a country- specific variable. According to Gapen'sand numeriousother researches Debt/ GDP is considered to be a leading factor into measuring country's default probability. Debt data is extracted from Eurostat on a quarterly basis so the variable is cubic spline interpolated in order to be turned into monthly numbers. The monthly data is expressed as a ratio to GDP. We expect the sign to bepositive.

Current Account/ GDP- According to some policiymakers, ivestorsandtraders, current account balance's variations reflect country's economic situation. It may be used as an indicator about the ability of a country to repay its debt. Baldacci *et al.* (2008) has revealed that current account balance is a significant risk premium determinant. The variable is obtained from International Monetary Fund statistic and it is expressed as a ratio of GDP. The variable is cubicspline interpolated in order to receive monthly data. The expected sign is negative, because the higher current account surplus, the lower credit spreadvalues.

Local capital markets - Local capital markets may be considered as leading indicators of economic activity because they directly affect the wealth of economy. A well- functioning and developing capital markets may expand economic growth. (Kolstad, M. (2013)).

Longstaffet al. (2011) has revealed that local stock market returns may be accepted as a proxy for the conditions and the state of the local country economy. The variables that are used by as, represent the capital market indexes for the followingcountries:

Table 1. Local capital markets indexes (LCMI)

Country:	Stock market indices:
Bulgaria	Sofix
Romania	BET
Italy	FTSEMIB
Ireland	ISEQ20
Spain	IBEX35
Portugal	PSI 20
Greece	Athex

Source: Author's classification

A country's index data are obtained from the internet sources of their capital markets in monthly numbers. The expected sign is negative.

Cubic Spline Interpolation:

Because of the fact that some of the researched variables are available on quarterly basis, we use cubic spline interpolation to convert them into monthly data basis. A cubic spline is a segmented function consisting of third- degree polynominal functions joined together making the whole curve and its first and second derivative continuous. Many researchers prefer cubic spline interpolation to linearinterpolation (Kolstad, M. (2013)).

Unit RootTest:

Before proceeding to the election of the econometric method, it is necessary to establish stationarity for all of the explored variables: dependent- CDS spreads- and explanatory variables. One of the used panel unit root tests is the test, developed by Levin, Lin and Chu (2002). The null hypothesis means that Ho: each time series contains a unit root, against the alternative hypothesis H1 :each time series is stationary. The test procedure includes four steps.

Oridnary Least SquaresRegression:

For the establishment of credit default spreads determinants, we use linear regression. The study is based on evaluating linear regression equation by means of *the method of least squared (OLS regression- ordinary least squares regression)* and it is included in the dummy variable equation- *dummy variable*. Using a dummy variable is intended to divide the regression equation of two sub- periods- Euro zone members and countries which are not members of the Euro zone (Bulgaria and Romania). To conduct calculation the dummy variable takes two values- (0) for the countries which are not Euro zone members (Bulgaria and Romania) and (1) for the countries which are Euro zone members (Portugal, Italy, Ireland, Greece and Spain). To determine Credit Default Spreads, using OLS- method, we apply an econometric equation with the following standard form:

$$CDS_{it=}\ \alpha + \beta_1\, CPI_{it} + \beta_2\, Debt/GDP_{it} + \beta_3\, CA/GDP_{it} + \beta_4\, LCMI_{it} + \beta_5\, (Euro\ zone\ 1/0) + \varepsilon_{it} \qquad (1)$$

RESULTS AND DISCUSSIONS

Before proceeding to the regression models, we have applyed panel unit root test. Table 3 shows the results of the Levin, Lin and Chu test (2002) for all researched variables. The results indicate that for all of the panel time series level data are not stationary so we have to transform them into first difference. According to the results in table 2 the first differences of the time series are stationary .The right column shows the test results for the first difference of the time series used in the regression analysis. A large negative t- statistic and the high significance level indicate the rejection of the null hypothesis and therefore, stationarity of the time series. Because of the fact that the first differences of the time series are stationary, we may conclude that they are integrated in order one.

Table 2. Panel Unit Root Test Results

Variable:	1-st difference statistic:	p-value:
CDS spreads	-17.7356	0.0000
CPI	-11.1261	0.0000
CA/ GDP	-34.2120	0.0000
Debt/ GDP	-12.7092	0.0000
Local capital market index (LCMI)	-17.6166	0.0000

Note: All of the variables are stationary at first difference
Source:Author's calculations

For the estimation of the first diiference of the explored variables, we use the following equation:

$$FirstDiff = \frac{VarValue_{it}}{VarValue_{it-1}} \quad (2)$$

Where:
FirstDiff- the first difference of the explored variable;
$VarValue_{it}$ - the value of the explored variables for the i- th country at moment t;
$VarValue_{it-1}$ - the value of the explored variable for the i- th country at the moment t-1.

OLS' results from CDS country specific determinants:

Table 3. Country- specific determinants of CDS spreads (Dependent variable CDS spreads)

Variable:	*Expected sign:*	*Coefficient:*	*t- statistic:*	*p-value:*
C		*0.299737*	*2.184903*	*0.0034*
CA/ GDP	*Negative*	*-0.267710*	*0.722512*	*0.4702*
LCMI	*Negative*	*-0.482177*	*23.91985*	*0.0006*
Euro zone=1		*-2.855384*	*-3.488286*	*0.0071*
CPI	*Positive*	*0.912364*	*-0.410023*	*0.6819*
Debt	*Positive*	*2.792615*	*9.009798*	*0.0295*
R- squared	*0.454550*			
Adjusted R- squared:	*0.450676*			

Source: Author's calculation

The results of linear regression, including country specific variables and the dummy variable Euro zone=1 for the explored time period, has revealed their strong influence to CDS spreads. To confirm these findings, we first consider the value of R^2 as an indicator, stating how much of the variability of CDS spreads may be explained by the regression equation. The

explanatory variables, as evidenced according to the results in table 4, are able to account for the 45.45% of the variation of CDS spreads, which means that country- specific variables are significant factors in determining sovereign credit spreads for the explored seven countries. Equally important as the fact that the variables do indeed influence the CDS spreads is whether or not coefficients of the variables have the correct sign base on what is expected in theory. All of the four explored variables in equation (1) have the correct signs. These results are consistent with the results of Edwards (1984), Boehmer and Megginson (1990), Beck et al. (2005), Dailami et al. (2008), Baldacii et al. (2011) and Beirne and Fratzeler (2013) which mean that macroeconomic conditions of a national economy are important CDS determinants.

Firstly, the results of linear regression, including country specific variables and the dummy variable Euro zone=1 reveals statistical significance of the dummy variable and its value is (*-2.855384).* It has been established that the negative sign and symbol of Euro zone=1 leads to reduction in the regression constant C, whose coefficient in the regression equation is (*0.299737).*

Secondly, local capital market index, euro zone= 1 dummy variable and debt- all have a statistically significant effect on CDS spreads. All of these variables reflect the sovereign credit default swaps spreads and have the expected sign. So, we may conclude that according to the results in table 4, developed capital markets of Euro zone country members leads to reduction of country's sovereign credit risk. But we should consider the fact that if a country's debt increases its level, it will lead to significant effects on CDS spreads (in order to expand them). According to the results in the linear regression equation, the significant effect of country' indebtness may be neutralized by higher market capitalization, market development and membership in the Euro zone.

In table 4, we have revealed the results from the OLS equation, but in this case dummy variable Euro zone is equal to zero (Euro zone= 0). The established value of Euro zone= 0 is positive and statistically significant with a coefficient value equal to (*2.855384),* and the coefficient value of the constant C is negative (*-0.691486).* We should take into account that according to the results in table 4 and table 5, opposite results are observed. From this, we can draw conclusions opposite to those characteristic of a country Euro zone member, and namely, if Bulgaria and Romania become Euro zone members, they will decrease their credit default spreads because now not being members leads to CDS spreads growth.

Table 4. Country- specific determinants of CDS spreads (dependant variable CDS spreads):

Variable:	*Expected sign:*	*Coefficient:*	*t- statistic:*	*p-value:*
C		*-0.691486*	*-2.625782*	*0.0042*
CA/ GDP	*Negative*	*-0.267710*	*0.722512*	*0.4702*
LCMI	*Negative*	*-0.482177*	*23.91985*	*0.0006*
Euro zone=0		*2.855384*	*3.488286*	*0.0071*
CPI	*Positive*	*0.912364*	*-0.410023*	*0.6819*
Debt	*Positive*	*2.792615*	*9.009798*	*0.0295*
R- squared	*0.454550*			
Adjusted R- squared:	*0.450676*			
AIC	*9.251272*			
SIC	*9.289851*			

Source: Author's calculation

CONCLUSION

This paper examines the macroeconomic conditions and CDS spread changes of the national economies of the following European countries: Bulgaria, Romania, Portugal, Italy, Ireland, Greece and Spain. We employ OLS regression model in order to reveal the influence of the macroeconomic determinants on CDS spreads. The main contribution of this paper is

that at our knowledge, this is the first paper that examines the the probability of a country to become Euro zone member influence on derivative market. When we explore, macroeconomic determinants influence, the Euro zone membership neutralizes the effects of the debt level and local capital markets and reduces CDS spreads. Taken together, we conclude that the factor of macroeconomic conditions play a critical role in pricing CDS when the country- specific variables, such as inflation, debt/GDP, current account/ GDP, local capital markets' indexes – have an explanatory power. If a country's debt increases its level, it will lead to significant effects on CDS spreads values. According to the results in the OLS-regression model, the significant effect of country' indebtness may be neutralized by higher market capitalization, market development and membership in the Euro zone. If Bulgaria and Romania become Euro zone members, they will decrease their credit default spreads because now not being member leads to CDS spreads increase.

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