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VšĮ Šiaurės Lietuvos kolegija
Tilžės g. 22, LT-78243 Šiauliai
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El. p. bilbokaite.ieva@slk.lt
http://www.slk.lt

Address:

Northern Lithuania College
Tilžės st. 22, 78243 Šiauliai, Lithuania
Tel./Fax: + 370 41 525 100
E-mail: bilbokaite.ieva@slk.lt
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DO SECURITIZED DERIVATIVES INCREASE MARKET CAPITALIZATION: AN ANALYSIS FOR WORLD STOCK EXCHANGE

Esref Savas BASCI
Hitit University

Abstract. There is a strong relationship between economic growth and the stock market. On one side, all countries aim to improve their economic growth; on the other side, equity markets are affected by growth of economies, as a part of investment opportunities in their economy. Globalization of economy leads to the use of financial instruments in order to enjoy the benefits from equity markets. The main financial instruments are not sufficient in some economies; therefore, they need to use financial derivatives in their stock markets to remove financial obstructions, and to control the risks that are part of uncertainties in financial confusing risks. Do securitized derivatives increase market capitalization (equity market) in the globalization process? This question is the main motivation of this paper. In financial literature, market capitalization can be calculated by multiplying the total amount of common stocks and their market prices. This total market capitalization refers only to equity stocks, most companies and investors can invest their stocks; on the other hand, they may invest financial derivatives for important purposes. Mainly, two types of instruments take different positions in stock exchange; it is known that financial effectiveness is related to the amount of financial instruments. If one economy generates different types of financial instruments, it is expected that their stock exchange increases. In this paper, we analyzed the relationship between securitized financial derivatives and market capitalization in Spain, Germany, Holland, Sweden, Norway, Switzerland and Austria within the period from 2005 to 2015. Stock exchange of these countries was used since they have continuous data over the years. We estimated the relationship between variables using the panel regression model with fixed effects, which is tested by the Hausman Test. The panel regression model requires the data which contains both cross-sectional and time series structure. From the results, we determined a positive relationship between securitized derivatives and market capitalizations which is a statistically significant coefficient.

Keywords: Market Capitalization, Securitized Derivatives, Panel Regression, World Stock Exchange.

Introduction

Investors need more specific instruments to trade for hedging or speculative purposes. Securitized derivatives are considered to be among such specific instruments. They also include different types of financial instruments and bear their own characteristics. Some examples of derivatives, such as capital protection, speculative trading, use different features of derivatives. Using securitized derivatives in stock exchange market could assist in the market growth. As a matter of fact, some investors prefer to use fundamental financial instruments. Despite this, there are investors who need to use derivative instruments against hedging, exposure to national or foreign equities.

On one side, the use of derivatives is rather complex for companies. According to Pierce (2015), current accounting standards need fair value for the derivatives since the derivatives could create time differences between buying and selling time. Even if according to hedge position of companies, they need to realize hedge transactions during gains and losses on derivative position, they could find themselves in a problematic situation.

On the other side, all companies aim to use derivatives in order to protect themselves against fluctuations in market. Changing spot and future prices of all variations as currencies, commodity, interest rate and etc. could cause volatility in the market. This uncertainty in the market could be managed by derivatives that are commonly accepted tools for risk management. When an investor determines a particular type of risk that could affect his business, he may wish to hedge this risk by becoming a party to a derivative contract (Naneva, 2016). For this purpose, companies aim to use derivatives. Derivative contracts allow companies to lock in prices or rates on underlying assets and liabilities for a defined period. Companies using derivatives to hedge against price or rate fluctuations have the advantage of more consistent and uniform cash flows. (Johnson and Xie, 2015)

In stock markets, not only stocks but also all kinds of securitized instruments, such as warrants, derivatives, bonds, exchange traded funds, etc., can be traded. It allows investors, stock holders and companies to invest to all instruments. In financial literature, market capitalization means the total value of the company's outstanding shares in the stock exchange. It could be calculated by multiplying the total of the company's outstanding stocks and the stock price at the same time. The total shares of a company in the stock exchange are stable in trading, buying, and selling until the company intends to change the total shares of stocks by using public offering, etc. Besides, the price of one share in the stock exchange may change according to the related demand and supply. The changing price in the outstanding stocks

may change the total value of the company's market value. In the stock exchange, the sum of the company's total market value means the total market capitalization for one point in time.

Investors may invest their money to all other instruments for different purposes. Calculating market capitalization with sum of firm's total market value is different from sum of other financial instruments. One stock exchange is known by sum of a firm's total market value as a total market capitalization. It totally means relating to the company's common stocks. Therefore, the use of derivatives could assist in improving the total value of stock exchange. Thus, the stock exchange may offer different opportunities to all investors by using all kinds of financial instruments. Relationships between securitized derivatives and stock indices are important to understand the market value.

In this study, our aim for the research problem is to determine any relationship between the market capitalization and the securitized derivatives. Over the last decades, there has been an exponential increase in the use of derivatives striving to better evaluate the company's assets and liabilities and to manage any risk in the market. Therefore, it has lead to an increased demand among the investors to use the derivatives. According to financial literature, the use of derivatives should increase the market concentrations. It may also lead to the increased market capacity for all types of investors. Therefore, investors have a chance to invest in financial instruments that vary from low risk to high risk with their own return. Thus, this paper is also an important contribution to the literature analyzing the relationship between derivatives and market capitalization in the world stock exchange.

Literature Review

In literature, there are some scientific articles that are related to derivatives and their place in the market. The researches could be classified by different purposes, such as hedging activities, effect to market and non hedging purposes. Allen and Santomero (1997) emphasized the theory of intermediation based on transaction cost and asymmetric information. In their paper, their research was conducted by comparing transaction cost, asymmetric information and financial intermediation. They explained importance of various types of derivatives for traditional markets and account for a very large majority of trading in new markets. Schrand (1997) investigated the pursuit of integration between market interest rates and derivatives activity in the stock market. One of the Schrand's results is related to hedging activities and its interest rate sensitivity. In the paper, it was indicated that the use of securitized derivatives is related to the decreasing equity market values, especially after the market crash of 1987.

Levine and Zervos (1999) assessed the relationship between stock market development and long-run growth. They suggested analysis of the derivatives as a component of the financial system for understanding the relationship between economic growth and finance. Nath (2003) analyzed behavior of volatility in equity market and related two periods, before and after the use of derivatives. Nath found that the market volatility had fallen in the post derivatives period. It means that derivatives could give balance to the market structure. Uluc and Melaine (2011) have found that using derivatives in emerging market could reduce the companies' exchange exposure. As the companies' level was analyzed, it was established that companies are able to diversify risk by using financial derivatives. However, there are negative aspects between the use of derivatives and the company's level exchange rate exposure.

Manchiraju, Pierce, and Sridharan (2014) studied the use of non-hedge derivatives in gas and oil sector by 87 companies. They focused on hedges that are not used for speculative or trading purposes. They concluded that companies using derivatives for non-speculative purposes could minimize risk thanks to financial derivatives with low contracting costs. Moreover, the findings suggest that the market penalizes industrial companies that use non-hedge derivatives. Johnson and Xie (2015) established the relationship between investment in non-hedge derivatives and stock betas of large U.S. manufacturing companies. They suggest that U.S. manufacturing companies are not related to speculations in the market. Guay and Kothari (2003) established several purposes for the extensive use of derivatives related to managing corporate risk. In their research, they classified the market that uses derivatives in segments. Pierce (2015) investigated hedges related to risk and value of a company. Particularly, large companies use hedge against decreasing earnings' volatility in accounting base. However, Pierce did not establish any evidence on investors' view and derivatives. Despite this, hedge accounting results in lower earnings' volatility, positively associated with company's value provide some justification for companies to incur costs required for implementation of hedge accounting.

Referring to the literature review, there is a weak relationship between market capitalization and securitized derivatives. In this study, we analyzed this gap in order to understand their relationship. Therefore, our study may also contribute to the related literature.

Data and Methodology

In this paper, we analyzed the relationship between securitized financial derivatives and market capitalization in Spain, Germany, Holland, Sweden, Norway, Switzerland and Austria within the period from 2005 to 2015. This paper is focused on the European Stock Exchanges since these exchange markets continue to use financial derivatives. Stock exchange of these countries was used since they have continuous data within the period from 2005 to 2015. Table 1 shows the stock exchanges that are used in this paper.

Table 1. **Stock Exchanges in Europe**

No.	Stock Exchange	Country and Continent
1	BME Spanish Exchanges	Spain, Europe
2	Deutsche Boerse	Germany, Europe
3	Euronext	Holland, Europe
4	NASDAQ OMX Nordic Exchange	Sweden, Europe
5	Oslo Bors	Norway, Europe
6	SIX Swiss Exchange	Switzerland, Europe
7	Wiener Borse	Austria, Europe

All series that are used in this paper have cross-sectional and time-series structure. According to the structure of our data, we analyzed the panel data regression model in order to estimate the relationship between the variables.

Table 2. **Variables in the Panel Data Analyze**

Variable Name	Description	Period	Role in Model
Mcap	Domestic market capitalization (USD millions)	Annually, From 2005 to 2015	Dependent Variable
Derv	Securitized derivatives (USD millions)	Annually, From 2005 to 2015	Independent Variable

Table 2 shows the explanation of all series and role in the model. We analyzed that both series are total value of the annual period and all series are used in logarithmic forms in the model.

Findings and Conclusions

Before starting the panel regression model, we determined a scatter graph for each series. In Figure 1, the logarithmic form of total market capitalization placed in axis, and total amount of derivatives in logarithmic form on the other side.

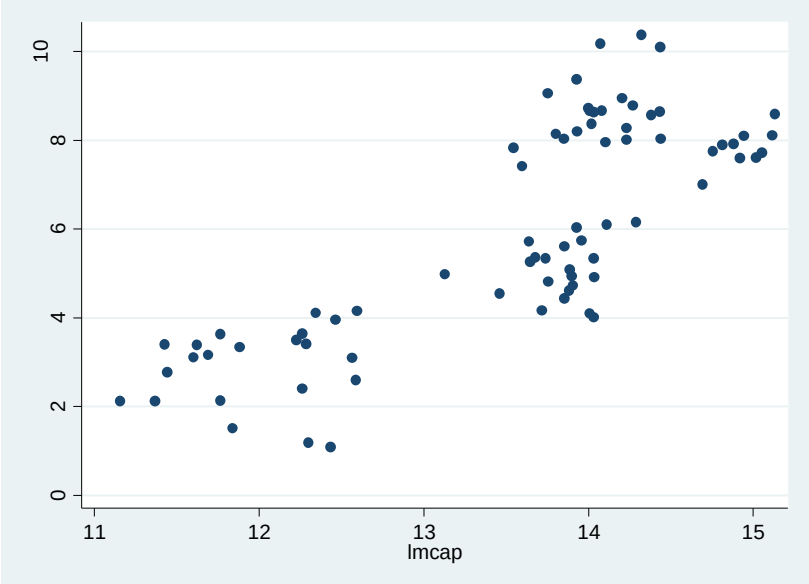

Figure 1. **Scatter Graph of both log series**

According to Figure 1, there is a linear relationship between the series. It means that if market capitalizations rise up, the derivative securities would rise up again. The relationship is the same; it may lead to a positive correlation between the series.

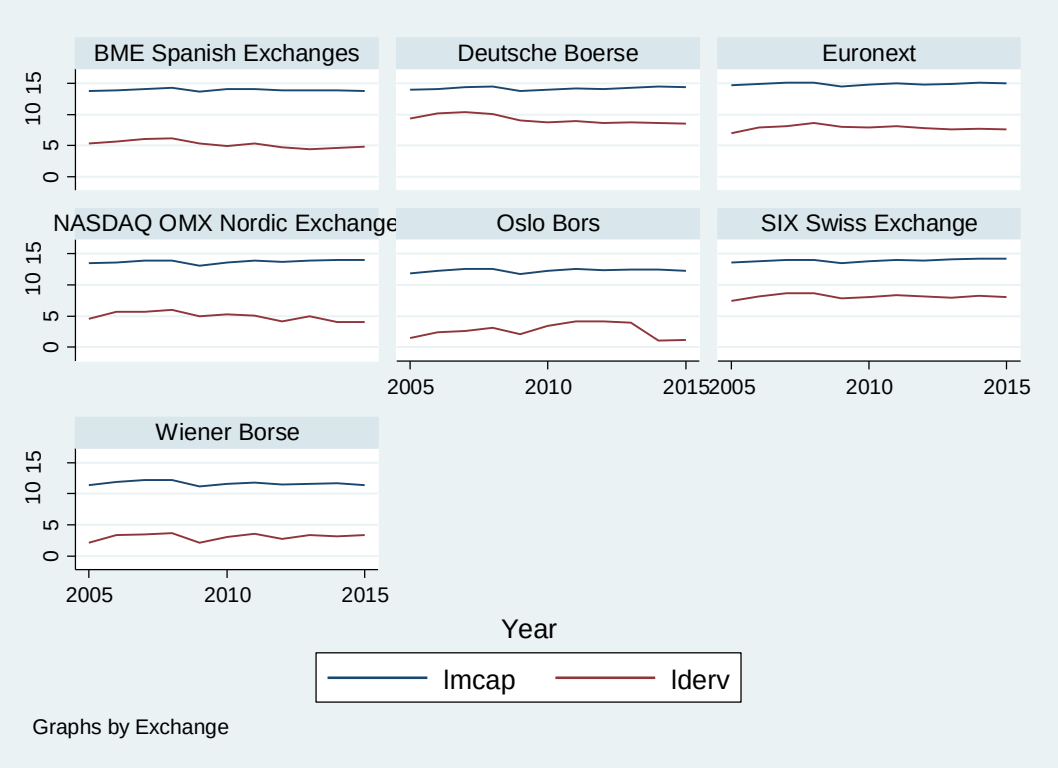

Figure 2. **Log. Line Graphs for Each Exchange**

Figure 2 shows all the exchange market capitalization and their securitized derivatives separately in the same period.

Table 3. **Correlations Between lmcap and lderv**

Name of Exchange	Corr $_{lmcap,\ lderv}$	Sig.
BME Spanish Exchanges	0.5367	0.0887
Deutsche Boerse	0.0957	0.7796
Euronext	0.3517	0.2889
NASDAQ OMX Nordic Exchange	-0.0542	0.8741
Oslo Bors	0.4413	0.1742
SIX Swiss Exchange	0.5531	0.0776
Wiener Borse	0.7598	0.0067

Table 3 shows correlations between the logarithmic series of market capitalization and derivatives of each exchange market. According to Table 3, only NASDAQ OMX Nordic Exchange has a negative correlation between the lmcap and lderv series. Despite this, the relationship is not statistically significant and other exchange markets have a positive correlation.

We analyzed the panel data regression model in this study. According to the structure of variables, these analyzing methods should be used. The panel data regression model could be calculated by using the fixed effect and the random effect. In the panel regression model, the coefficients differ over the time periods. The same situation exists in the error terms. There are two assumptions- in selecting a model like the fixed effect and the random effect in the panel data regression model. In the fixed effect model, it should be assumed that the coefficients are changing according to time and element of

regression, and slope is fixed in the model. On the contrary, for the random effects, it should be assumed that it interferes with error elimination in terms of the fixed model. The random effect allows not only changing the coefficient for the period but also adds to all other components in the model (Baltagi, 2008).

The fixed or random effect selecting criteria is called the Hausman Test. The Hausman Test analyzes all coefficients from both panel data regression. The Hausman tests differ between the coefficients and its test zero hypothesis. If the zero hypothesis accepts that it is the random effect, then it is an acceptable method for the panel data regression analyze (Hausman, 1978). Results of the Hausman test are shown in Table 3 below.

Table 3. **Hausman Test Result**

	Coefficients		
	β_1 Fixed	**β_2 Random**	**Difference Coef.**
Lderv	.1315285	.1619925	-.0304641
H_0: Difference in coefficients not systematic			
Chi^2	5,34		
Prob.	0,0209		

Referring to the result shown in Table 3, zero hypothesis should be rejected and the fixed effect model should be selected in the panel regression model.

Table 4. **Panel Data Regression Test Result with the Fixed Effect Model**

Lmcap	**Coefficients**	**Std. Err.**	**t**	**P value**
Lderv	.1315285	.0423777	3.10	0.003
Constant	12.74917	.2509118	50.81	0.000
R^2	0.69			
F test	79.78			
Prob.	0.000			

Result of the panel data regression test with the fixed effect model is shown in Table 4. According to the result, they are statistically significant at 1% level. As an independent variable, lderv has a positive sign and 0,1315 coefficient to predict the lmcap variable. It means that two variables are identical. In case if one variable starts moving, the other variable would follow it. In the result, the exchange stock market needs securitized s derivatives for its growth. From the results, we determined a positive relationship between the securitized derivatives and the market capitalization which is a statistically significant coefficient.

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