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ICon-LBG 2016

The Third International Conference on Law, Business and Governance

PROCEEDINGS

Hosted by

Faculty of Law, Faculty of Economics and Faculty of Social Science
Bandar Lampung University (UBL)

Icon-LBG 2016

THE THIRD INTERNATIONAL CONFERENCE ON LAW, BUSINESS AND GOVERNANCE 2016

20, 21 May 2016
Bandar Lampung University (UBL)
Lampung, Indonesia

PROCEEDINGS

Organized by:

Faculty of Law, Faculty of Economics and Faculty of Social Science
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PREFACE

The Activities of the International Conference are in line and very appropriate with the vision and mission of Bandar Lampung University (UBL) to promote training and education as well as research in these areas.

On behalf of the Third International Conference on Law, Business and Governance (3th Icon-LBG 2016) organizing committee, we are very pleased with the very good response especially from the keynote speaker and from the participans. It is noteworthy to point out that about 46 technical papers were received for this conference.

The participants of the conference come from many well known universities, among others : International Islamic University Malaysia, Unika ATMA JAYA, Shinawatra University, Universitas Sebelas Maret, Universitas Timbul Nusantara, Universitas Pelita Harapan, Universitas Bandar Lampung, Universitas Lampung.

I would like to express my deepest gratitude to the International Advisory Board members, sponsor and also to all keynote speakers and all participants. I am also gratefull to all organizing committee and all of the reviewers who contribute to the high standard of the conference. Also I would like to express my deepest gratitude to the Rector of Bandar Lampung University (UBL) who give us endless support to these activities, so that the conference can be administrated on time

Bandar Lampung, 21 May 2016

Mustofa Usman, Ph.D
Icon-LBG Chairman

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MARKET REGIME AND RELATIVE RISK BETWEEN SECTORS

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Abstract

This study aims to explain the occurrence of market regime and the measurement of the relative risk between sectors in stocks of financial sector and stocks of trade sector in the Indonesia Stock Exchange. This study uses Markov regime switching model, to identify market regime that occurred in the financial sector and the trade sector. Then the model parameters using the Variation Coeficient be measured relative risk of each sector of the market that occurred regime. This study uses data Indonesian stock exchange for the observation period January 1996 until March 2016.The results of this study indicate that market regime that occurred in the financial sector and the trade sector is divided into bullish regime and bearish regime, where the difference is primarily due to differences in volatility. The risk per unit of return indicate that relativelystocks of trade sectors had a higher risk than stocks of financial sector in Indonesia Stock Exchange.

Keywords:Market Regime, Markov Switching Model, Coeficient of Variation.

1. BACKGROUND

There is a common belief among the investors, policy makers and academicians that low-frequency trend exists in the stock market. Traditionally, positive and negative low-frequency trends have been known respectively as bullish and bearish condition. If these trends exist, it is important to extract them from the data, to analyse their characters and consider their uses as the input for investment decision and risk assessment(Maheu *et al.*, 2012).

Analysis of stock market conditions, whether it is bullish or bearish, very relevant, especially for investors who implement the market timing strategy in practice trading. They seek to invest in assets with a bullish outlook and removing the asset with the bearish outlook. The successful implementation of this strategy requires identification and accurate predictions in the period of bullish and bearish.In connection with an investment in the common stock, the investors will be exposed to a wide selection of industrial sectors. An analysis of sectoral investment is important to be conducted to make it easier for investors in determining the investment option (Jones, 2007). All listed the issuers on the Indonesia Stock Exchange (IDX) are classified into nine sectors. They are: agriculture, mining, basic industry, miscellaneous industry, consumer goods, property and real estate, infrastructure, finance, trade and service. In this paper, the author limits only to the finance sector and trade and service sector. The author considers that these sectors are the highest number of issuers than other sectors with 78 issues (16%) and 111 issues (23%).

Development of the the stock price are grouped by business groups that exist in the Indonesia Stock Exchange reflected in sectoral stock indexes published by PT. Indonesia Stock Exchange each period.Consideration of an investor, to choose which sector will be entered in the stock investing, is the return and the risk. Investors will like investing in stocks that have high returns and low risks. What if the choice is faced with two investments, one has a high risk and high return, while only investment returns are low and low risk. Which should be chosen ?, this study will look at risk and return two sectors, the financial sector and the trade sector in the two market conditions, will then assess which sectors have relatively the risk per unit of return lower. It can be used as a reference for investors to select which sectors should be selected to invest in stock in the Indonesian capital market.

2. LITERATURE REVIEW

Much research has been conducted by researchers associated with the bullish and bearish. Based on the belief that the behavior of stock prices in conditions different from the conditions bullish bearish. Because the condition bullish / bearish unobserved, many existing research using the realization of return to determine whether the market is in a state of bullish or bearish on a certain time. Hamilton (1989) provide an econometric model to analyze the condition of bullish and bearish and switching between the two conditions. Based on this framework, Schwert (1989) and Hamilton and Susmel (1994) conducted a study about a regime change and market volatility in both conditions. While Turner, et al (1989) found that the S & P 500 index has a mean and variance can differ across conditions of bullish and bearish. Ang and Bekaert (2002) and Guidolin and Timmermann (2004) examines the portfolio decisions related to the return of assets to the regime-switching that gives insight into the investment in the condition of bullish and bearish.

For time series that tends to be cyclical, for example, due to the business cycle, a popular model is a two-state regime-switching model in which the conditions are latent and mixing parameters estimated from the data available. One stipulation is a popular parameter Markov-switching models where the transition between the condition / state governed by a Markov chain. Hamilton (1989) apply the model of two-states Markov-Switching, using data from the US GNP growth rate quarterly to identify the business cycle and the estimated first order Markov transition probabilities associated with cycles of expansion and recession phases. Stock markets are also considered to have a cyclical pattern that can be identified with the regime-switching models. For example, Hamilton and Lin (1996) connects the business cycle and stock market regime, Chauvet and Potter (2000) and Maheu and McCurdy (2000a) using a Markov-switching measurements to analyze the nature of the regime of bullish and bearish extracted from the aggregate stock market return.Time series data, especially financial stock prices always had an episode in which the behavior of series seems to change quite dramatically. This phenomenon refers to a structural break or regime shift, and this can not be modeled with linear time series model of a single equation. Usually the regime shift will occur because of the economic and financial crisis that is happening around the world, which led to a change in the nature of financial time series, especially the stock price. This condition motivates the use of regime switching models. (Ismail et al, 2008). Martin P.H. Panggabean (2010) Markov regime switching model to identify the Indonesian stock market conditions.

3. RESEARCH METHOD

Markov Switching Model (MSM) was introduced in finance by Hamilton (1989). Hamilton and Lin (1996); Turner, et al (1989), Maheu, et al (2000), Ismail, et al (2008), Chen (2009), Martin PH. Pangabean (2010), Kole et al. (2012) to identify the regime of bullish and bearish on the stock market.

r_t = sectoral stock *return* i at time t, calculated from the logarithm changesof $IHSS_i$ (Y_{it})

$r_t = 100 . \ln(Y_{it}/Y_{it-1})$ (1)

S_t = i, ismarket conditionsvariable, i = 1; 2

S_t = 1, *bullish condition*

S_t = 2, *bearish condition*

Markov-Switching Model with two conditions (two-state Markov Switching Model) which describes the evolution of the data$r_t = \{r_1, r_2, r_3, \ldots r_t\}$ adalah sebagai berikut:

$r_t = \mu_1 S_t + \mu_2(1-S_t) + [\sigma_1 S_t + \sigma_2(1-S_t)]\varepsilon_t$ (2)

where ε_t is*error term*, dan $\mathcal{E}_t \sim$ i.i.d. $N(0, \sigma_{st})$

Variable conditions S_t is assumed and governed by the first order of Markov chain process with transition probabilities, p_{ij}, given by

$P\{ S_t = j \mid S_{t-1} = i\} = p_{ij} \quad \forall \quad i,j = 1,2$ (3)

In particular, $p_{11}=P\{ S_t = 1 \mid S_{t-1} = 1\}$ indicates the probability of starting in a bullish condition and ending up in the same condition and $p_{22}=P\{ S_t = 2 \mid S_{t-1} = 2 \}$ indicates the probability of starting in a bearish condition and ending up in the same condition. The transition probability is estimated by maximum likelihood.

The results of the identification of the condition of the stock market by using a Markov switching model will generate model parameters μ1 and σ1 (mean and standard deviation of return of each sector in a bullish condition), μ2 and σ2 (mean and standard deviation of return each each sector in bearish condition). Comparison of risk between the financial sector and the trade sector is done by using Coëficient of Variation, A standardized measure of dispersion about the expected value, that shows the risk per unit of return. (Brigham and Houston, 2004):

$$CV = \frac{\sigma}{\mu}$$

CV= Coeficient of Variation
σ = Standart Deviationof sectoral stock return
μ = Mean of sectoral stock return

Tabel 1
Variable Involve In The Study

Variable	Variable Concept	Indicator	unit
Finance sector stock return (r_finc)	Yields in general of finance sector stock return in the Indonesian capital market	$r\_finc = (\ln FSSI_{it} – \ln FSSI_{it-1})*100$ $FSSI_i$ = finance sector stock index	%
Trade sector stock return (r_trade)	Yields in general of trade sector stock return in the Indonesian capital market	$r_i = (\ln TSSI_{it} – \ln TSSI_{it-1})*100$ $TSSI_i$ = trade sector stock index	%

4. RESULT AND DISCUSSION

TO TEST THE STATIONARITYTEST

The stationarity testing data of finance sector stock return and finance sector stock return used the Augmented Dickey Fuller (ADF) and Phillips-Perron test (PP) test.

Tabel 2
The Result ofStationarity Data

Variable	ADF *Test*		PP *Test*	
	t-stat	Prob	Adj. T-stat	Prob
r_finc	-13,132	0,000	-13,086	0,000
r_trade	-11,541	0,000	-11.436	0,000

Table 4 shows the ADF test and PP test are significant (p-value < 0,01) all the variables. It means that thedata of finance sector stock return and finance sector stock return are stationary.

BULLISH AND BEARISH IDENTIFICATION

Identification of bullish and bearish conditions sectorally on the financial sector and the trade sector based on the return of each sector using the Markov regime switching models. Based on the proposed model that has been presented obtained values of model parameters as follows:

Tabel 3
The Estimation of Parameters of Markov Regime Switching Model of Finance sector stock return
And Trade Sector tock Return Period of January 1996 - March 2016

Parameter	Keuangan	Perdagangan
μ_1	***1.7012	***1.5514
μ_2	-2.9933	-2.2561
S_1	***6,6261	***6,1036
S_2	***15,0847	***17,5729
P_{11}	***0.9873	***0.9887
P_{22}	***0.9424	***0.9460

**) significant at 1% level*) significant at 5% level

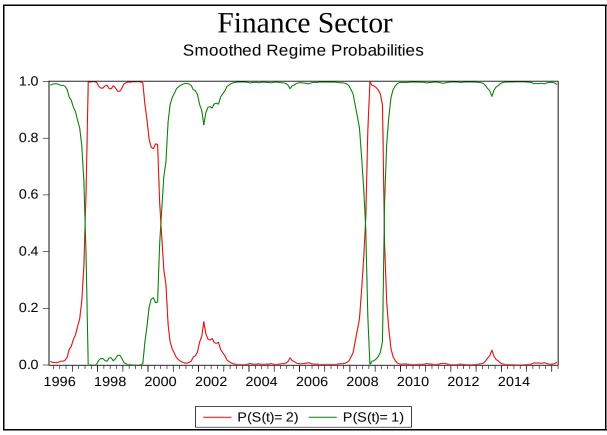

Figure 1
Finance Sector

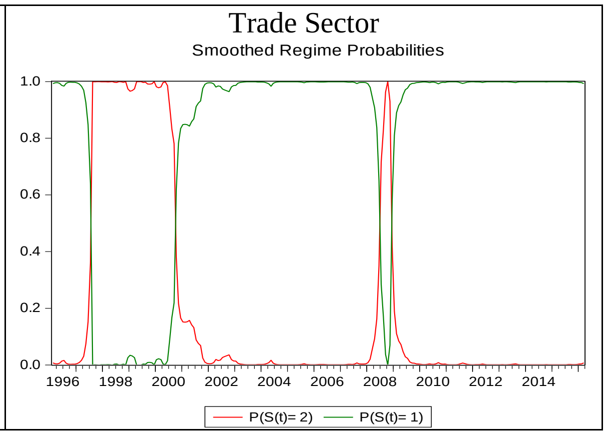

Figure 1
Trade Sector

Tabel 4
Bullish and Bearish Condition Period in Finance Sector And Trade Sector
February 1996 toMarch 2016

Finance Sector				Trade Sector			
Bullish		Bearish		Bullish		Bearish	
1996:02 – 1997:06	17	1997:07 – 2000:06	36	1996:02 – 1997:07	18	1997:08 – 2000:09	38
1997:07 – 2008:07	97	2008:08 – 2009:04	9	2000:10 – 2008:06	93	2008:07 – 2008:11	5
2009:05 – 2016:03	83			2008:12 – 2016:03	88		
81,4%	197	18,6%	45	82,2%	199	17,8%	43

Table 4 shows that the parameters are very significant (p-value<0.01), but μ_2 is not significant.Eventhough μ_2 is not significant, the interpretation of this model remains attractive. This model shows that we can divide market condition of finance sector and trade sector into two regimes. The difference of conditions is due to the difference in market volatility.Thus, the first regime is characterized by positive returns with low volatility (low risk) and the second regime is characterized by a negative return with high volatility (high risk). In line withthe previous studies such as Turner, *et al* (1989), Maheu *et al.* (2000), Ismail *et al.* (2008), Martin PH. Pangabean (2010), and Kole *et al.* (2012), we can conlude that state1 was identified as the bullish condition and the state 2 was identified as the bearish conditions.

FINANCE SECTOR

The finance sector in the bullish condition showed that the average monthly return is positive (1.55% per month or equivalent to 18.60% profit per year). In contrast, bearish condition showed an average negative return monthly (-2.99% per month or equivalent to 35.88% loss per year). The standard deviation of bullish condition is 6.63%, while the standard deviation of bearish condition is 15.08%. It means that the volatility of bullish condition is lower than that bearish condition.Based on the Figure 1 and Table 4 conclude that during the observation period in February 1996 until March 2016 (242 observations) stocks of the finance sector in Indonesia Stock Exchange experienced 81.4 percent (197 observations) condition bullish and 18.6 percent (45 observations) bearish condition. The expected duration of bullish condition is 78.5 months, and the bearish condition is 17.4 months.

TRADE SECTOR

The financial sector in the bullish condition showed the average monthly return is positive (1.70% per month or equivalent to 20.40% profit per year). In contrast, bearish condition showed an average negative return monthly (-2.26% per month, equivalent to 27.12% loss per year). The standard deviation of bullish condition is 6.10%, while the standard deviation of bearish condition is 17.57%. It means that the volatility of bullish condition is lower than that of bearish condition.

Based on the figure 2 and table 4 concluded that during the observation period in February 1996 until March 2016 (242 observations) stockss of the finance sector in the Indonesia Stock Exchange experienced a 82.2 percent (199 observations) condition bullish and 17.8 percent (43 observations) bearish condition. Expected duration bullish condition is 88.7 months, while the bearish condition is 18.5 months.

COMPARISON BETWEEN SECTORS

Figure 1 financial sector responds first monetary crisis occurred in 1997, when in July 1997 the financial sector has entered the bearish condition, while the trade sector in August 1997 just entered the bearish condition. Furthermore, the financial sector in July 2000 was back switching to bullish conditions, while the trade sector last longer. Only in October 2000 re-entered the bullish conditions. In relative terms the financial crisis that occurred in 1997 - 2000 experienced longer by trading stocks than the financial sector.

The crisis of 2008, known as the supreme morgage crisis in the United States also have an impact on the Indonesian stock market. The trade sector respond to the first effects of the crisis, namely in July 2008. Meanwhile, the financial sector in August 2008. Furthermore supreme morgage crisis did not last long on stocks trading only lasted 5 months, in December 2008, the trade sector is back in shape bullish. Supreme morgage crisis impact on public confidence in the financial institutions in general. This condition causes the financial sector experienced a bearish condition is relatively longer than the trading sector. Bearish conditions as supreme morgage crisis in the United States experienced the financial sector for 9 months ie from August 2008 until April 2009.

What about the relative risks between sectors?. which sectors are more at risk ?. Based on the risk measurement results that can be obtained per unit of investment shares in bullish mood in the financial sector was 3.5 per cent, while the share of investment in the trade sector 3.9 percent. Risk of results that can be obtained per unit of investment shares in bearish conditions in the financial sector was 5.0 per cent, while the share of investment in the trade sector 7.8 percent. In relative risk per unit results that can be obtained from stock investments in the financial sector lower than stock investments in the trade sector in both the bullish and bearish conditions. It can be concluded that the overall investment stock in trade is higher risk than investing in stocks in the financial sector in the Indonesian Capital Market

5. CONCLUSION

By using a Markov switching model, the market regime which occurred in the financial sector and the trade sector is divided into bullish regime and bearish regime, where the difference is primarily due to differences in volatility. Stocks of trade sector experienced a bearish condition longer than the stocks of financial sector during the monetary crisis in 1997, while the supreme morgage crisis in the United States in 2008, the stock of the financial sector experienced a bearish condition longer than stocks of trading sector. Measurement the risk per unit of return trade sector stocks higher than the risk per unit of return in the financial sector stocks, either in bullish or bearish condition. This means that relativelystocks of trade sector had a higher risk than stocks of financial sector in the Indonesian Stock Exchange.

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