ISSN 2540-928X

EAEA 2016

conference proceeding

The 15th International Convention of the East Asian Economic Association

November 5-6, 2016 Bandung - Indonesia

FEB Universitas Padjadjaran | EAEA

ISSN 2540-928X

EAEA 2016

conference proceeding

The 15th International Convention of the East Asian Economic Association

November 5-6, 2016 Bandung - Indonesia

FEB Universitas Padjadjaran | EAEA

Bandung, 5-6 November 2016
EAEA 15th International Convention of
the East Asian Economic Association
Conference Proceeding
Organizers: FEB Universitas Padjadjaran
ISSN 2540-928X

JCI volatility. These results suggest that the direction of relationship between exchange rate and stock price in Indonesia is supporting the portfolio balance model.

The Effect of Business Cycles to the Stock Performance in Cycle and Defensive Sectors at Jakarta Stock Exchange

Sumarsono Sumarsono, Achmad Kemal Hidayat
Fakultas Ekonomi Universitas Kristen Maranatha; sumarsono70@yahoo.com

In general, Investor in capital market always wants to secure their investment, especially for typical passive investor (investor that invest for long term period). Logically business cycle and economic condition will direct or indirectly effect their investment. That is why, the investor should/want know which stocks in sectors that are categories as cycle or defensive sector. The purpose of this study is examined the effect of business cycle and macro economy indicator to the stock performance in cycle and defensive sectors at Jakarta stock exchange, which are use two measurement approach, that are stock return and sharp index respectively. The study, use data of daily stock return of emiten, growth real PDB quarterly since 2000-2015 after decomposition processes and de-trending as a proxy of business cycle, which divided into three stage, initial, middle and final expansion respectively. Indicator economic Data consist of production of industry, consumer expansion, inflation and interest at the same period mentioned above.

The Approach of Hypothesis test is regression Logit

The result of the study, expect to identify the cycle and defensive sector, and shows that business cycle and macro economic indicator significantly effect to the cycle and defensive sectors. While, both the stock return and sharp index approach, can be above or below market return. Thus, in the condition of down turning economic situation, the investor should select defensive sector instated of cycle one, especially for passive investor.

The Effect of Business Cycle to the Stock Performance in Cyclical and Defensive Industries Sectors at Jakarta Stock Exchange

by:

Sumarsono
Email: ssumarsono70@yahoo.com
(Faculty of Economics, Maranatha Christian University, Bandung, Indonesia)

Kemal Achmad Hidayat
Email: achmad.hidayat@fe.unpad.ac.id
(Faculty of Economics and Business, Padjadjaran University, Bandung, Indonesia)

Abstract

In general, investor in capital market always wants to secure their investment especially for typical passive investor (investor that invests for long term period). Logically business cycle and economic condition will direct or indirectly effect their investment. That is why, the investor should/want know which stocks in sectors that are categories as cycle or defensive sector. The purpose of this study is examined the effect of business cycle and macro economy indicator to the stock performance in cycle and defensive sectors at Jakarta Stock Exchange, which are use two measurement approach, that are stock return and sharp index respectively. The study, use data of daily stock return of emiten, growth real GDP quarterly since 2000-2014 after decomposition processes and de-trending as a proxy of business cycle, which divided into three stage, initial, middle, and final expansion respectively. Indicator economic data consist of production of industry, consumer expansion, inflation, and interest at the same period mentioned above.

The approach of hypothesis test is regression Logit.

The result of the study, expect to identify the cycle and defensive sector, and shows that business cycle and macro economic indicator significantly effect to the cycle and defensive sectors. While, both the stock return and sharp index approach, can be above or below market return. Thus, in the condition of down turning economic situation, the investor should select defensive sector instated of cycle one, especially for passive investor

Keywords: Business cycles, performance stocks, cyclical industries, defensive industries

I. Introduction

In the efficient market hypothesis is discussed about the importance of information in stock investments, because the content of the information would affect the value of the stock. The value of information useful for the movement of stocks is information that contains estimates of the future performance of the company.

The phenomenon occurs because the stock market reflects future expectations about the economy, investors bid prices when investors expect the company to earn a profit. The increase in stock prices indicating that investors suspect the economy will grow rapidly and decline in share price indicates that investors expect to be the sluggishness in the economy (Mankiw, 2007). Research Goldman Sachs Research in 1986 showed that the stock market on average will move towards the highest prices before 8 months of the business cycle reaches the expansion highest or peak stage and the stock market will reach its lowest level in at an average of 3 months before business cycle contraction experienced the lowest (trough) (Cohen, et al, 1987). Merrill Lynch research shows that approximately 6 months earlier cycles before the stock market move was followed by a business cycle (Cohen, et al, 1987).

The business cycle will lead the sales and profits of certain industrial sectors will fluctuate with the business cycle. Sensitive corporate sales and profits of the business cycle called cyclical industries and unsensitive called defensive industries (Bodie, Kane and Marcus, 2011). Research Jin (2005) found empirical evidence that the effect of business cycles on a cyclical industry will affect sales growth, profitability, changes in earnings before extraordinary items, changes in net income and growth in total assets. While the influence to the company defensive influence only to the level of sales and investment and does not affect the rate of profit. Cyclical industry because performance is to follow the business cycle usually beta shares will be above 1, while the defensive industry because of the relatively stable performance of its profits, its stock will usually beta below 1 (Bodie, Kane and Marcus, 2011).

Research Merrill Lynch (1987), Stovall (1996), Nawrocki and Carter (1995, 1997), Bolten (2000), Murphy (2004), DeStefano (2004), Smith, Sorensen, Wickens (2006) Salaber 2007 and Stangl, Jacobsen and Visaltanachoti (2007) has found empirical evidence that in every phase of the business cycle, because of the influence business cycles and economic indicators in each of the business cycle there is some cyclical and defensive industries that have performance opportunities stock above average stock market.

Research on the performance of the stock at this stage of the business cycle in the case of Indonesia capital market issuers draw was conducted to determine the performance of stocks in each industry business cycle. That is because the tendency of economic liberalism in the sense of reducing government interference in the economy and give it to the market mechanism of increasing both because of pressure from within to streamline the economy and pressure from the outside as a result of international agreements such as GAAT / WTO and regional agreements such as AFTA and APEC (Juoro, 2005). Economists believe that in an economy that is fully governed by market forces, economic cycles are very unstable. The rapid development can be followed by a serious deterioration of economic activity (Gilarso, 2004; Sukirno, 2008). This is because the reaction of the business community more quickly and intensively and public demand are also elastic (Gilarso, 2004). The movement of output, prices, interest rates and employment opportunities up and down to form a business cycle which is characteristic of market economy the past two centuries, since the economy that uses money began to replace the commercial society that is self-sufficient (Samuelson and Nordhaus, 1992).

II. Theory and Research Accomplished

The stock price reflects the expectations of the future and it shows that the investment is future oriented business. An intrinsic value of a stock is the present value of the dividends to be received by investors at a later date (Husnan, 2005). Modelling intrinsic value of stock is as follows:

$$P = \sum_{t=1}^{\infty} \frac{C_t}{(1+r)^t} \quad \text{…….(1)}$$

Where P is the intrinsic value of a stock or fundamental value, C is the future cash flow and r is the opportunity cost of capital.

Cash flow that can be used in the valuation of the stock is earnings. From the perspective of investors who bought shares, the cash flow received by investors is earnings distributed in dividends (Tandelilin, 2010). Bolten and Weigand (2005) by observing the flow of dividends, equation 1 can be written as follows:

$$P_t = \frac{E_{t+1}(1-\lambda) + C(1-\lambda)}{(1+r_i^*)} \quad \text{…….(2)}$$

Where P is the stock price, E is the earnings expectations of companies' future earnings, λ is the retention rate of retained earnings, C is a constant which is representative of the total earnings expectations over the business cycle until the end of the cycle at discounted and r * is the interest rate.

Future cash flow in the form of dividend payments received by the investor directly related to the company's performance expectations for the future. Expectations of future performance of the company in addition to depend on the expectations of the company's internal condition also depends on the expectations of investors on the company's external environment in both the scale and the scale industry macro environment. Related to the company's internal and external environment that can be manifested into three determinant variables intriksik value stock that is profit, economic conditions and interest rates, then the second derivative of the equation can be written as:

$$\frac{1}{P}\frac{dP}{dt} = \frac{1}{E + C}\frac{dE}{dt} - \frac{1}{(1 + r^*)}\frac{dr}{dt} \qquad \text{……………………………………………………………(3)}$$

From the equation above shows that the stock price changes caused by changes in relative earnings expectations factor (a function of the economy) and the interest rate (the rate of return required by the market). Table 1 and Figure 1 describes the phenomenon of stock prices with respect to changes in economic conditions, earnings and interest rates.

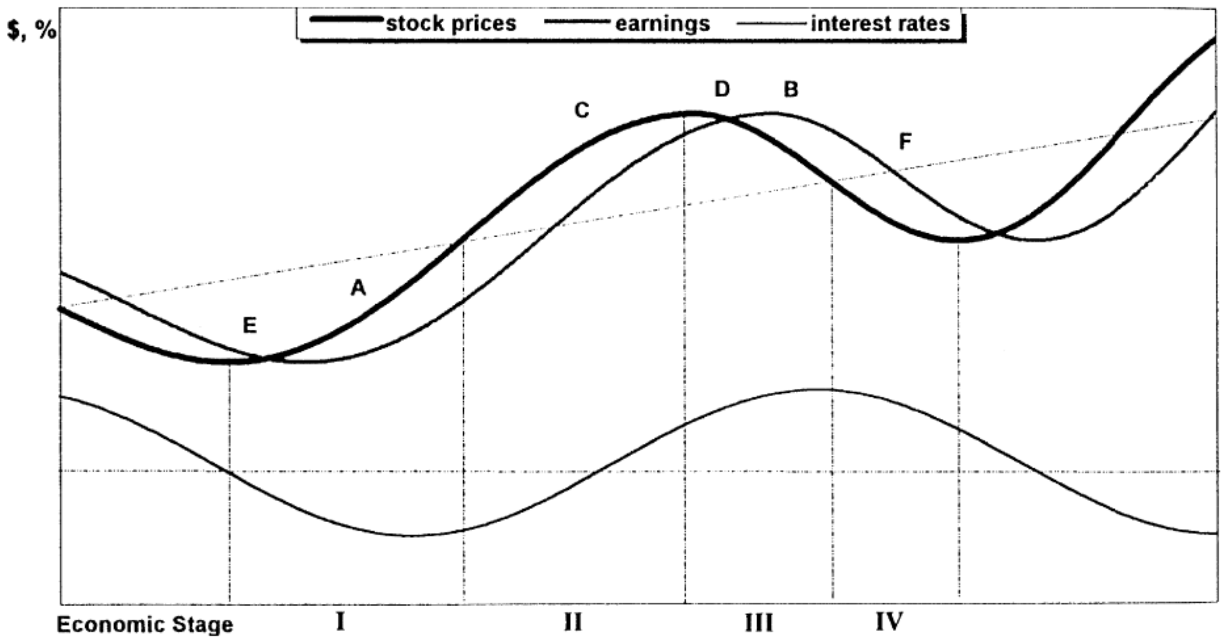
When economic activity rose (dE / dt> 0) and the interest rate falls (dr / dt <0) share price will rise (dP / dt> 0) it is shown in period A in Figure 1.

Table I
The Effect of Change in Earning Expectatition &
Interest Rates on Stock Prices

Sign of $\frac{dE}{dt}$	and $\frac{dr}{dt}$	and	implies $\frac{dP}{dt}$	appears in Figure 1 as
+	–		+	A
–	+		–	B
+	+	$(dE/dt) > (dr/dt)(1 + r)(E + C)$	+	C
+	+	$(dr/dt) > (dE/dt)/[(E + C)(1 + r)]$	–	D
–	–	$(dr/dt) > (dE/dt)/[(E + C)(1 + r)]$	+	E
–	–	$(dE/dt) > (dr/dt)(1 + r)(E + C)$	–	F

Source : Bolten & Wegan (2000)

Figure I
Economic Factors & the Stock Market Cycle



Source : Bolten & Wegan (2000)

When economic activity and profit is predicted to fall (dE / dt <0) but the interest rate rise (dr / dt > 0) then the stock price will drop (dP / dt <0) it is shown in Figure I. B in a period when economic activity and earnings expected to rise (dE / dt > 0) and rising interest rate (dr / dt > 0) is generally the stock price will rise or fall. If dE / dt greater than (dr / dt) (1 + r) (E + C), the expectation of rising earnings greater than the expected negative impact of rising interest rates, then the stock price will go up it is shown in the period C in Figure I. If dr / dt greater than (dE / dt) (E + C) (1 + r), the increase in interest rates more strongly negative impact and caused the stock price to fall, it is shown in the period D in Figure I. When both dr / dt and DE / dt < 0, earnings expectations have a negative impact on the stock market but the interest rate will have a positive impact, but in general the price of the stock can go up or down. If (dr / dt)> (dE / dt) / [(E + C) (1 + r)] the impact of falling interest rates is stronger then the share price will rise, it is shown in the period E in Figure I. If (dE / dt) > (dr / dt) (1 + r) (E + C) decline in profit expectations for a stronger impact on the stock price will go down, it is shown in the period F in Figure I. Scenarios the end of the case (dE / dt) / (E + C) = (dr / dt) (1 + r), then the stock market at the top (peak) or bottom (trough) depending on changes in the value that precedes. If the conditions in the market peak then the price will go up and if prices fall then the market will go down.

Optimization of the company's ability to generate profits in the future, dividends can be paid and the interest rate will determine the current stock price now. Investors bid when investors expect the company to earn a profit. The increase in stock price indicates that investors suspect the economy will grow rapidly and decline in stock price indicates that investors expect to be the sluggishness in the economy (Mankiw, 2007). This resulted in the stock market and GDP tend to move together but the association is not real and the stock market fluctuated in advance, followed by economic fluctuations (Cominincioli (1995), Mauro (2000), Ibotson and Chen (2002), Foresti (2007), Duca (2007), Nieto and Rubio (2011) and Olweny and Kimani (2011)).

Research Goldman Sachs Research in 1986 showed that the stock market on average will move towards the highest prices before 8 months of the business cycle reaches the expansion highest or peak stage and the stock market will reach its lowest level in at an average of 3 months before lowest business cycle contraction / trough (Cohen, Zinbarg and Zeikal, 1987). Merrill Lynch research shows that about 6 months early cycle stock market moves before followed by the business cycle (Cohen, Zinbarg and Zeikal, 1987).

Fluctuations in the economy will shape the business cycle. Business cycles at the lowest point called troughs, then the economy will fluctuate into expansion, and expansion in to peak and contraction followed. GDP measures the total income and expenditure in the economy. Because GDP is the most comprehensive measure of overall economic conditions and the best measure of how good economic performance (Boediono, 2010), GDP is a natural place to start the analysis of the business cycle (Mankiw, 2007).

The business cycle can be divided into five phases as practiced by Stovall (1996), Nawrocki and Carter (1997) and Stangl, Jacobsen and Visaltanachoti (2007). The division of the business cycle phase is the initial phase of expansion, the expansion of the middle, final expansion, contraction early and late contraction. Each phase of the business cycle has economic indicators vary and can be presented in Table II.

Table II
The Five Phases of an Economic Cycle

Economic Indicator	Early/Initial Expansion	Middle Expansion	Late Expansion	Early Contraction	Late Contraction
Consumer Expectations	Rising sharply	Leveling off	Declining	Falling sharply	Reviving
Industrial Production	Flat to rising modestly	Rising sharply	Flattening out	Declining	Decline diminishing
Inflation	Continuing to fall	Bottoming out	Rising modestly and beginning to be of concern to investors and the Fed	Rising less strongly	Flat to declaining
Interest rates	Bottoming out (leads inflation)	Rising modestly	Rising rapidly due to Monetery Authority policy to combat inflation	Peaking	Falling
Yield curve	Steep	Moderate	Flattening out	Flat	Rising again

Source : Stovall (1996). Modified by author.

Business cycles and economic indicators in each of the business cycle will affect the level of sales and profit of the industrial sector. The industrial sector is affected by the level of sales and profits are called cyclical industries and industrial sectors are not affected the level of sales and profits so-called defensive industries. Bodie, Kane and Marcus (2011) defines cyclical industry that the industry sales performance has sensitivity to economic conditions in above average and tend to outperform other industries. Defensive industry is the industrial sector sales performance has a low sensitivity to the business cycle.

Research on Merrill Lynch (1987), Stovall (1996), Nawrocki and Carter (1995, 1997), Bolten (2000), Murphy (2004), DeStefano (2004), Smith, Sorensen, Wickens (2006) Salaber 2007 and Stangl, Jacobsen and Visaltanachoti (2007) have found empirical evidence that in every phase of the business cycle, due to the influence of business cycles and economic indicators in each business cycle and future earnings and earnings forecasts there are some cyclical and defensive industry sectors that have a performance chance of having a performance share above the stock market average. Performance appraisal of stocks can be seen returns or after paying attention to the risk can use the index of sharpe that pay attention to risk in total, either systematic or not systematic risk. Choosing the right time in an investment in accordance with the business cycle will result in an optimal investment performance opportunity as well.

III. Research methods

3.1. Data

The research object of this paper is the business cycle, cyclical and defensive industry sectors as well as the performance of shares of all listed industrial sectors listed in Indonesia Stock Exchange from 2000 to 2014. Data were taken from the Central Bureau of Statistics, Bank Indonesia, Stock Exchange Indonesia, Yahoo Finance, IDX Watch, Indonesian Capital Market Directory and other sources. This study was a descriptive analytical research type.

3.2. Model Hypothesis Testing

Logit regression testing by using the following equation:

$$
\begin{aligned}
L_i = l_n\,(p_t / 1\text{-}p_t) = \lambda_0 + \lambda_1 eapdb_t + \lambda_2 etpdb_t + \lambda_3 eipdb_t + \lambda_4 kapdb_t \\
+ \lambda_5 eks\_konsumen_t + \lambda_6 indeks\_produksi_t + \lambda_7 inflasi_t \\
+ \lambda_8 sukubunga_t + \varepsilon_t \text{..}(4)
\end{aligned}
$$

Where :

p : The probability of a cyclical industry sector / defensive return stocks / sharpe index above the return on the stock market / stock market sharpe index. If return on stocks /

sharpe index industrial sector cyclical / defensive above market returns stocks / sharpe index was given a score of 1 and for return stocks / sharpe index sector is cyclical / defensive under the results of return / sharpe index stock market was given a score of 0.

λ_0 : Constants

λ_{1-8} : Values of regression coefficients

eapdbt : Dummy phase of the business cycle 'early expansion', a score of 1 to the phase of the business cycle 'early expansion' and a score of 0 for the other phases of the business cycle in period t.

etpdbt : Dummy phase of the business cycle 'middle expansion’, score one for the phase of the business cycle 'middle expansion' and a score of 0 for the other phases of the business cycle in period t.

eipdbt : Dummy phase of the business cycle 'late expansion', a score of 1 to the phase of the business cycle 'late expansion' and a score of 0 for the other phases of the business cycle in period t.

kapdbt : Dummy phase of the business cycle 'early contraction’ score of 1 and a score of 0 for the other phases of the business cycle in period t.

$eks\_konsumen_t$: Consumer expectation in period t

$indeks\_produksi_t$: The production index in period t.

$inflasi_t$: Inflation in period t

$sukubunga_t$: Interest rates in period t

IV. Results and Discussion

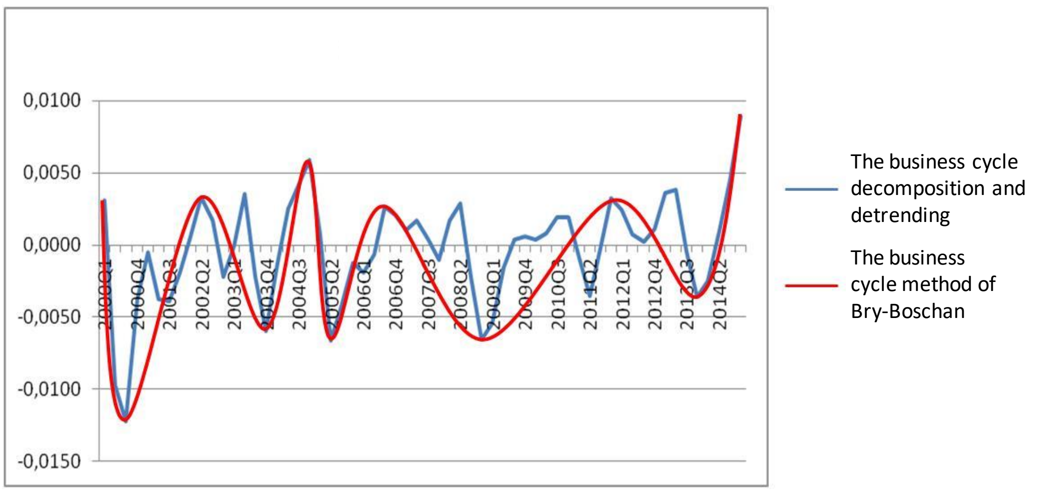
4.1. Indonesia Business Cycle

Growth in Gross Domestic Product (GDP) quarterly 2000 through 2014 during research conducted decomposition Seasonal Adjustment using Census X-12 to eliminate the element of seasonality and irregularity as well as detrending method Hodrick-Prescott (HP) filter to remove the element of trend. Decomposition and detrending the GDP growth as in Figure II.

Based on the business cycle data generated from the decomposition and detrending, GDP growth then determined the phase of the business cycle. Determination of the business cycle phases implemented by the method of Bry-Boschan. Determination of the business cycle is the determination of the main turning point in the cycle in the stage of expansion or contraction.

The turning point of the business cycle Bry-Boschan method can be illustrated in Graph II. Based on the data in the graph can be concluded that from 2000 to tiwulan I Quarter 2014 occurred 6 cycles are detailed in Table III.

Figure II
The Turning Point of the Business Cycle



Source : The data processing

Table III
The Turning Point of the Business Cycle

Phase of the cycle	**Turning Point**			**Duration**	
	Trough	**Peak**	**Trough**	**Phase**	**Cycle**
Expansion		?		0	
Contraction	?		2000Q3	6	
Cycle 1					**6**
Expansion		2002Q2		21	
Contraction	2000Q3		2003Q4	18	
Cycle 2					**39**
Expansion		2004Q4		12	
Contraction	2003Q4		2005Q2	6	
Cycle 3					**18**
Expansion		2006Q3		15	
Contraction	2005Q2		2008Q4	27	
Cycle 4					**42**
Expansion		2011Q4		36	
Contraction	2008Q4		2013Q4	24	
Cycle 5					**60**
Expansion		?		12	
Contraction	2013Q4		?	0	
Cycle 6					**12**

Source : The data processing

4.2. Industrial cyclical and defensive sectors

The classification process industry sector into the industrial sector of cyclical and defensive regression equation regression wear 5.

Classification of industrial cyclical and defensive sectors of the outcome of the test statistic t business cycle dummy variables to the model equation as follows:

$$R_{it} = \beta_0 + \beta_1 EAPDB_t + \beta_2 ETPDB_t + \beta_3 EIPDB_t + \beta_4 KAPDB_t + \beta_5 EKS\_KONSUMEN_t + \beta_6 INDEKS\_PRODUKSI_t + \beta_7 INFLASI_t + \beta_8 SUKUBUNGA_t + \varepsilon_t \quad \text{.........................(5)}$$

Where :

Ri_t : Yields Industry Sector stock i at time t

β_0 : Constants

β_{1-8} : Values of regression coefficients

Other variables : The same as the equation 4.

In the above equation, as the dummy reference business cycle is the final contraction phase of the business cycle. An industrial sectors are classified into cyclical industrial sector if the results of the regression equation every industry sector:

a. Dummy reference statistically significant and there is also a dummy business cycle other than the reference there is a statistically significant
b. Dummy reference is not statistically significant and no one other than the reference dummy business cycle there is a statistically significant

An industrial sectors are classified into defensive industry sectors if the regression results every industry sector:

a. If the results of the regression every industry sector, dummy reference statistically significant, but the dummy business cycle there is no other statistically significant.
b. If the entire dummy phase of the business cycle is not statistically significant.

Based on the results of data processing, industrial cyclical and defensive sectors in Indonesia Stock Exchange is as follows:

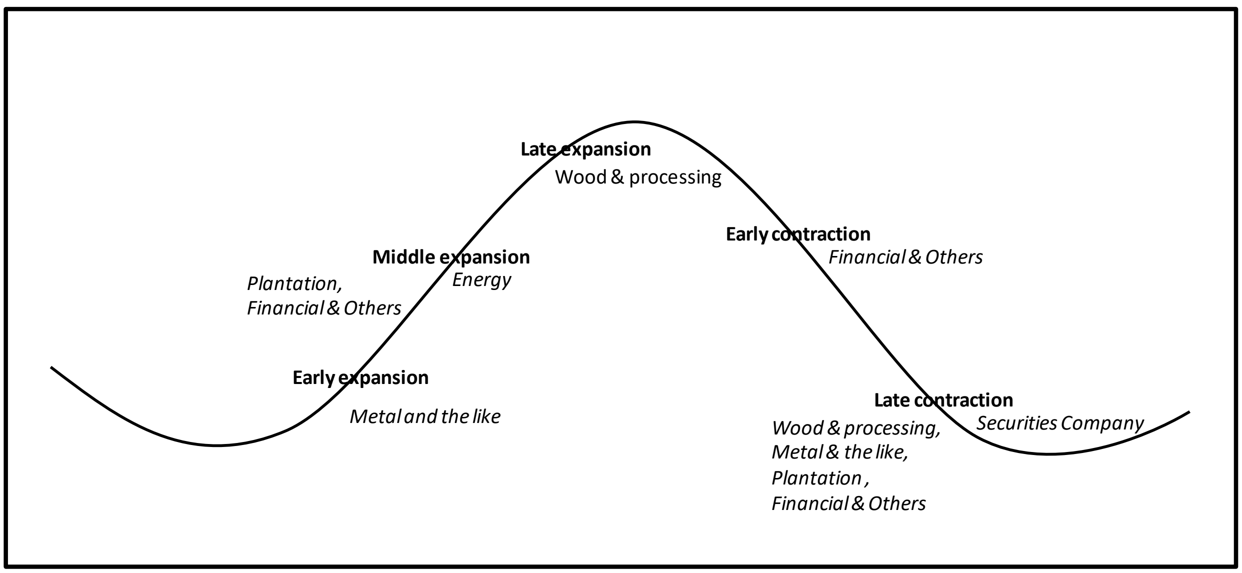
a. The industrial sector in cycles as much as 19 sector consists of: Cables, Automotive & Components, Textiles & Garments, Computer Services & These devices, Wood & Processing, Ceramics, Perselen & Glass, Metals & Ships, Energy, Toll Roads, Ports, Airports & Ships, Telecommunication , Pharmaceutical, Food & Beverage, Home Appliances, Cigarette, Crops / Food Plant, Plantation, Banks, Other Financial and Securities Company.
b. The industrial sector defensively as much as 22 industry sector consists of: Footwear, Advertising, Wholesale Goods Production, Retail, Investment Companies, Restaurants, Hotels & Tourism, Chemical, Animal Feed, Plastic & Packaging, Pulp & Paper, Cement, Construction Non-Building, Transportation, Cosmetics & Household Goods Purposes, Fisheries, Other Agriculture, Building Construction, Property & Real Estate, Oil & Gas Mining, Coal Mining, and Other Insurance and Financing Agency

4.3. Test result

4.3.1. Performance Return Stock Industries Sector Above / Below Market Performance Stock.

Based on the research model testing, each phase of the business cycle consists of an early expansion, middle expansion, late expansion, early contraction and late contraction, the performance of cyclical industries sector return stock above or below the stock market performance of presented in Figure III.

Figure III
Performance Returns Stock Cyclical Industrial Sector
Above / Below the Stock Market Performance



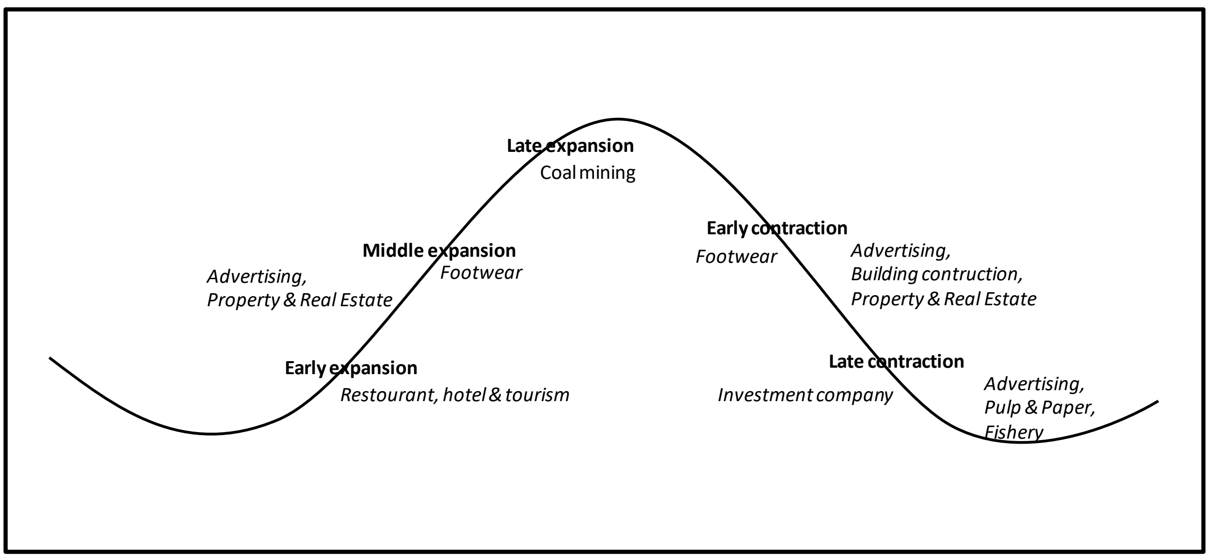
Source : The data processing

From of the graph III shows that certain industry sectors have performed above the return on the stock market in the middle of the expansion phase of the cycle, the early contractions and late contractions. In the middle of the expansion phase which return the performance of its stock over the stock market is the plantation sector as well as finance and others. At the beginning of the contraction phase, namely the financial sector and more and at the end of the contraction phase is a securities company.

Each phase of the business cycle, there are several industrial sectors whose performance is below the return on stock market performance. In the early expansion phase sector of the metal industry and the like have a performance under the performance of the stock market, the middle expansion phase sector of the energy industry performance is below the stock market, the late expansion phase sector of the wood and the processing return stock below the performance of the stock market and the contraction phase sector wood industry and processing, metal and the like, as well as financial and other plantation return its stock under the stock market performance.

Performance returns defensive industry sectors in every phase of the business cycle is presented as in Figure IV.

Figure IV
Performance Returns Stock Defensive Industrial Sector
Above / Below the Stock Market Performance



Source : The data processing

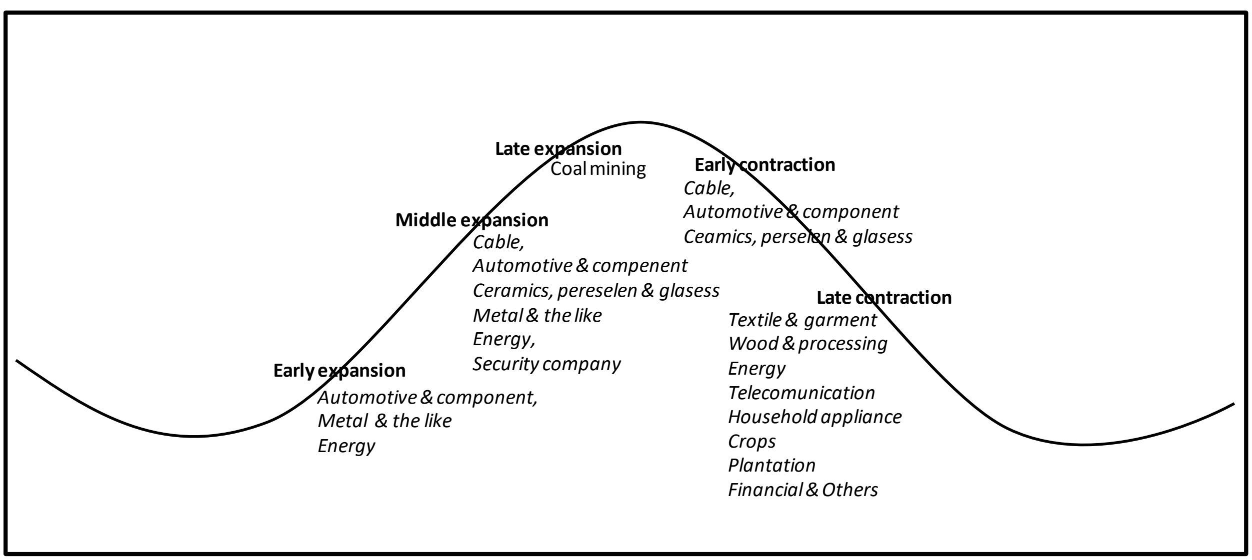
In the phase of the business cycle middle expansion, the industrial sector advertising as well as property and real estate have stock returns on the stock market, then the phase of contraction beginning, the industrial sector advertising, construction of buildings and properties and real estate return stocks on the stock market performance, then at the end of the contraction, the sector of the advertising industry, pulp and paper and fishing have stock returns on the stock market.

At every phase of the business cycle, equally there are some sectors with return of dtock under the stock market performance. At the beginning of the expansion phase, the restaurant sector, hotel and tourism, in the middle of an expansion phase of the footwear sector, the final expansion phase of the coal mining sector, at the beginning of the contraction phase of the footwear sector and the contraction phase of the cycle end investment company sector.

4.5.2. Performance Sharpe Index Industries Sector Above / Below Market Performance Stock.

Based on the research model testing with performance measurement variables sharpe index, cyclical industry sector performance no one has an index above sharpe sharpe stock market index performance. In detail, as in the Figure V.

Figure V
Performance Sharpe Index Cyclal Industrial Sector
Above / Below the Stock Market Performance



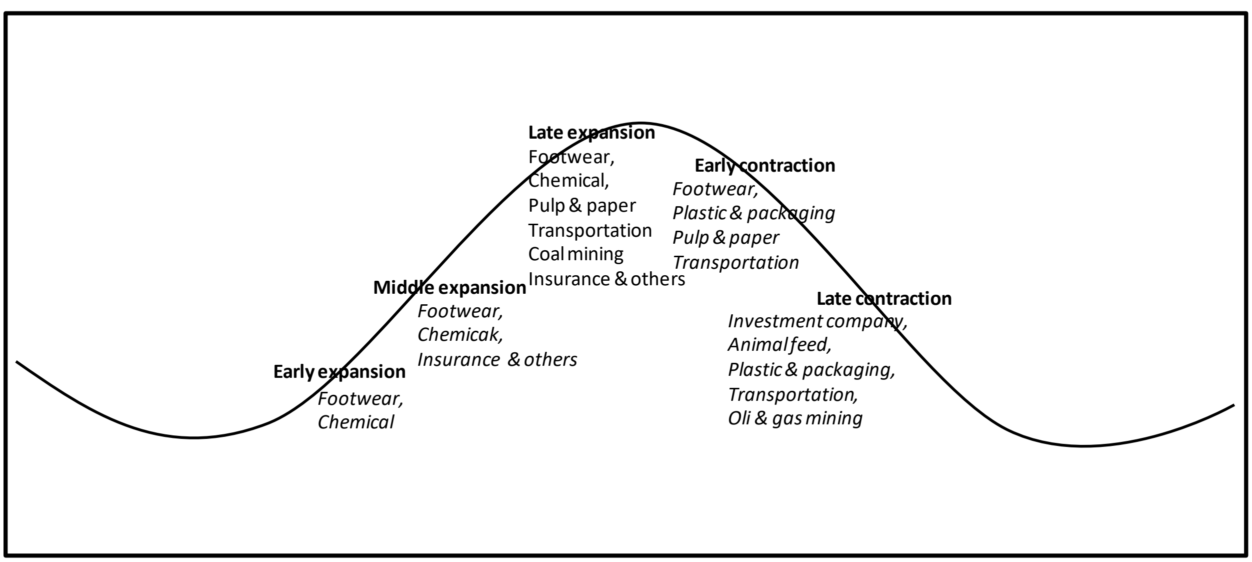
Source : The data processing

Each phase of the business cycle there is some cyclical industry sectors that have an index of stock market performance sharpe below:

a. Early expansion phase of the business cycle, sharpe index sectors automotive and component industries, metals and the like as well as the energy sector.
b. Business cycle expansion phase of the center, sharpe index cable industry, the automotive and components, ceramic, perselen and glass, metal and the like, energy and securities companies.
c. Final expansion phase of the business cycle indexes Sharpe coal mining sector.
d. Early contraction phase of the business cycle, sharpe index cable industry, the automotive and components and industrial ceramics sector, perselen and glas.
e. The phase of the business cycle is the final contraction, the index of textile and garment industry, wood and energy processing, telecommunications, household appliances, food crops, plantations and financial sector and the like.

The defensive industry performance of its sharpe index is also similar to the performance of the cyclic industry sector, which is totally nonexistent on the stock market stock index. In detail as in graph VI.

Figure VI
Performance Sharpe Index Defensive Industrial Sector
Above / Below the Stock Market Performance



Source : The data processing

While the industrial sector defensive performance of the index is below sharpe stock market indices are as follows:

a. Early expansion phase of the business cycle, the footwear sector and chemicals.
b. Business cycle expansion phase of the center, the footwear sector, chemicals and insurance.
c. Final expansion phase of the business cycle, the footwear sector, chemical, pulp and paper, transportation, coal mining and insurance.
d. Early contraction phase of the business cycle, the footwear sector, plastics and packaging, pulp and paper and transport.
e. The end of the contraction phase of the business cycle, the corporate sector investment, animal feed, plastics and packaging, transport and oil and gas.

The result of probability calculation by considering the result of coefficients in logit regression results, it can be mapped probability of each industry sectors that have performance above or below the performance of stock market, using both stock return performance parameter and sharpe index performance as presented in table IV-VII.

Table IV
Stock Performance Cyclical Industrial Sector
Above / Below Stock Market Performance

No.	Industry Sector	Early Expansion		Midle Expansion		LateExpansion	
		Return/ Sharpe	Probability Return/Sharpe	Return/ Sharpe	Probability Return/Sharpe	Return/ Sharpe	Probability Return/Sharpe
A	**Above Market Performance**						
1	Plantation			R	84.08%		
2	Financial & Others			R	38.61%		
B	**Under the Market Performance**						
1	Cable			S	96.36%		
2	Automotive & Component	S	64.06%	S	95.33%	S	57.07%
3	Wood & Processing					R	59.09%
4	Metal & the like	R/S	77.46% / 76.97%	S	96.34%		
5	Energy	S	82.69%	R/S	51.48% / 74.59%	S	85.39%
6	Security Company			S	92.38%	S	82.21%

Source : The data processing

Table V
Stock Performance Cyclical Industrial Sector
Above / Below Stock Market Performance (Cont)

No.	Industry Sector	Early Contraction		Late Contraction	
		Return/ Sharpe	Probability Return/Sharpe	Return/ Sharpe	Probability Return/Sharpe
A	**Above Market Performance**				
1	Financial & others	R	83.22%		
2	Security Company			R	81.90%
B	**Under the Market Performance**				
1	Cable	S	83.22%		
2	Automotive & Component	S	88.38%		
3	Textil & Garment			S	71.26%
4	Wood & Processing			R/S	55.45% / 54.57%
5	Metal & the like	S	85.47%	R	18.63%
6	Energy			S	33.26%
7	Telecomunication			S	67.64%
8	Household appliance			S	58.16%
9	Crops			S	84.56%
10	Plantation			R/S	55.23% / 64.49%
11	Financial & Others			R	63.78%

Source : The data processing

Table VI
Stock Performance Defensive Industrial Sector
Above / Below Stock Market Performance

No.	Industry Sector	Early Expansion		Midle Expansion		LateExpansion	
		Return/ Sharpe	Probability Return/Sharpe	Return/ Sharpe	Probability Return/Sharpe	Return/ Sharpe	Probability Return/Sharpe
A	**Above Market Performance**						
1	Advertising			R	89.88%		
2	Property & Real Estate			R	58.26%		
B	**Under the Market Performance**						
1	Footwear	S	92.57%	R / S	93.82% / 95.48%	S	99.00%
2	Restaurant, hotel & tourism	R	55.00%				
3	Chemicals	S	80.48%	S	96.33%	S	87.77%
4	Transportation					S	97.22%
5	Coal Mining					R/S	71.91% / 89.03%
6	Insurance			S	82.15%		

Source : The data processing

Table VII
Stock Performance Defensive Industrial Sector
Above / Below Stock Market Performance (Cont)

No.	Industry Sector	Early Contraction		Late Contraction	
		Return/ Sharpe	Probability Return/Sharpe	Return/ Sharpe	Probability Return/Sharpe
A	**Above Market Performance**				
1	Advertising	R	89.07%	R	52.38%
2	Retail			R	56.89%
3	Pulp & paper			R	65.18%
4	Fishery			R	79.21%
5	Building contruction	R	84.98%		
6	Property & real estate	R	77.63%		
B	**Under the Market Performance**				
1	Footwear	R/S	76.97% / 89.90%		
2	Invesment Company			R/S	56.64% / 61.27%
3	Animal feed			S	62.06%
4	Plastic & packging	S	93.21%	S	52.42%
5	Pulp & paper	S	46.18%		
6	Transportation	S	96.86%	S	64.68%
7	Oil & gas mining			S	66.19%

Source : The data processing

Based on these data indicate cyclical and defensive sectors given the opportunity to have the performance of stock returns above or below the stock market (the industrial sector is code R), but after taking into account risk factors using the index calculation sharpe, industrial cyclical and defensive sectors none of the above performance of the stock market (sector specific code S). So after considering the risks, the highest performance of the industrial sector in every phase of the business cycle is equal to the performance of the market. The findings of this study indicate that the Indonesian stock market is in a state of efficient and most profitable is likely to implement the investor with passive trading strategy by forming a portfolio that can replicate a market index. In accordance with investor confidence that implementing passive trading strategies that no single investor can obtain yields greater than market returns (Tandelilin 2010; Bodie, Kane and Marcus, 2011).

4.5.3. Effect of Economic Indicators Industrial Sector Stock Performance Against Above / Below Market Performance

Based on test results, economic indicators that affect the stock performance of the industrial sector are presented in Table VIII.

Table VIII
Effect of Economic Indicators Industrial Sector Stock Performance
Against Above / Below Market Performance

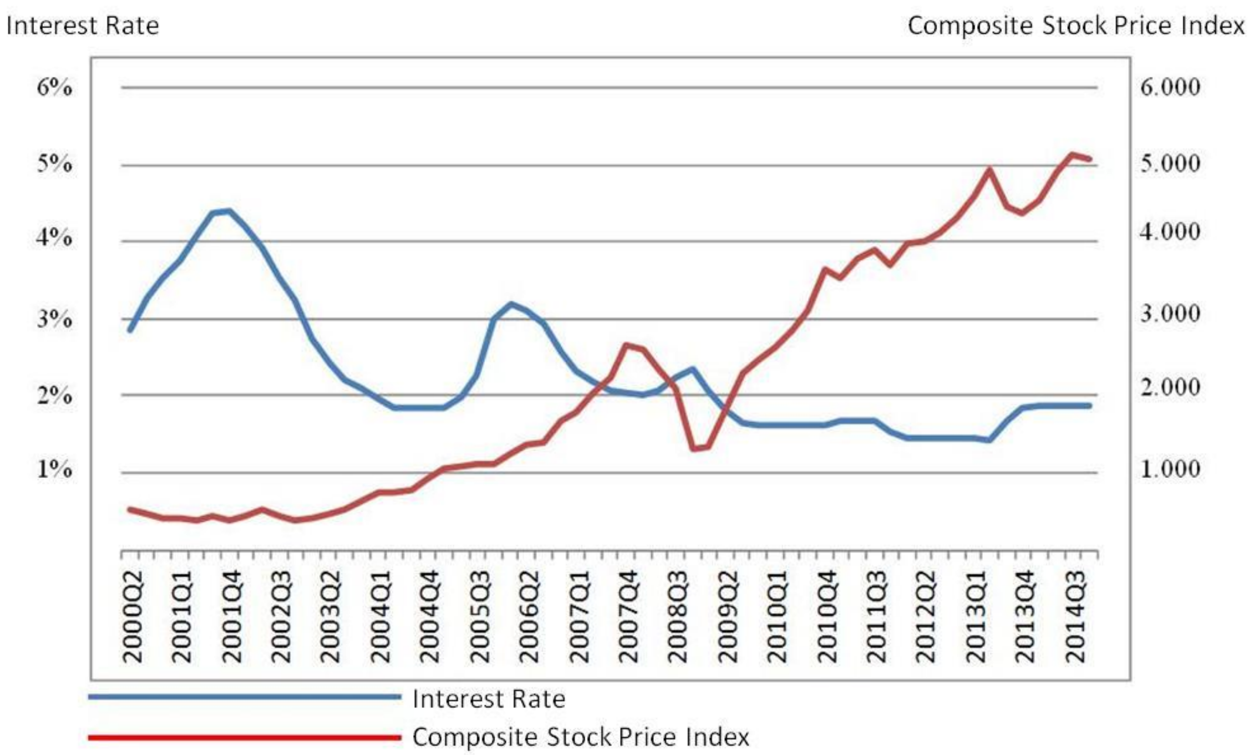
No.	Description	Consumer Expectation	Rate of Production	Inflation	Interest
A	**Influence of Yield**				
1	**Cycle Industries**				
a	Positive Influence	Wood & Processing	Metal and the like	Textil & Garment	Wood & processing, Metal & the like, Energy, Plantation, Financial & Others
b	Negative Influence		Automotive & component, Crops		Cigarete
2	**Defensive Industries**				
a	Positive Influence				Footwear, Restaurant, hotel & tourism
b	Negative Influence	Retail, Restaurant, hotel & tourism		Animal Feed	Advertising
B	**Influence of Sharpe Index**				
1	Cycle Industries				
a	Positive Influence			Crops	Automotive & component, Textil & Garment, Computer, Wood & processing, Ceramics, perselen, glasses, metal & the like, Energy, Household appliances, Plantation, Financial & others, Securities.
b	Negative Influence	Cigaret		Farmacy	
2	Defensive Industries				
a	Positive Influence	Big trade of goods production			Foodwear, Big trade of goods production, Investment company, Restaurant, hotel & tourism, Chemistri, Animal feed, Plastics & Packaging, Transpotation, Cosmetics, Oil & gas mining, Coal mining, Insurance
b	Negative Influence			Restaurant, hotel & tourisme, Property & Real Estate, Investment Company	

Source : The data processing

Based on the above data, shows that only the highest interest rates affect the stock performance of industrial sector and were mostly positive effect.

Based on data from the movement of interest rates show that during the first quarter of 2000 until the fourth quarter of 2014 the trend of interest rates in Indonesia decreased. In 2000 and 2002 the interest rate of around 3-4% / quarter, or about 12-16% / year and continued to decline, and since 2009 the interest rate has been below 2% / quarterly or below 8% per year. While JCI happens the upside, in 2000 the value of the index is still about 500 in 2014, the index value has reached over 5,000. Thus there has been a decrease in the interest rate of about 40-60% and there has been a 1,000% increase in JCI. In detail presented in Figure IX.

Figure IX
Interest Rate and Composite Stock Price Index Trends



Source : Yahoo Finance & Central Bureau of Statistic.
Represented graphically by author

V. Conclusion

1. Based on the results of research and discussion, it can be concluded as follows: The influence of business cycle and economic indicators together result in cyclic and defensive industry sectors whose stock return performance is above or below the stock market, but the performance of the sharpe index is maximally equal to the performance of the stock market and there are several industrial sectors underperforming the stock

market. This shows that the Indonesian stock market in efficient and most favorable conditions for investors is to apply passive trading strategy by forming a portfolio that can replicate the market index.

2. Interest rates have a positive effect on the performance of shares of certain industrial sectors to have performance above the stock market performance, because in addition to the nature of the industry also due to the trend of interest rate decline in Indonesia during the period of research.

References

Bodie, Z. Kane, A. and Marcus, A. J. 2011. Investment and Portfolio Management, McGraw-Hill/Irwin, New York.

Bolten, S.E and Weigand, R.A. 2000. The Generation of Stock Market Cycles at Bolten, S.E. 2000. Stock Market Cycles, A Practical Explanation, Quorum Books, Westport.

Bolten, S.E. 2000. Stock Market Cycles, A Practical Explanation, Quorum Books, Westport.

Boediono. 2010. *Pendidikan dalam Pertumbuhan Ekonomi Kajian Konseptual dan Empirik* . http : // images .windu 1976. multiply. multiplycontent. com / attachment / 0 / T8Mi Bwoo Cy0AACWFFsc1 / ekonomi pendidikan draft5. pdf?key = windu1976. Accessed on May 15, 2012.

Comincioli, B. 1995. The Stock Market as a Leading Economic Indikator : An Application of Granger Causality. Honors Projects. Paper 54. http : // digitalcommons. iwu.edu/econ_honproj/54. Accessed on May 15, 2012.

Cohen, J.B. Zinbarg, E.D. Zeikel, A. 1987. Investment Analysis and Portfolio Management, Fifth Edition, Richard D. Irwin, Inc. United States Of America.

DeStefano, M. 2004. Stock Return and The Business Cycle, Financial Review, Vol 39. No. 4.

Duca, G. 2007. The Relationship Between The Stock Market And The economy : Experience Form International Markets, Bank of Valletta Review, No. 36, Autumn, 2007.

Foresti, P. 2007. Testing for Granger Causality Between Stock Prices and Economic Growth, Munich Personal RePEc Archive, http://mpra.ub.uni-muenchen.de/2962/MPRA Paper No. 2962, posted 07. November 2007. Accessed on May 15, 2012.

Gilarso, T. 2004. *Pengantar Ilmu Ekonomi Makro*, Revision Edition, Penerbit Kanisius, Yogyakarta.

Husnan, S. 2005. *Dasar-Dasar Teori Portofolio dan Analisis Sekuritas*, UPP. AMP. YKPN. Yogyakarta.

Ibotson, R.G dan Chen, P. 2002. Stock Market Return in the Long Run : Participating in the Real Economy, Forthcoming Financial Analyst Journal. http : // papers.ssrn.com / sol3 / papers. cfm? abstract_id=274150. Accessed on July 23, 2012.

Jin, Q. 2005. Business Cycle, Accounting Behavior and Earning Management, Thesis (Ph.D) Hong Kong University of Science and Technology, http://hdl.handle.net/1783.1/2666. Accessed on May 3, 2012.

Juoro, U. 2005. *Liberalisasi Dan Pembangunan Ekonomi Rakyat*, *dalam* Soesastro H, Budiman A, Triawati N, Alisjahbana A, Adiningsih A, *Pemikian Dan Permasalahan Ekonomi Di Indonesia Dalam Setengah Abad Terakhir*, ISEI & *Penerbit* Kanisius, Yogyakara.

Mauro, P. 2000. Stock Return and Output Growth in Emerging and Advanced Economies, IMF Working Paper. http : //www.imf.org / external / pubs / ft / wp / 2000/wp0089.pdf. Accessed on July 23, 2012.

Mankiw, N.G. 2007. *Makro Ekonomi*, 6th Edition, Translation : Fitri Liza & Imam Nurmawan, Penerbit Erlangga, Jakarta.

Murphy, J.J. 2004. Intermarket Analysis, Profiting from Global Market Relationship. John Willey & Sons, Inc.

Nawrocki, D. dan Carter, W. 1995. Phase of the USA Business Cycle and the Investment Performance of Internationality Diversified Portfolios. http : // cycles. technicalanalysis.org.uk/NaCa.pdf. Accessed on July 23, 2012.

Nawrocki, D. dan Carter, W. 1997. Phase of the Business Cycle and Portfolio Management. http : // www56. homepage. villanova. edu / david.nawrocki / CYCLE.HTM. Accessed on July 23, 2012.

Nieto, B. dan Rubio, G. 2011. Sorting Stocks, Volatility Bounds and Real Activity Prediction. http : // papers. ssrn.com / sol3 / papers.cfm?abstract_id=1965258. Accessed on July 23, 2012.

Olweny, T.O dan Kimani, D. 2011. Stock Market Performance and Economic Growth Empirical Evidence From Kenya using Causality Test Approach, Advance in Management & Applied Economics, Vol. 1, No. 3, 2011, P. 153-196.

Salaber, J. 2007. Sin Stock Return over the Business Cycle. Paris Dauphine University. http : // www. cereg. dauphine. Fr / UserFiles /File/Paper_salaber.pdf. Accessed on May 5, 2012.

Samuelson , P. A dan Nordhaus, W. D. 1992. *Makro Ekonomi*, 14th Edition, Translation. Erlangga, Jakarta.

Smith, P.N. Sorensen, S. Wickens, M.R. 2006. The Asymmetric Effect of the Business Cycle on the Relation between Stock Market Return and Their Volatility, University of York. http : //www. york. ac. Uk / media / economics / documents / discussionpapers / 2006/0604.pdf. Accessed on July 23, 2012.

Stangl S. Jacobsen B. Visaltanachoti. N. 2007. Sector Rotation over Business-Cycles. http : // www. melbournecentre. com. Au / Finsia_MCFS / 2007 / Sector _ Rotation _ over _ BusinessCycles.pdf. Accessed on May 10, 2012.

Stovall, S. 1996. Standard & Poor’s Guide to Sector Investing. McGraw-Hill.

Sukirno, S. 2008. *Makroekonomi, Teori Pengantar*, 3rd Edition, Raja Grafindo Persada, Jakarta

Tandelilin, E. 2010. *Protofolio dan Investasi, Teori dan Aplikasi*, 1st Edition, Kanisius, Yogyakarta.

Website :http://www.bps.go.id.

Website :http://www.bi.go.id.

Website :http://www.yahoo.finance.com