

The Effect of Changes in Oil Prices and Gold Prices on the Return of the Sectoral Stock Index in Indonesia from 1999-2019

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Abstract. This study aims to determine the effect of changes in oil and gold prices on sectoral stock index returns. Furthermore, this study evaluates the possibility of a structural break during the research period that could affect the stability of the asset-pricing model. This study uses samples from 10 sectoral stock indexes in Indonesia with the JASICA system listed on the Indonesia Stock Exchange from 1999 to 2019. Bai & Perron's structural break test was used to evaluate the possibility of a structural break during the research period that could affect the stability of the asset-pricing model. The findings in this study are the effect of changes in oil prices and gold prices on the return of sectoral stock indexes in Indonesia varies in each sector. In addition, there is one structural break in the six sector index models with the 1999-2019 research period.

Keywords: Changes in oil price, changes in gold price, sectoral stock index returns, structural break.

1 Introduction

Oil and gold prices over the past twenty years until now tend to fluctuate, whereas the performance of the Indonesian stock market, which witnessed from the movement of the Indonesia Composite Index (IDX Composite) from 1999 to 2019 has an ascending tendency from year to year. This differs from the performance of the Indonesian sectoral stock index using the JASICA classification system. The changes in oil and gold prices that are unstable, as well as the changes in the composite stock index and sectoral stock indices that fluctuate, have a riskier effect on the performance of corporate stocks and sectoral indices.

Oil and gold are two commodities that have different characteristics, oil is mostly used as fuel or raw material, while gold is used as a hedging tool. The effect of changes in oil and gold price on sectoral stock returns can vary between sectors, depending on the level of intensity of oil and gold in the production process or as hedging assets [1][2][3][4][5][6][7][8][9][10].

Unstable oil and gold price changes increase the risk of fluctuations in the price of raw materials, prices of key products, or hedging assets [11]. Previous research in Indonesia has only focused on the influence of commodities on stock market movements in general and there has been no research on the impact of two different commodities, namely oil and gold, on sectoral stock index returns. The price changes will affect the company's operational performance. The operational performance of the company or sector that is affected will affect the financial performance, so it can have an effect on the performance of company shares and sectoral indexes. This research period covers important events that can affect the oil, gold, and stock markets. These events can cause structural changes in the parameters of the research model.

There have been numerous studies examining the relationship between the stock market and oil prices. Along with the increase in oil prices, the operational costs incurred to manage the company's activities and projects will also increase [10]. The increase in operating costs will inflict a decrease in company profits and dividends to be paid to shareholders so that the share price will decrease. Oil prices have a significant influence on the company's operational costs because there are companies that use oil as an operational material or as fuel in both the production process and product delivery. Assuming there is no likelihood of replacement of production factors, an increase in oil prices will increase production costs that concern cash flow and lead to a decrease in stock prices [12]. Oil prices can directly or indirectly affect stock prices. The direct impact is associated with future cash flows meantime the indirect effect is related to the interest rate used to discount future cash flows [7]. Many researchers have discovered a statistical significant relationship related to stock price returns and oil prices. The study started with finding that found the combined stock returns in four developed countries, namely England, Canada, Japan, and the United States, had a negative relationship with fluctuations or changes in oil prices [13].

There are several studies examining the interaction of gold prices and the stock market based on the premise that gold acts as both a hedge and a safe haven. The gold prices' tendency to surge while the value of other assets falls, and the fact that this trait persists even during volatile periods, makes gold a safe haven [14]. The discovery provides a theoretical interpretation for the connection between gold and other variables under three widely-known hypotheses: diversification, hedging, and safe-haven [15]. According to the researcher, investors diversify their portfolios by adding assets that are positively or negatively correlated or uncorrelated under normal conditions.

Research that uses a sample of sectors, countries, and companies find that only a few parts of the sample are significantly affected. This is influenced by several factors, one of them is the dependence of the production process of a sector on the oil and gold price. The difference between this study and previous studies is that it uses two commodity prices, namely the oil price and the gold price. The difference between this study and previous studies is that it uses two commodity prices, namely the oil price and the gold price. The sectoral stock index used in Indonesia is a sector index using the JASICA system. This study also adds two control variables *videlicet* changes in the exchange rate and interest rate.

The effect of two commodity changes with different characteristics will be researched further by analyzing the effect of changes in oil prices and gold prices on the return of sectoral stock indexes in Indonesia for 21 years, from 1999 to 2019. The period of this research includes

important events that affect the oil market, gold, and stocks. These events can cause structural changes in the parameters of the research model.

The research problems are formulated as follows:

1. What is the effect of changes in oil prices on the stock index returns in Indonesia in the 1999-2019 period?
2. What is the effect of changes in gold prices on the stock index returns in Indonesia in the 1999-2019 period?
3. Is there a structural break in the research model regarding the effect of changes in oil and gold prices on the stock index returns in Indonesia in the 1999-2019 period?

The research objectives in accordance with the above problems are:

1. To identify the effect of changes in oil prices on the sectoral stock index returns in Indonesia in the 1999-2019 period.
2. To identify the effect of changes in gold prices on the stock index returns in Indonesia in the 1999-2019 period.
3. To identify the structural break contained in the research model regarding the effect of changes in oil and gold prices on the return of the sectoral stock index in Indonesia in the 1999-2019 period.

The hypotheses in this study refer to a research model from the previous research [10]. The following is the hypothesis of this research:

H1: Oil prices changes have different effects on sectoral stock index returns.

H2: Gold price changes have a different effect on stock index returns in each sector.

H3: There is at least one structural break in the one index model of one sector with the 1999-2019 research period.

2 Data

The data utilized is secondary data obtained from Thomson Reuters and Datastream. The data period is from 1999 to 2019. The sample collection technique that will be used is non-probability sampling. A purposive sampling method based on specific criteria that have been determined in advance will be used in this study. The following are some of the specific criteria that have been determined:

1. The sectoral stock indexes in Indonesia listed on the Indonesia Stock Exchange are based on the JASICA system, namely the (a) agriculture; (b) mining; (c) basic industry; (d) miscellaneous industries; (e) consumer goods; (f) construction; (g) infrastructure; (h) finance; (i) trade; and (j) manufacture.
2. Monthly data on oil prices, gold prices, market returns, exchange rates, and interest rates for the period 1999-2019, and available in the Datastream database.

3. Data on price or rate changes that can be processed as research variables.

In accordance with the criteria above, the final sample of this study includes 10 sectors listed on the IDX based on the JASICA system during the 1999-2019 period, and a total of 252 observations were obtained.

3 Methodology

Time-series data is the type of data used in this study. Time series are observations that are ordered by time parameters. Time-series can be measured continuously or discretely [28]. The time-series data used is the period from 1999 to 2019 or a period of 21 years. The multifactor asset-pricing model method is used to examine the effect of changes in oil and gold prices on stock returns of 10 sectoral index in Indonesia.

The multi-factor model is a financial model that utilizes a lot of factors in its calculations to explain market phenomena and equilibrium asset prices. Individual or portfolios of securities can be described using multi-factor models. The model compares two or more factors to analyze the connection between the variables and the resulting performance [16]. The model in this study which refers to the previous research are as follows: [10]

$$Rsi_{it} = \alpha_{i0} + \beta_{ioil}Roil_t + \beta_{igola}Rgold_t + \beta_{im}Rm_t + \beta_{ier}Rer_t + \beta_{iir}Rir_t + u_{it}. \quad (1)$$

Explanation :

Rsi_{it} = Return in the i^{th} sector

β_{ioil} = The sectoral returns sensitivity to the risk of changes in oil prices

$Roil_t$ = Return on oil prices (natural logarithm of oil price $_t$ with respect to oil price $_{t-1}$, in percentage)

β_{igola} = The sectoral returns sensitivity to the risk of changes in gold prices

$Rgold_t$ = Return on gold prices (natural logarithm of gold price $_t$ with respect to gold price $_{t-1}$)

β_{im} = Market beta, systematic risk of sector i^{th} returns with respect to the market

Rm_t = Return on market index, in percentage

β_{ier} = The sectoral returns sensitivity to the risk of exchange rate return

Rer_t = Exchange rate return

β_{iir} = The sectoral returns sensitivity to the risk of interest rate return

Rir_t = Interest rate return

Bai & Perron's structural break test was used to evaluate the possibility of a structural break during the research period that could affect the stability of the asset-pricing model [17][18]. This method is based on ordinary least squares (OLS) recursive estimation. The equation of the Bai & Perron's structural break test is as follows:

$$\sum_{i=1}^{m+1} \sum_{T_{i-1}+1}^{T_i} (Rex_{it} - \alpha_{i0} - \beta_{ioil}Roil_t - \beta_{igola}Rgold_t - \beta_{im}Rm_t - \beta_{ier}Rer_t - \beta_{iir}Rir_t)^2 \quad (2)$$

4 Empirical results

4.1 Descriptive statistics

Table 1. Descriptive statistics.

Variables	Mean	Median	Standard Deviation	Skewness	Kurtosis	Jarque-Bera
Agriculture	0.005599	0.005732	0.103270	-1.181770	11.36716	793.7546***
Basic Industries	0.009287	0.020378	0.078383	-0.649911	4.938613	57.20149***
Construction	0.011552	0.009598	0.097366	0.603987	6.804795	167.3245***
Consumer	0.012357	0.013260	0.062084	0.253660	4.831265	37.91450***
Finance	0.013444	0.014737	0.076836	-0.077697	4.868107	36.89670***
Infrastructure	0.009835	0.008638	0.073331	-0.236728	5.959722	94.33317***
Manufacture	0.011041	0.014112	0.063739	-0.452743	6.044523	105.9348***
Mining	0.009208	0.006380	0.101453	0.011230	7.720566	233.9846***
Misc. Industries	0.010711	0.009389	0.082000	-0.796928	7.889593	277.7092***
Trade	0.010055	0.009452	0.079778	-0.258009	11.63922	786.4753***
<i>Oil Price</i>	0.006441	0.019173	0.095403	-0.530021	4.368582	31.46539***
<i>Gold Price</i>	0.006606	0.005734	0.047262	-0.127582	4.079161	12.91183**
<i>Market Return</i>	0.010959	0.013989	0.064256	-0.758283	8.109897	298.3157***
<i>Exchange Rate</i>	0.002212	0.00139	0.037671	-0.840182	10.38238	601.8937***
<i>Interest Rate</i>	-0.007661	-0.002984	0.065074	-0.840889	10.46067	614.1455***

Note : The sign of *, **, and *** show the confidence level of 90%, 95%, and 99%.

The descriptive statistics for the sample data are shown in Table 1. All of the sectors' returns were positive on average and similar in magnitude. Except for the interest rate, all of the independent and control variables had positive average returns. The agricultural sector had the highest volatility (0.10327). The consumer goods industry, on the other hand, had the lowest volatility (0.062). It's also worth noting that seven out of ten sectoral returns had negative skewness and excess kurtosis. These findings show that important events (i.e. 2007–2009 global financial crises) that occurred during the analysis period had a considerable impact on the distributional properties of stock returns, according to the financial economics literature. The non-normality of oil prices, exchange rates, and sectoral stock returns was implied by the Jarque-Bera tests.

4.2 Stationarity test

Table 2. Stationarity test.

Variables	ADF Statistics		PP Statistics	
	t-Statistics	Prob	Adj. t-Stat	Prob
Agriculture	-13.39239	0.0000	-13.39432	0.0000
Basic Industries	-12.88754	0.0000	-12.88047	0.0000
Construction	-13.07655	0.0000	-12.98526	0.0000
Consumer	-13.19729	0.0000	-13.19729	0.0000
Finance	-14.63876	0.0000	-14.61249	0.0000
Infrastructure	-15.29936	0.0000	-15.29604	0.0000
Manufacture	-12.82155	0.0000	-12.82155	0.0000
Mining	-11.71615	0.0000	-11.88254	0.0000
Misc. Industries	-13.65363	0.0000	-13.64595	0.0000

Trade	-11.17604	0.0000	-11.01815	0.0000
Oil Price	-13.64026	0.0000	-13.62971	0.0000
Gold Price	-17.54785	0.0000	-17.64254	0.0000
Market Return	-12.63865	0.0000	-12.65525	0.0000
Exchange Rate	-15.60792	0.0000	-15.61683	0.0000
Interest Rate	-7.378586	0.0000	-10.41001	0.0000

The stationarity test results in Table 2 show that the probability of all variables in both the ADF Statistics and PP Statistics tests is smaller than the 0.05 significance level. Therefore, H_0 can be rejected. Thus, it can be concluded that all variables of changes in oil prices, gold prices, exchange rates, interest rates, market returns, and stock index returns in ten sectors do not contain a unit root or are stationary.

4.3 Independent variables

Table 3. Regression.

Industry	Intercept	Oil price (R_{oil})	Gold price (R_{gold})	Market return (R_m)	Exchange rate (R_{er})	Interest rate (R_{ir})
Agriculture	-0.006291 (0.2218)	0.032251 (0.5507)	0.3299*** (0.0026)	0.932806*** (0.0000)	-0.139579 (0.3713)	0.0536 (0.4947)
Basic Industries	-0.001452 (0.6112)	0.003621 (0.9039)	-0.008425 (0.8888)	1.007230*** (0.0000)	-0.051921 (0.5490)	0.0199 (0.6482)
Construction	0.001238 (0.7539)	-0.064789 (0.1192)	-0.111136 (0.1832)	1.001114*** (0.0000)	-0.46695*** (0.0001)	-0.199*** (0.0011)
Consumer	0.004229 (0.0981)	-0.063372** (0.0187)	-0.042196 (0.4335)	0.772482*** (0.0000)	0.008658 (0.9109)	-0.0431 (0.2688)
Finance	0.004494 (0.0962)	-0.074112*** (0.0093)	-0.057754 (0.3104)	0.974767*** (0.0000)	-0.23075*** (0.0051)	0.0473 (0.2502)
Infrastructure	-0.000796 (0.7696)	-0.022822 (0.4244)	-0.046431 (0.4187)	1.040596*** (0.0000)	0.2301*** (0.0056)	0.1081*** (0.0096)
Manufacture	0.000924 (0.5421)	-0.041893*** (0.0090)	0.008006 (0.8024)	0.927915*** (0.0000)	-0.01145 (0.8033)	-0.0248 (0.2831)
Mining	-0.005285 (0.2572)	0.254046*** (0.0000)	0.2862*** (0.0039)	0.975887*** (0.0000)	0.190423 (0.1787)	0.0197 (0.7820)
Misc. Industries	-0.000772 (0.7881)	-0.059767** (0.0487)	0.087478 (0.1503)	1.026107*** (0.0000)	-0.1454* (0.0963)	-0.04795 (0.2744)
Trade	-0.000877 (0.7338)	0.060087** (0.0273)	-0.154*** (0.0052)	0.989724*** (0.0000)	-0.15284* (0.0516)	-0.137*** (0.0006)

Note : The sign of *, **, and *** show the confidence level of 90%, 95%, and 99%.

The data shown in Table 3 show that the market-return coefficients were highly significant for all sectors, although oil prices, gold prices, interest rate, and exchange rate returns were discovered to be significant for only a few, such as oil prices seem to have a negative and significant impact on consumer, finance, manufacture, and miscellaneous industries. Nonetheless, it appears to have a positive and significant coefficient for both the mining and trade sectors. The coefficients of oil price changes were discovered to be more significant than other variables.

The findings show that changes in gold prices had a negative and significant impact on the trade sectors. Nevertheless, gold price changes had a positive and significant impact on the agriculture

and mining sectors. Meanwhile, data show that the exchange rate had a negative and significant impact on the construction, finance, miscellaneous industries, and trade sectors. On the contrary, exchange rate returns had a positive and significant impact on the infrastructure sectors. The results for interest rate indicate that the construction and trade sectors were negatively and significantly impacted. Contrarily, interest rate parameters had a positive and significant impact on the infrastructure sectors.

The effect of changes in oil and gold prices on sectoral stock index returns in Indonesia in the 1999-2019 period is different for each sector. There are sector stock index returns that are affected by changes in oil prices and gold prices, as well as sector stock index returns that are not affected. The results of this study are in line with the results of research which states that oil and gold price changes have different effects on sectoral stock index returns [10][29][30][31]. The analysis of the independent variable test is divided into two, namely the effect of changes in oil price on sectoral stock index returns, and the effect of changes in gold prices on sectoral stock index returns. Changes in oil prices and gold prices both affect or have a positive impact on the mining sector. In addition to the mining sector, the impact of changes in oil prices and gold prices on stock returns for each sector is different.

Table 3 shows that the effect of changes in oil prices on the sectoral stock index returns in Indonesia in the 1999-2019 period is different. Oil price changes have no impact or influence on stock index returns in the agriculture, basic industries, construction, as well as infrastructure. Oil price changes have an impact or influence on stock returns in the consumer goods industry, finance, manufacturing, mining, miscellaneous industries, as well as trade sector.

The effect of oil price changes on stock index returns in the consumer goods industry is negative. Companies in the consumer sector, mostly use oil as a raw material in the production process. The unstable changes in oil prices certainly have an impact on the cost of raw materials for these companies. Production costs and selling prices of products produced by the company are influenced by fluctuations in commodity and raw material prices [19]. In addition to directly influencing the company's raw costs in the consumer goods industry sector, unstable oil price changes will have an effect on the company's financial performance, and in the end, will also affect the stock performance of companies in the consumer goods industry sector.

Oil price changes have a negative impact on stock index returns in the financial sector. Borrowing customers in the financial industry is generally companies that sell oil-related products or use oil as a raw material. This demonstrates that firms' reliance on oil is rather high, because it does not directly impact the company, but it does affect third-party companies and affects the income or operational performance in the financial sector. Price changes in commodities lead to a reduction in commercial activity among partners [20]. In addition to having an effect on company earnings in the financial industry sector, unstable oil price changes will have an effect on the company's financial performance, and in the end, will also affect the stock performance of companies in the financial sector.

The effect of oil price changes on the stock index return of the manufacturing sector is negative. Oil is commonly used as a raw material in the manufacturing industry. The fluctuating price of oil has a significant impact on the cost of raw materials for these businesses. In addition to having an impact on manufacturing business earnings, unpredictable oil price changes will have an impact on the firm's financial performance, which will, in turn, have an impact on manufacturing company stock performance.

Changes in oil prices have a positive impact on mining stock index performance. Coal is partially the major product in the mining sector's business line. Oil can be substituted with coal. Companies whose main commodity is coal, seeing a boost in revenue as oil prices fluctuate. This demonstrates that changes in oil prices have a significant impact on mining company earnings. Besides having an effect on company revenues in the mining sector, unstable oil price changes will have an effect on the company's financial performance, and in the end, will also affect the stock performance of companies in the mining sector.

The effect of oil price changes on stock index returns in miscellaneous industries is negative. Companies in the miscellaneous industries such as Astra International, mostly use oil as a raw material in the production process as well as as a product of the company's line of business. The unstable changes of oil prices certainly have an impact on the cost of raw materials for these companies. In addition to directly influencing the company's raw costs in the miscellaneous industries, unstable oil price changes will have an impact on the company's financial performance, and in the end, will also affect the stock performance of companies in the miscellaneous industries.

Oil price changes have a positive impact on stock index returns in the trade sector. United Tractors Tbk. as one of the companies with large capitalization in the trade sectors, coal is one of the company's product lines. Coal is a substitute for oil. Changes in oil prices allow companies with coal product lines to increase revenue. This shows that the impact of oil price changes on company revenues is quite huge. The unstable changes in oil prices certainly have an impact on the income of these companies. In addition to having an influence on company income in the trade sectors, unstable oil price changes will have an effect on the company's financial performance, and in the end, will also have an influence on the stock performance of companies in the trade sectors.

The data show that the effect of changes in gold prices on sectoral stock index returns in Indonesia in the 1999-2019 period is different. The effect of gold price changes on stock index returns in the agricultural sector is positive. Based on the company's annual report, Astra Agro Lestari Tbk, SMART Tbk, and PP London Sumatra Indonesia Tbk hedged against fluctuations in commodity values and other macroeconomic variables. Hedging activities carried out by companies reduce the risk of fluctuations in the value of commodities and macroeconomic variables that can affect production costs. The reduction in risk indirectly affects the company's financial performance and ultimately affects the stock performance of companies in the agricultural sector.

Gold price changes have a positive impact on stock index returns in the mining sector. Companies in the mining industry also hedge against fluctuations to protect themselves against changes in commodity prices and macroeconomic variables. This hedging action lowers the risk of commodity price changes and macroeconomic variables affecting manufacturing costs. The reduction in risk has an indirect impact on the company's financial performance, which in turn has an impact on the mining sector's stock performance.

Changes in gold prices have a negative impact on trade stock index performance. The increase in gold prices will trigger inflation, which will also affect the company's operational processes in the trade sector. The company's operations will tend to decline and affect the company's financial performance. The fluctuations of gold prices, in the end, have an influence on the performance of the shares of companies in the trade sector.

4.4 Control variables

The table of regression test results shows that the effect of market return on the sectoral stock index returns in Indonesia in the 1999-2019 period is positive and significant as a control variable at a 99% confidence level. The effect of positive and significant market return is found in all sectoral index models.

The effect of changes in the exchange rate on stock index returns in the infrastructure, construction, finance, and trade sectors is significant as a control variable at a 99% confidence level. Meanwhile, the effect of changes in the exchange rate on stock index returns in miscellaneous industrial sectors is significant at the 90% confidence level. Changes in the exchange rates have a positive and significant impact on the stock index return of the infrastructure sector. In addition, changes in the exchange rate have a negative and significant effect on stock index returns in the construction sector, financial sector, miscellaneous industries, and the trade sector. The effect of changes in the exchange rate on stock returns in several sectors is significant due to the company's activities in using foreign currencies so that exchange rate returns have a direct impact on company operations [1][10].

The effect of changes in interest rates on stock index returns in the construction and infrastructure sectors is significant as a control variable at a 99% confidence level. Changes in interest rates have a positive and significant impact on the stock index return of the infrastructure sector. In addition, changes in the interest rate have a negative and significant effect on the stock index return of the construction sector. The effect of changes in interest rates on stock returns of several significant sectors can be due to the company's funding activities in financial institutions so that interest rate returns have a direct impact on company operations [1][21].

4.4 Structural breaks

Table 4. Structural breaks.

Industry	Breaks	Dates
Agriculture	1	2008M07
Basic Industries	1	2002M06
Consumer	1	2006M09
Infrastructure	1	2007M04
Misc. Industries	1	2006M05
Trade	1	2002M05

The results of the structural break test can be seen in the table below. The six equation models occur in stock index returns in the agriculture sector, basic industries, consumer, infrastructure, miscellaneous industries, and trade. The results obtained are different from the previous study [10]. This is due to differences in the type of data time, this study uses monthly data, while research on reference journals is carried out using daily data.

Structural breaks in the stock index equation model for the trade sector occurred in May 2002 and June 2002 for the basic industries sector stock index equation model. There are several events that could be the reason behind the occurrence of a structural break that year. Stock market downturn or bear markets occurred in 2002 [22]. The percentage loss of the Dow Jones from March 19 to October 9, 2002, was 31.5%. This was due to the WorldCom and Enron

accounting fraud cases that sparked concerns that more companies could artificially increase their profits. The Jakarta Stock Exchange in March 2002 began implementing a remote trading system or remote trading system [23]. East Timor officially became an independent country under the name Timor Leste on May 20, 2002. The Fair Trade Indonesia Forum (FFTI) was also established in 2002. The Fair Trade Indonesia Forum (FFTI) is a country network for the World Fair Trade Organization-Asia (WFTO-Asia) and works together as partners with the goal of empowering fair trade in Indonesia, Asia, and Internationally [24].

The stock index equation model for the miscellaneous industries and consumer sectors had a structural break in May and June 2006. There were several policy decisions that could be the reason behind the structural break in 2006. The reduction in domestic fuel selling price subsidies was set in 2005 through Presidential Regulation No. 22 of 2005 concerning the Retail Selling Price of Domestic Fuel Oil. The price of fuel has increased by more than 20% and the decree took effect in March 2005. The Ministry of Energy and Mineral Resources (ESDM) stipulates the Minister of Energy and Mineral Resources Regulation No. 26 of 2006 concerning the Provision of Oil Fuel in the Context of Empowering the National Shipping Industry.

The structural break in the infrastructure sector stock index equation model occurred in April 2007. There were events and several policy decisions that could be the reason behind the structural break in 2007. The incident that occurred was the Adam Air 574 plane crash in January 2007 [25]. The first policy stipulation is Law no. 17 of 2007 concerning the National Long-Term Development Plan for 2005-2025 in February 2007. The second policy is Law no. 25 of 2007 concerning Investment. The law came into force in April 2007 and regulates the obligations, rights, and responsibilities of investors with the aim of providing legal certainty.

The agricultural stock index equation model had a structural break in July 2008. There were several events and policy decisions that could be the reason behind the structural break in 2008. Law no. 20 of 2008 concerning Micro, Small, and Medium Enterprises was enacted in July 2008 replacing Law no. 19 of 2005 concerning Small Business. This is due to the growth of an increasingly global and dynamic economic ecosystem. The Surabaya Stock Exchange was consolidated into the Jakarta Stock Exchange in November 2007 which later changed its name to the Indonesia Stock Exchange (IDX). IHSG reached its highest point in January 2008 [26]. The global economic crisis also occurred in 2008 which caused turbulence in global finance [27].

5 Conclusion

Based on the results of research and analysis that has been carried out, it can be concluded that the effect of changes in oil prices on sectoral stock index returns is different in each sector. Positive influence on the mining and trade sectors, and negative influence on the four sectors. The effect of changes in gold prices on sectoral stock index returns also varies in each sector. Positive influence on the mining and agriculture sectors, as well as a negative influence on the trade sector. There is one structural break in the six-sector index model with the 1999-2019 research period, namely the agriculture sector index, basic industries, consumer goods industry, infrastructure, misc-industries, as well as trade.

Based on the conclusions of the research above, several suggestions can be drawn for policymakers, investors, and the industry:

1. Policymakers related to this research topic such as the Financial Services Authority (OJK), the Indonesia Stock Exchange (IDX), and the Ministry of Energy and Mineral Resources can develop a database of oil consumption and gold used in each related sector. Policymakers can consider the effect of the risk of oil and gold price fluctuations on sectoral stock index returns in setting regulations or policies related to oil, gold, and sectoral stock index commodities.
2. The industry can consider the use of oil as raw material, fuel, or as a product in the operational process if changes in oil prices affect the return of the related sectoral stock index. Industry can also use gold as a hedge asset to protect against the effects of fluctuations.
3. Investors can consider the degree of dependence of sectors on oil and gold in making decisions regarding stock investments. Investors can consider the movement of oil and gold prices when investing in shares that are affected by fluctuations in the prices of these two commodities. Investors can hedge their investment assets if unstable oil and gold price fluctuations affect the performance of the shares.

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