

HERDING BEHAVIOR OF ENERGY SECTORS LISTED IN THE ASEAN EMERGING STOCK MARKET

Hartono Ryandy¹ and Gusni²

¹Magister Management, Widyatama University, Jl. Phh. Mustofa No.59, Bandung

²Economics and Business, Widyatama University, Jl. Cikutra No.204 A, Bandung

E-mail: h.ryandy10@gmail.com, Gusni.tanjung@widyatama.ac.id

ABSTRACT

This study investigates herd behavior of the energy sector in the Indonesian and Malaysian capital markets, as well as whether oil prices and the fed funds rate drive herd behavior in the two ASEAN emerging capital markets. To fulfill the research objectives, daily closing stock price data for each stock listed in the energy sectors from 2015 to 2022 were employed. In the way to achieve its objectives, this study employed a cross-sectional dispersion technique. The study's findings indicate that herding behavior was not observed in the energy sector documented in the Indonesian stock market, both for the complete research period and during COVID-19, also oil prices and the fed funds rate do not induce herding behavior. Meanwhile, herding behavior was observed in the energy sector of Malaysian capital markets, both during the full research period and during the COVID-19 pandemic, and oil prices did not encourage herding behavior, whereas the fed funds rate encouraged herd behavior of energy sector. The findings of this study would serve as a source of knowledge for ASEAN capital market policymakers in order to sustain capital market stability and prevent herding behavior.

Key words: Herd behavior, oil price, fed fund rate, energy sectors

INTRODUCTION

The energy sector is critical to a country's economy. This sector is extremely subject to changes in global economic conditions, particularly when a global crisis occurs, which has an impact on share price swings. These stock price fluctuations can occur as a result of changes in commodity prices (Xia et al., 2019), which encourage investor panic, so that when making investment decisions, investors tend to follow the behavior of other investors (Chiang & Zheng, 2010) and assume that other investors have better information about markets with poor quality information (Litimi et al., 2016), despite the fact that this condition has not been proven for all energy sectors listed on various capital markets, especially in emerging capital markets. This behavior of investors mimicking the decisions of other investors in making investment decisions is often known as herding behavior.

Herding behavior is a type of behavioral bias that has become a popular topic of discussion in the world after a number of crises hit the world, resulting in a variety of financial events were very contrary to the concept of traditional financial theory, namely rationality and efficient capital markets (Doyle & Chen, 2009). Financial behavior experts argue that markets are not totally efficient, and investors' investing decisions are influenced by psychological factors that drive them to behave irrationally. Herding behavior is considered extremely damaging since it can produce uncertainty and volatility in the financial market (Deng et al., 2018), Asset prices go away from their underlying value frequently (Javaira & Hassan, 2015), while empirical evidence is still mixed and limited (Welch, 2000).

After 1992, extensive research on herding behavior in the capital market began. (Christie & Huang, 1995) is the first person to demonstrate the existence of herding behavior in the US capital market using a technique they invented themselves, which is the cross-sectional standard deviation of returns (CSSD). The results did not show herding behavior in the US stock market. They then expanded this approach into the cross-sectional absolute deviation (CSAD), which was further expanded by (Chang, Cheng, Khorana, 2000) using a more sensitive technique that describes the relationship between CSAD and market returns using the entire distribution of market returns to determine the existence of behavior herding. (Chang, Cheng, and Khorana, 2000) validated this model by performing research on developed and emerging capital markets, and the results showed that the existence of herd behavior was more dominant in emerging capital markets compared to developed capital markets.

There is still very little research on herding behavior in the energy sector. (Shen, 2018) carried out study on various energy sectors in the Chinese stock market, and the findings revealed the existence of herding tendency. (Trueck & Yu, 2016) conducted study on the renewable energy sector in the United States from 2000 to 2015, and the findings revealed that no herding behavior was observed in this sector. (Youssef, 2022) conducted study on commodity markets and one of them, namely the energy sector, between 2003 and 2017, and the results revealed that herding behavior had not been identified in the energy sector or other commodity markets. Herding behavior in the energy industry is frequently linked to swings in global oil prices and the federal funds rate. (Chang et al., 2020) reveals that herding behavior in the American capital market is closely tied to variations in global oil prices. Herding behavior was observed in the energy industry when world oil prices were extremely

low, whereas during SARS and COVID-19, herding behavior was observed when world oil prices were extremely high.

The goal of this study is to identify the presence of herding behavior in the energy sector in ASEAN emerging capital markets (Indonesia and Malaysia), as well as to determine whether oil prices and the fed funds rate support herding behavior. Herding behavior in the energy sector is extremely fascinating to investigate in the Indonesian and Malaysian capital markets since Indonesia has the most investors compared to other ASEAN emerging capital markets, while Malaysia has many energy companies listed on its capital market. Herding behavior in the energy sector is still very limited and rarely studied in ASEAN emerging capital markets, so it is intriguing to develop, and the findings are expected to be valuable for capital market policymakers and investors.

METHOD

This fundamental study employs quantitative tools to discover energy sector herding behavior in Indonesian and Malaysian capital markets, as well as the drive of oil prices and the fed funds rate on herding behavior. In practice, this research will take the form of an event study, employing a descriptive and quantitative technique. The goal of descriptive research approach is to obtain reliable and useful information about herd behavior (Sallis et al., 2021). Secondary data in the form of historical data on the daily closing prices of all shares listed in the energy sector on the Indonesian and Malaysian capital markets from January 1, 2015 to December 30, 2022 was used in this research. The research period was chosen because global economic conditions were beginning to deteriorate made worse by the war between Russia and Ukraine, which caused international oil prices to become unstable, including the fed funds rate, and the emergence of many global difficulties, which generated an economic and financial crisis, which was exacerbated by the COVID-19 pandemi.

The sample size for this research consists of 35 companies listed in the energy sector of the Indonesian capital market and 60 energy companies listed in the Malaysian capital market, selected using purposive techniques with criteria. To achieve the research objectives, a systematic approach will be used to find herding behavior in the energy sector in the Indonesian and Malaysian capital markets. To calculate the CSAD value, the following approach will be used (Christie & Huang, 1995). Furthermore, to detect the existence of herding behavior, an approach (Chang, Cheng, & Khorana, 2000) will be used using a non-linear model, which will reveal the relationship between CSAD_{m,t}, and market returns by utilizing the entire market return distribution with the following equation:

$$CSAD_{m,t} = \Omega + \mu_1 |R_{m,t}| + \mu_2 R^2_{m,t} + \epsilon_{m,t}$$

(Chang, Cheng, & Khorana, 2000) underlines that, under the assumptions of the capital asset pricing approach, rational asset pricing anticipates that stock return dispersion will have an increasing linear connection with absolute market returns due to the differential sensitivity of individual stocks to market returns. The presence of herding behavior will be detected if large average equity price movements and extreme market conditions cause the linear relationship to become non-linear and the coefficient μ_2 is expected to be negative (CSAD_{m,t} increases at decreasing values or dispersion increases at increasing levels). This suggests that herd behavior will be recognized when the coefficient μ_2 is negative and significant.

The CSAD approach of (Chang, Cheng, & Khorana, 2000), which has been modified as utilized by (Rahman & Ermawati, 2020; Youssef, 2022) was used to investigate the influence of oil prices and the fed fund rate on herding behavior in the energy sector of the Indonesia and Malaysian capital markets with the below formula:

$$CSAD_{m,t} = \Omega_0 + \mu_1 |R_{m,t}| + \mu_2 R^2_{m,t} + \mu_3 WO + \mu_4 FR + \epsilon_{m,t}$$

Where WO is the oil price and FR is the Federal Reserve Funds Rate. The presence of both elements that drive energy sectors herding behavior may be noticed when the coefficients μ_3 and μ_4 are negative and significant, indicating that oil prices and the fed funds rate contribute to the existence of herd behavior in the two countries' energy sectors.

RESULTS AND DISCUSSION

Table 1 summarizes the descriptive data for CSAD and market return (the equal weighted average return for all individual equities on each trading day, or Rm).

Table 1. Descriptive statistics for CSAD and Rm

	Energy Sectors Indonesia		Energy Sectors Malaysia	
	CSAD	Rm	CSAD	Rm
Mean	1.961414	0.077823	2.187157	0.073205
Median	1.826269	0.025810	2.020693	0.090932
Maximum	5.578276	4.251130	9.469755	9.998572

Minimum	0.160989	-5.046320	0.210923	-12.66432
Std. Dev.	0.742849	1.110638	0.824673	1.215233
Observations	1932	1932	1957	1957

Source: Data processed by using (Christie & Huang, 1995) approach and Rm

The average CSAD of Malaysia's energy sector is higher than that of Indonesia, indicating that individual energy sector stock prices deviate significantly from the returns of all energy companies on the trading day. The standard deviation of the Malaysian energy sector is also larger than that of Indonesia, reflecting the significant volatility and market risk. Meanwhile, market returns in Malaysia and Indonesia are nearly identical.

Table 2 shows the results of predicting herd behavior in the energy sector in the Indonesian and Malaysian capital markets using the CCK (2000) technique, which was tested with the Newey and West consistent estimator. Panel A displays the empirical test findings for the whole time span of the study. The test results demonstrate that the coefficient μ_1 is positive and significant for both nations tested, demonstrating that the hypothesized association between CSAD and market returns exists. Meanwhile, the test findings for the coefficient μ_2 are positive and significant for Indonesia and negative as well as significant for Malaysia, indicating that herding behavior is not present in the Indonesian capital market but was observed in the Malaysian capital market.

The existence of herding behavior during the COVID-19 pandemic can be seen in Panel B. The μ_2 coefficient for the energy sector in the Indonesian capital market is positive and significant, indicating that herding behavior has not been detected. For the energy sector in the Malaysian capital market, herding behavior was detected because the coefficient value μ_2 for Malaysia was negative and significant. The COVID period used is only 2020, during which period there was investor panic due to the COVID-19 pandemic that hit the world. For more details, see table 2 below.

Table 2. Estimation results of energy sector herd behavior of Indonesia and Malaysia Capital Market

	Constant	$ R_{mt} $	$R^2_{m,t}$	$R^2_{adj.(\%)}$
Panel A: Full Period (1 Jan 2015 – 30 Des 2022)				
Indonesia	1.435(44.16)	0.578(12.17)	0.034(2.18)*	44.17
Malaysia	1.624(54.84)	0.708(15.98)	-0.009(-1.63)**	51,63
Panel B: Covid (23 Jan 2020 – 30 Des 2020)				
Indonesia	1.298(16.04)	0.730(5.98)	0.025(0.73)*	62,658
Malaysia	2.119(23.01)	0.744(8.25)	-0.019(-2.59)**	60,71

Sources: Data processed by using (Chang, Cheng, & Khorana, 2000) approach

Note: The superscripts (*), (**), and (***) indicate the significance of the parameter at 10%, 5% and 1%

The presence of undetected herding behavior in the energy sector in the Indonesian capital market may be due to the Indonesian capital market being unique and slightly different from other capital markets, as well as the fact that there are still energy stocks that are not actively traded despite having good fundamentals. The presence of herding behavior in the Malaysian capital market's energy sector both during the full research period and during the COVID-19 pandemic was triggered by the high presence of foreign investors in the country. Foreign investors can cause market instability and panic (Park, 2008), because they had better information and expertise in investment (Sruthi & Shijin, 2017). Aside from these reasons, the occurrence of herding behavior is also driven by trade volume of trading and the lack of trustworthy information (Ah Mand & Sifat, 2021).

Table 3 shows the test findings of the drive in oil prices and the fed funds rate on energy sector herding behavior in the Indonesian and Malaysian capital markets.

Table 2. Empirical results of energy sectors herding with oil price and fed fund rate

	Indonesia	Malaysia
Constant	1.722(1.88)**	2.913(3.52)***
$ R_{mt} $	0.57(12.28)	0.696(16.19)
$R^2_{m,t}$	0.033(2.19)**	-0.009(-1.61)
WO	-0.020(-0.29)	-0.1005(-1.50)
FR	-0.017(-0.85)	-0.041(-2.00)**

Sources: Data processed by using (Chang, Cheng, & Khorana, 2000) approach

Note: *, **, and *** indicate significance at 10%, 5% and 1%

The oil price and fed funds rate do not increase herding behavior in the Indonesian capital market, as evidenced by coefficients μ_3 and μ_4 , which are negative but not significant. This condition demonstrates that variations in oil prices and the fed funds rate do not induce investors to herd. Herd behavior in the energy sectors of Malaysian capital market is not driven by oil price swings; rather, the fed funds rate drives herding behavior

in the country. Fear of high changes in the fed funds rate promotes panic among investors, thus they seek to herd by following market movements.

Malaysian investors are particularly sensitive to the Fed funds rate because they perceive it as poor information that influences investment decisions. The announcement of changes to the Fed funds rate triggers herding behavior in the Malaysian capital market because many stock analysts will provide predictions about its effect on stock prices, which will encourage investors, both rational and irrational, to overreact in making investment decisions, as stated by (Arisanti, 2020).

CONCLUSION

The findings of empirical testing on the presence of herding behavior in the energy sector in the Indonesian capital market demonstrate that no herding behavior was observed during the entire research period or during the COVID-19 outbreak. Different results were obtained in the Malaysian capital market's energy sector, where herding behavior was observed both for the complete research period and during the COVID-19 pandemic. The empirical results of empirical tests on the encouragement of oil prices and the fed funds rate on herding behavior in the energy sector of the two countries studied show that only the fed funds rate drives herding behavior in the Malaysian capital market, whereas neither the oil price nor the fed funds rate encourages this herding behavior in the energy sector of the Indonesian capital market. It is intended that future researchers will expand on this research by using more samples, not just from ASEAN countries but also from Asian countries and other parts of the world, to achieve even better results.

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