Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

Sectoral Herding Contagion Between Oil Rich Countries

Syed Faisal Hassan Bukhari (Corresponding Author)
Manager Finance, HQ NLC Rawalpindi, Pakistan. Email: nadealishanawer@gmail.com

Saif ullah Khurram
Assistant Manager Finance, HQ NLC Rawalpindi, Pakistan.
Email: Saifullahkhankhuram@gmail.com

Saparova Botagoz
L.N.Gumilyov Eurasian National University, Ph.D., Associate Professor, Nur-Sultan, Kazakhstan. Email: sbsfmenu@mail.ru

Ghulam Abbas
Department of Business Administration, Sukkur IBA University, Sindh-65200, Pakistan. Email: g_abbas@iba-suk.edu.pk

Abstract
This paper examines the spread of herd behavior in the oil-rich stock markets of Saudi Arabia (KSA) and Iraq, particularly amidst the heightened uncertainty of the COVID-19 pandemic, considering the degree of market integration. A modified Cross-Sectional Absolute Deviation (CSAD) measure, recognized as an indicator of herding, is employed to explore the presence of herding contagion before and after the COVID-19 crisis. The findings reveal that herding behavior from dominant markets influences other integrated markets, both before and after the pandemic. Specifically, herding in the Iraqi stock market is significantly impacted by activity in the integrated Saudi Arabian market. However, the energy and healthcare sectors did not exhibit herding contagion. This highlights the importance of market participants exercising caution in predicting this phenomenon in integrated markets under various conditions. The findings hold substantial implications for governments, investors, and policymakers, enhancing their understanding of market dynamics and aiding in portfolio diversification strategies.

Keywords: Covid-19, Herding contagion, Volatility, Financial crisis, Portfolio Diversification.

Introduction

A vast body of literature has explored and examined herding behavior across various continents. Similarly, stock market correlations represent a distinct area of study that has garnered substantial scholarly interest. However, there remains a research gap linking market correlation to herding contagion at the sectoral level. Financial integration, strengthened by the interconnectedness of global stock markets, has likely intensified herding contagion. Both theoretical and empirical evidence support the notion that international markets can provoke herding behavior in domestic markets, particularly

ISSN Online: 3007-3154
ISSN Print: 3007-3146

Vol. 2 No. 5 (December) (2024)

during periods of financial integration (Wahyudi, Najmudin, & Rachmawati, 2018). Consequently, stakeholders expect significant impacts of foreign markets on domestic stock markets under financial integration. Moreover, herding behavior tends to amplify volatility and adversely affect investor confidence in any stock market (Vieito et al., 2024; Wang & Wang, 2018). Integrated stock markets are particularly susceptible to herding behavior (Chiang & Zheng, 2010).

Guney, Kallinterakis, and Komba (2017) investigated herding behavior in eight African stock markets and argued that herding significantly impacts market returns, fostering regional stock market integration. Their findings further suggest that investor behavior is largely unaffected by external factors, with financial integration being marginally influenced by the international financial system (Vieito et al., 2024).

Herding is generally defined as "investors imitating the financial decisions of others without utilizing their own information or reasoning." While substantial research has investigated herding in traditional financial markets, a significant gap persists in exploring such behavior in emerging markets (Afrin, 2024). During financial crises, the high volatility and speculative nature of emerging stock markets provide fertile ground for understanding investor herding behavior and its broader implications. Herding behavior is often associated with extreme volatility, financial turmoil, and crises. By comprehending herding tendencies, investors can make more informed and profitable investment decisions (Syed Faisal Hassan Bukhari, Yasir, Méndez, & Mustafa, 2023; Chiang & Zheng, 2010).

Behavioral finance studies offer varying definitions of "herding," commonly characterized as "actions of a group of investors exhibiting similarities" (Christie & Huang, 1995). Herding behavior drives asset price momentum, uncertainty, extreme volatility, and bubbles in stock markets, disrupting fundamental price levels and leading to financial crises (Avery & Zemsky, 1998). Investor feedback loops—both positive and negative—are often the root of financial market trends, causing herding behavior where decisions are made collectively. These groups exhibit highly correlated activities, resulting in market bubbles and crises (Epstein & Schneider, 2008; Zorgati, Albouchi, & Garfatta, 2024).

The COVID-19 pandemic introduced unprecedented economic crises in global financial markets, throwing all stakeholders into a climate of uncertainty and insecurity. This unpredictability led to extreme stock price movements (volatility) and increased interdependence among investors (Zulhelfi & Novianty, 2024). Globalization played a key role in transmitting volatility risk across stock markets. During crises, asymmetric information prompts investors to follow the herd, and uninformed investors disturb price equilibrium (Lobão & Almeida, 2024). Both herding and anti-herding behaviors have strong effects on stock market volatility, contributing to inefficiencies and recent financial crises (Syed Faisal Hasan Bukhari, Ahmad, Hanif, & Shah, 2022; Espinosa-Méndez & Maquieira, 2023).

Herding behavior has shown mixed trends across different regions. During the Asian financial crisis, correlation among investors increased significantly due to unique behavioral biases, contrasting with trends in Latin American and European stock markets. Studying herding behavior in Asian oil-rich countries can reveal new behavioral dynamics and homogeneous investor actions during financial crises (Asaad & Al-Delawi, 2022). This study focuses on herding behavior in the stock markets of Saudi Arabia (KSA) and Iraq.

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

Using the Chang, Cheng, & Khorana (2000) model of dispersion, it detects herding and anti-herding sentiments in stock markets under various market conditions.

Numerous studies have examined the transmission of herding behavior across stock markets, yielding diverse findings. Some studies provide robust evidence of cross-country herding contagion in Asian and U.S. stock markets (Wahyudi et al., 2018), while others identify no co-integration between certain markets (Economou et al., 2011). Contradictory findings highlight a gap in understanding herding contagion. This study aims to bridge that gap by investigating integration and herding contagion between stock markets at the sectoral level in oil-rich countries. It further analyzes investor behavior before and after the COVID-19 pandemic to assess its impact on major oil-producing Muslim countries.

This study empirically contributes to the existing literature on stock markets before and after COVID-19, shedding light on herding contagion and its influence on market volatility and decision-making. It also examines asymmetrical movements across stock markets and evaluates their resilience to the pandemic, offering valuable insights for governments, policymakers, and investors.

Strategic development between KSA and Iraqi Financial markets

Over the last decade, Iraq's economy has undergone a remarkable transformation, with substantial investments flowing in from Gulf Cooperation Council (GCC) countries, predominantly Saudi Arabia. These economic developments represent a significant milestone in Iraq-Saudi relations, which have historically been marked by tension. Saudi Arabia has signed multiple Memorandums of Understanding (MOUs) and committed approximately $5 billion to major ventures in Iraq, particularly in the real estate sector of Baghdad. Additionally, the Saudi Public Investment Fund has announced plans to inject $3 billion through a specialized investment unit into key sectors, including mining, agriculture, infrastructure, and financial services.

The establishment of the Arab Bank-Iraq further facilitates financial activities and promotes investment transactions. According to official data, trade activities between Saudi Arabia and Iraq have increased significantly—by approximately 50% (valuing $1.5 billion)—indicating growing economic cooperation. In recent years, Saudi Arabia, the UAE, and Qatar have announced investments in ten major real estate projects totaling $15 billion in Baghdad, Iraq. This surge in trade ties underscores Saudi Arabia's commitment to exploring Iraq's investment opportunities. Saudi Arabia has actively participated in investment exhibitions and economic cooperation platforms (Asaad & Al-Delawi, 2022).

Literature Review

Over the past three decades, global financial markets have frequently faced financial crises, with investor behavior playing a pivotal role in spreading these crises worldwide. Emotional reactions and tense situations often lead to irrational behavior among investors and fund managers. Major historical financial crises, such as the Great Depression (1930), the Asian Crisis (1997), the dot-com bubble (2000), the mortgage crisis (2008), the European sovereign debt crisis (2011), the oil crash (2014), the Chinese yuan crash (2015), and the recent COVID-19 pandemic (2020), highlight the significant influence of investor sentiment and emotions on financial markets (Shrotryia & Kalra, 2022).

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

Academic literature offers several theories to explain the origins of herding behavior among market participants. Many studies have found that herding becomes pronounced during periods of extreme volatility and turmoil (Syed Faisal Hassan Bukhari et al., 2023; Chiang & Zheng, 2010; Christie & Huang, 1995; Shiller, 2000). In contrast, some studies argue that herding behavior intensifies during stable periods (Hudson, Yan, & Zhang, 2020; Hwang & Salmon, 2009; Litimi, BenSaïda, & Bouraoui, 2016).

Financial Markets Before Covid 19

Chiang and Zheng (2010) argued that herding behavior tends to dominate during economic slowdowns in Asian markets. However, in Latin American markets, no evidence of such behavior was found. Their observations were supported by Yao, Ma, and He (2014) and Zheng, Li, and Chiang (2017), who found increased herding during financial crises and low-return periods, respectively. Lao and Singh (2011) noted heightened herding behavior in the Chinese stock market during global financial crises, while Jlassi and Naoui (2015) observed that the subprime crisis rapidly amplified herding behavior, creating a disconnect between stock prices and intrinsic values.

Furthermore, during bullish periods, investor behavior also becomes more significant. Economou, Kostakis, and Philippas (2011) observed strong herding tendencies in Portugal and Italy during financial crises, while Greece and Spain showed less pronounced imitative behavior. In Greece, herding was more evident during bull markets. Similarly, Tan, Chiang, Mason, and Nelling (2008) found that herding behavior was prevalent during market expansions, while Camara (2017) identified sector-specific herding trends in the United States, such as manufacturing during bull markets and services during bear markets.

However, some studies suggest herding behavior is not exclusive to periods of crisis. Economou, Hassapis, and Philippas (2018) found no indication of herding in the US, UK, and German stock markets, regardless of market conditions. Hwang and Salmon (2009) argued that herding becomes more apparent during stable market periods as investors focus on fundamental values rather than market movements. Litimi (2017) noted a mixed response, with herding behavior varying across different US markets during both stable and crisis periods.

Financial Markets After Covid 19

Abundant research has examined the shifts in investor behavior resulting from the COVID-19 pandemic. Wu, Yang, and Zhao (2020) applied the Christie and Huang (1995) and Chang et al. (2000) models to approximately 2,900 A-shares listed on the Shanghai and Shenzhen stock markets. They found a significant decrease in investor imitation during the pandemic, alongside reduced market volatility. However, herding was observed during upward market trends. Yuan (2021) identified a sharp increase in herding in the Chinese A-share market after the pandemic, particularly during market recessions, with certain industries, such as business, transportation, and cultural products, exhibiting amplified herding.

Luu and Luong (2020) analyzed sectoral-level herding in Taiwan and Vietnam during pandemics such as H1N1 and COVID-19, revealing extreme herding in certain sectors. Mishra and Mishra (2023) noted that sectoral herding in India's National Stock Exchange disrupted market equilibrium during both bull and bear phases. Espinosa-Méndez and

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

Arias (2021) observed that COVID-19 significantly stimulated herding in five prominent European stock markets. Similarly, Fang et al. (2021) found that Eastern European markets experienced notable herding post-COVID-19.

Herding behavior has also been documented in other regions. Espinosa-Méndez and Arias (2021) noted increased herding in Australia, while Ghorbel, Snene, and Frikha (2023) linked herding during the pandemic to transaction volumes and pandemic-related deaths in BRICS and developed markets. Kizys, Tzouvanas, and Donadelli (2021) examined the role of government responses, finding mixed herding effects across 72 global stock markets.

Objective and Hypothesis

The primary objective of this study is to explore the presence of herding contagion (spillover) between the Saudi Arabian stock market (KSA) and the Iraqi stock exchange at both sectoral and aggregate levels. The analysis is conducted across three distinct periods: the entire duration (January 2016 to December 2020), the pre-COVID-19 period, and the post-COVID-19 period.

Null Hypothesis (H_0): There is no significant herding contagion between the Saudi Arabian and Iraqi stock markets during the stated periods.

Alternative Hypothesis (H_1): There is significant herding contagion between the Saudi Arabian and Iraqi stock markets during the stated periods.

The study aligns with its objectives by analyzing investor behavior, the integration of stock markets, and the effect of sectoral and aggregate-level herding contagion over these periods.

Research Methodology

Data and Sample

Banker Thompson database was used to access data of all companies. The entire study includes data spanning from the pre Covid-19 periods, covering the timeframe of 01 January 2016 to 31 Dec 2019. While, the after Covid-19 period spans from 01 January 2020 to 31 December 2023. It's notable that daily data for all variables throughout the whole period are utilized. Further, data is divided into 10 sectors according to Banker Thompson Classification standard.

Methods and Model Specification

Present literature highlights two frequently employed approaches for deducting the presence of herding behavior. The first method proposed by (Christie & Huang, 1995), based on the idea that investors has tendency to align with market consensus particularly during periods of extreme price movements. However, (Christie & Huang, 1995) model exhibit few inherent drawbacks, first it has stringent nature due to which low level of herding not capture by the model. Most of the studies have not deducted herding behavior using this approach during stable market condition. Subsequently, (Chang et al., 2000) presented an alternative method to address these limitations. The basic design of this model is shown as follows:

$$CSAD_t = \alpha + \gamma_1 |R_{m,t}| + \gamma_2 R^2{}_{m,t} + \varepsilon_t \quad (1)$$

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

In this context, $R_{m,t}$ represents the return of the market portfolio weighted by capitalization on day t. Meanwhile, $R_{i,t}$ signifies the return of an individual stock i on the same day t, and N denotes the total count of listed firms in the stock market. The cross-sectional absolute deviation, serving as a measure of return dispersion, is calculated as follows:

$$CSAD_t = \frac{1}{N}\sum_{i=1}^{N}\left|R_{i,t} - R_{m,t}\right| \quad (2)$$

It is assumed that the CSAD serves as a substitute for investor herding behavior, yet its existence cannot be conditional. Basically, CSAD measures the proximity of individual returns to the overall market returns. Lower CSAD values may show a possible agreement among investors to trade a limited number of stocks, whereas higher values recommend a deviation, suggesting conflicting investment tactics encompassing a broader collection of stocks as CSAD increases. The association between CSAD and $R_{m,t}$ is likely to be linear and gradually positive under the assumption of prudent investor behavior (absence of herding) and adherence to the CAPM model in price estimation. On the other hand, when investors display herding behavior, stock returns are expected to converge toward the market average rather than diverge from it. The coefficient γ_2 deduct the non-linear association between CSAD and the average market return. In the presence of herding γ_2 is likely to be negative (Economou et al., 2011).

The next phase of our examination includes determining the degree of integration between sectoral and aggregate market returns (Iraq and KSA stock market). To explore the herding contagion necessitate examining whether the variability of returns in a specific stock market can be attributed to the inconsistency of returns in dominant markets as indicated by the cross-sectional absolute deviation of returns (CSAD) model presented by (Wahyudi et al., 2018). This relationship is represented by the following model:

$$CSAD_{i,t} = \gamma_0 \sum_{j=1}^{N} \delta_j \, CSAD_{f,t} + \varepsilon_t \quad (3)$$

$$CSAD_{Iraq,t} = \gamma_0 + CSAD_{KSA,t-1} \quad (4)$$

The model includes independent variables representing the variation of returns in KSA stock markets ($CSAD_{KSA,t-1}$). The idea suggests that the inconsistency of returns in the Iraqi stock market ($CSAD_{Iraq,t}$) could be partially explained by the inconsistency of returns in dominant foreign markets ($CSAD_{KSA,t-1}$). The coefficient term j indicates the effect of CSAD for foreign markets. A positive value of j indicates the presence of transnational herding.

Empirical Results and Discussion

Descriptive Statistics

The outcomes for the first part, which covers the entire sample of KSA stock market are displayed in Table No.1. It reveals that the Energy sector has highest mean return and Cyclicals sector has highest standard deviation. Table No.2 provide descriptive statistics about Entire sample of Iraqi Stock market, which reveals that Healthcare sector has highest

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

mean and standard deviation. Table No. 3 reports regarding descriptive statistics of KSA - Before Covid 19, it shows that Utilities sector has highest mean and standard deviation. The descriptive statistics of Iraq – Before Covid 19 shown at table No.4, which out that Real estate sector has highest mean and Healthcare sector has highest standard deviation. Table No.5 describe about summary statistics of KSA - After Covid 19 period, indicating that Energy sector has highest mean and standard deviation. Lastly, from the information shown at table No.6, Healthcare sector has highest mean and standard deviation. Higher standard deviation is indication of shock or unusual activity in the market and further categorized as sensitive sector / market (Chiang & Zheng, 2010).

The Skewness coefficients indicate that most of the variables follow a Gaussian distribution. Table 1, 2, 3, 4, 5 and 6 demonstrates that the daily return distribution of sectors and aggregate samples are skewed to the right, as indicated by their positive Skewness values. Each return series displays kurtosis values surpassing 3, implying a leptokurtic distribution marked by heavier tails.

Table 1: Entire Sample of KSA

Sector	Variable	Mean	St dev	Var	Skew	Kurt	Min	Max	Obsn
Cyclicals	CSAD	0.421	0.340	0.115	0.250	2.525	0	1.687	2016
	R_m	0.247	0.385	0.148	4.058	30.923	0	4.341	2016
Financials	CSAD	0.356	0.288	0.083	0.397	3.344	0	1.963	2016
	R_m	0.235	0.360	0.130	3.922	30.222	0	4.221	2016
Industrials	CSAD	0.388	0.320	0.103	0.299	2.428	0	1.698	2016
	R_m	0.240	0.372	0.139	4.100	31.898	0	4.277	2016
Non-Cyclicals	CSAD	0.374	0.315	0.099	0.517	3.227	0	1.766	2016
	R_m	0.229	0.348	0.121	3.551	23.672	0	3.654	2016
Technology	CSAD	0.386	0.362	0.131	0.934	4.000	0	2.385	2016
	R_m	0.259	0.358	0.128	2.857	17.106	0	3.455	2016
Energy	CSAD	0.348	0.322	0.104	0.960	4.626	0	2.360	2016
	R_m	0.262	0.375	0.141	3.188	20.077	0	3.815	2016
Healthcare	CSAD	0.356	0.323	0.105	0.896	4.374	0	2.300	2016
	R_m	0.239	0.345	0.119	3.613	28.183	0	4.197	2016
Material	CSAD	0.334	0.259	0.067	0.032	2.277	0	1.387	2016
	R_m	0.221	0.350	0.123	4.373	35.761	0	4.118	2016
Real Estate	CSAD	0.283	0.236	0.056	0.474	3.247	0	1.611	2016
	R_m	0.184	0.283	0.080	4.277	35.387	0	3.519	2016
Utilities	CSAD	0.312	0.363	0.132	2.005	9.408	0	2.986	2016
	R_m	0.251	0.363	0.132	2.610	12.641	0	3.092	2016
Aggregate	CSAD	0.356	0.318	0.101	0.837	4.548	0	2.986	2016

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

	R_m	0.237	0.356	0.126	3.653	26.410	0	4.341	2016

Table 2: Entire Sample of Iraq

Sector	Variable	Mean	St dev	Var	Skew	Kurt	Min	Max	Obsn
Materials	CSAD	0.221	0.396	0.156	4.556	37.821	0	4.964	2016
	R_m	0.139	0.333	0.111	6.560	72.090	0	4.964	2016
Cyclicals	CSAD	0.245	0.285	0.081	1.827	9.627	0	2.810	2016
	R_m	0.117	0.178	0.032	2.849	15.386	0	1.714	2016
Non-Cyclicals	CSAD	0.277	0.550	0.302	14.231	313.804	0	13.491	2016
	R_m	0.158	0.463	0.214	17.213	405.675	0	11.798	2016
Energy	CSAD	0.160	0.766	0.586	9.569	101.552	0	9.926	2016
	R_m	0.205	0.517	0.268	4.723	31.802	0	5.001	2016
Financials	CSAD	0.220	0.272	0.074	2.706	17.486	0	2.657	2016
	R_m	0.095	0.155	0.024	3.607	24.310	0	1.567	2016
Healthcare	CSAD	0.354	0.717	0.514	8.870	149.557	0	14.35	2016
	R_m	0.302	0.716	0.513	9.099	150.490	0	14.315	2016
Industrials	CSAD	0.180	0.386	0.149	15.865	382.744	0	9.832	2016
	R_m	0.097	0.331	0.110	21.264	578.928	0	9.382	2016
Real Estate	CSAD	0.285	0.521	0.271	3.461	18.839	0	4.581	2016
	R_m	0.242	0.503	0.253	3.813	22.716	0	4.814	2016
Technology	CSAD	0.175	0.296	0.088	3.908	27.469	0	3.554	2016
	R_m	0.120	0.263	0.069	4.704	36.503	0	3.002	2016
Aggregate	CSAD	0.235	0.500	0.250	10.548	203.562	0	14.350	2016
	R_m	0.164	0.426	0.181	10.876	242.261	0	14.315	2016

Table 3: KSA Before COVID 19

Sector	Variable	Mean	St dev	Var	Skew	Kurt	Min	Max	Obsn
Cyclicals	CSAD	0.454	0.356	0.127	0.112	2.300	0	1.687	1008
	R_m	0.249	0.359	0.129	3.403	25.260	0	4.341	1008
Financials	CSAD	0.372	0.302	0.091	0.402	3.361	0	1.963	1008
	R_m	0.233	0.323	0.105	2.673	15.160	0	3.280	1008

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

Industrials	CSAD	0.413	0.329	0.108	0.131	2.169	0	1.698	1008
	R_m	0.246	0.352	0.124	3.162	20.248	0	3.741	1008
Non-Cyclicals	CSAD	0.402	0.336	0.113	0.459	3.010	0	1.766	1008
	R_m	0.238	0.339	0.115	2.672	13.717	0	2.996	1008
Technology	CSAD	0.401	0.368	0.136	0.853	3.835	0	2.385	1008
	R_m	0.263	0.348	0.121	2.274	11.315	0	3.114	1008
Energy	CSAD	0.354	0.318	0.101	0.749	3.652	0	1.880	1008
	R_m	0.250	0.333	0.111	2.378	12.042	0	2.965	1008
Healthcare	CSAD	0.403	0.352	0.124	0.650	3.388	0	1.843	1008
	R_m	0.234	0.297	0.088	1.830	7.501	0	2.346	1008
Material	CSAD	0.360	0.272	0.074	-0.08	2.222	0	1.387	1008
	R_m	0.221	0.309	0.095	3.047	20.285	0	3.485	1008
Real Estate	CSAD	0.297	0.243	0.059	0.293	2.542	0	1.285	1008
	R_m	0.182	0.259	0.067	3.575	28.503	0	3.136	1008
Utilities	CSAD	0.372	0.399	0.159	1.553	6.513	0	2.500	1008
	R_m	0.292	0.390	0.152	2.156	9.263	0	2.757	1008
Aggregate	CSAD	0.383	0.333	0.111	0.693	3.940	0	2.500	1008
	R_m	0.241	0.334	0.111	2.738	16.118	0	4.341	1008

Table 4: Iraq Before COVID 19

Sectors	Variable	Mean	St dev	Var	Skew	Kurt	Min	Max	Obsn
Materials	CSAD	0.288	0.497	0.247	4.010	27.696	0	4.964	1008
	R_m	0.189	0.424	0.180	5.794	51.750	0	4.964	1008
Non-Cyclicals	CSAD	0.255	0.327	0.107	2.595	16.868	0	3.477	1008
	R_m	0.136	0.227	0.052	3.954	31.178	0	2.799	1008
Financials	CSAD	0.232	0.288	0.083	2.773	17.910	0	2.657	1008
	R_m	0.100	0.161	0.026	3.429	21.790	0	1.567	1008
Industrials	CSAD	0.198	0.272	0.074	2.448	12.593	0	2.522	1008
	R_m	0.106	0.188	0.035	3.028	15.261	0	1.545	1008
Technology	CSAD	0.184	0.317	0.101	4.360	32.533	0	3.554	1008

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

	R_m	0.132	0.292	0.085	5.233	41.326	0	3.002	1008
Cyclicals	CSAD	0.260	0.309	0.095	2.032	10.853	0	2.810	1008
	R_m	0.123	0.195	0.038	3.060	16.593	0	1.714	1008
Energy	CSAD	0.131	0.595	0.354	11.350	148.452	0	9.926	1008
	R_m	0.160	0.403	0.163	5.913	51.717	0	5.001	1008
Healthcare	CSAD	0.338	0.570	0.325	3.790	23.936	0	5.322	1008
	R_m	0.282	0.568	0.322	4.550	30.698	0	5.333	1008
Real Estate	CSAD	0.328	0.549	0.302	2.858	13.617	0	4.558	1008
	R_m	0.287	0.529	0.280	3.185	17.196	0	4.814	1008
Total	CSAD	0.246	0.438	0.191	5.974	73.501	0	9.926	1008
	R_m	0.168	0.368	0.136	5.682	52.292	0	5.333	1008

Table 5: KSA After COVID 19

Sector	Variable	Mean	St dev	Var	Skew	Kurt	Min	Max	Obsn
Cyclicals	CSAD	0.388	0.319	0.102	0.372	2.865	0	1.672	1008
	R_m	0.246	0.409	0.167	4.460	33.500	0	4.271	1008
Financials	CSAD	0.340	0.273	0.075	0.353	3.200	0	1.462	1008
	R_m	0.237	0.394	0.155	4.526	35.448	0	4.221	1008
Industrials	CSAD	0.364	0.310	0.096	0.474	2.823	0	1.465	1008
	R_m	0.235	0.391	0.153	4.765	39.128	0	4.277	1008
Non-Cyclicals	CSAD	0.347	0.291	0.084	0.515	3.366	0	1.753	1008
	R_m	0.220	0.356	0.127	4.321	32.068	0	3.654	1008
Technology	CSAD	0.372	0.356	0.127	1.017	4.197	0	1.889	1008
	R_m	0.254	0.369	0.136	3.341	21.616	0	3.455	1008
Energy	CSAD	0.341	0.327	0.107	1.159	5.532	0	2.360	1008
	R_m	0.274	0.414	0.171	3.504	21.970	0	3.815	1008
Healthcare	CSAD	0.309	0.285	0.081	1.141	6.206	0	2.300	1008
	R_m	0.245	0.387	0.150	4.266	32.688	0	4.197	1008
Material	CSAD	0.309	0.243	0.059	0.116	2.355	0	1.143	1008
	R_m	0.221	0.387	0.150	4.924	39.640	0	4.118	1008
Real Estate	CSAD	0.269	0.229	0.052	0.669	4.195	0	1.611	1008
	R_m	0.187	0.306	0.094	4.627	37.430	0	3.519	1008
Utilities	CSAD	0.253	0.311	0.097	2.706	16.099	0	2.986	1008
	R_m	0.210	0.328	0.108	3.278	18.873	0	3.092	1008

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

Aggregate	CSAD	0.329	0.299	0.090	0.984	5.416	0	2.986	1008
	R_m	0.233	0.376	0.142	4.267	32.283	0	4.277	1008

Table 6: Iraq After COVID 19

Sector	Variable	Mean	St dev	Var	Skew	Kurt	Min	Max	Obsn
Materials	CSAD	0.153	0.239	0.057	2.510	10.80	0	1.792	1008
	R_m	0.089	0.194	0.038	3.193	15.66	0	1.632	1008
Non-Cyclicals	CSAD	0.299	0.704	0.496	13.188	230.23	0	13.491	1008
	R_m	0.180	0.613	0.376	14.521	260.96	0	11.798	1008
Financials	CSAD	0.207	0.254	0.065	2.549	15.93	0	2.303	1008
	R_m	0.091	0.148	0.022	3.809	27.44	0	1.551	1008
Industrials	CSAD	0.162	0.473	0.224	16.892	341.59	0	9.832	1008
	R_m	0.089	0.429	0.184	19.351	411.88	0	9.382	1008
Technology	CSAD	0.166	0.273	0.074	3.087	16.06	0	2.305	1008
	R_m	0.109	0.230	0.053	3.280	16.08	0	1.743	1008
Cyclicals	CSAD	0.230	0.259	0.067	1.368	5.89	0	1.956	1008
	R_m	0.112	0.160	0.026	2.327	10.70	0	1.248	1008
Energy	CSAD	0.190	0.904	0.817	8.343	76.07	0	9.704	1008
	R_m	0.250	0.607	0.369	3.987	22.75	0	4.846	1008
Healthcare	CSAD	0.369	0.839	0.703	9.875	154.23	0	14.350	1008
	R_m	0.321	0.838	0.703	9.896	153.08	0	14.315	1008
Real Estate	CSAD	0.242	0.487	0.238	4.293	27.20	0	4.581	1008
	R_m	0.198	0.471	0.222	4.692	31.58	0	4.596	1008
Total	CSAD	0.224	0.556	0.309	12.495	239.84	0	14.350	1008
	R_m	0.160	0.477	0.227	12.905	290.44	0	14.315	1008

Herding – Chang dispersion Model

Tables No. 7 to 14 exhibit the results of the regression analyses for equations No.1 and 2 correspondingly. From the data presented in these tables, it is apparent that the R^2 values for the different regressions are generally acceptable. Irrespective of the sample, whether it's the complete period or both sub-periods, the coefficient γ_2 connected with the quadratic term constantly shows a negative and statistically significant association across most of the aggregate and sectoral samples of KSA and Iraqi stock market. This indicates the probability of a nonlinear correlation between the CSAD and the average market / sectoral return. The negative symbol suggests that the CSAD tends to decline rather than rise for the extreme values of $R^2{}_{m,t}$ demonstrating the presence of herding behavior in these markets. However, positive values of Energy and Healthcare sectors in Iraqi stock market suggest lack of herd behavior, indicating that investors do not follow to the average market opinion.

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

From the viewpoint of managing stock portfolio, investors must consider herding behavior due to its contagious impact.

The results of herding behavior before and after the COVID-19 pandemic aligns with plentiful prior researches conducted in several stock markets during this health crisis, as demonstrated by studies by (Espinosa-Méndez & Arias, 2021; Espinosa-Méndez, Gorigoitía, & Vieito, 2020; Fang et al., 2021; Ferreruela & Mallor, 2021).

Table 7: Aggregate Sample of KSA

Variables	before COVID 19	After COVID 19	Whole sample period
γ_1	1.034***	0.872***	0.940***
	(0.0381)	(0.0297)	(0.0232)
γ_2	-0.284***	-0.198***	-0.224***
	(0.0223)	(0.0112)	(0.00997)
α	0.215***	0.195***	0.206***
	(0.00841)	(0.00707)	(0.00550)
Obsns	1,008	1,008	2,016
R Sq.	0.498	0.512	0.499

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Aggregate Sample of Iraq

Variables	before COVID 19	After COVID 19	Whole sample period
γ_1	2.213***	1.991***	2.123***
	(0.0543)	(0.0485)	(0.0363)
γ_2	-0.494***	-0.141**	-0.368***
	(0.0547)	(0.0622)	(0.0406)
α	0.0898***	0.0714***	0.0800***
	(0.00511)	(0.00437)	(0.00339)
Observations	1,008	1,008	2,016
R Sq.	0.756	0.815	0.781

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 9: Entire Sectoral of KSA

Sectors	γ_1		γ_2		α		R Sq.
Material	0.806***	(0.021)	-0.186***	(0.009)	0.188***	(0.005)	0.474
Cyclicals	1.001***	(0.025)	-0.229***	(0.010)	0.221***	(0.007)	0.495
Non-cyclicals	1.009***	(0.025)	-0.239***	(0.013)	0.185***	(0.006)	0.528
Energy	0.953***	(0.025)	-0.229***	(0.012)	0.146***	(0.007)	0.513

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

Financials	0.904***	(0.021)	-0.205***	(0.009)	0.181***	(0.006)	0.536
Healthcare	0.981***	(0.025)	-0.231***	(0.012)	0.162***	(0.007)	0.488
Industrials	0.962***	(0.024)	-0.221***	(0.010)	0.201***	(0.007)	0.492
Real estate	0.894***	(0.022)	-0.207***	(0.011)	0.142***	(0.005)	0.542
Technology	1.085***	(0.027)	-0.241***	(0.015)	0.153***	(0.007)	0.557
Utilities	0.906***	(0.030)	-0.101***	(0.018)	0.104***	(0.007)	0.583

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 10: Entire Sectoral of Iraq

Sectors	γ_1		γ_2		α		R Sq.
Material	1.244***	(0.017)	-0.059***	(0.006)	0.055***	(0.004)	0.863
Cyclicals	1.557***	(0.039)	-0.328***	(0.045)	0.077***	(0.005)	0.683
Non-cyclicals	1.190***	(0.016)	-0.006***	(0.002)	0.089***	(0.004)	0.909
Energy	-0.365***	(0.030)	0.512***	(0.009)	0.076***	(0.008)	0.821
Financials	1.636***	(0.039)	-0.222***	(0.043)	0.070***	(0.004)	0.703
Healthcare	0.948***	(0.009)	0.003***	(0.001)	0.065***	(0.004)	0.94
Industrials	1.230***	(0.020)	-0.019***	(0.002)	0.062***	(0.003)	0.877
Real estate	1.070***	(0.012)	-0.027***	(0.004)	0.034***	(0.003)	0.94
Technology	1.124***	(0.017)	-0.052***	(0.010)	0.044***	(0.003)	0.866

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 11: Before Covid 19 KSA

Sectors	γ_1		γ_2		α		R Sq.
Material	0.890***	(0.035)	-0.243***	(0.021)	0.198***	(0.008)	0.47
Cyclicals	1.006***	(0.038)	-0.227***	(0.018)	0.246***	(0.011)	0.471
Non-cyclicals	1.074***	(0.042)	-0.272***	(0.026)	0.193***	(0.010)	0.544
Energy	1.003***	(0.041)	-0.270***	(0.027)	0.150***	(0.010)	0.518
Financials	1.007***	(0.036)	-0.255***	(0.023)	0.178***	(0.008)	0.568
Healthcare	1.230***	(0.057)	-0.420***	(0.050)	0.176***	(0.011)	0.497
Industrials	0.990***	(0.039)	-0.270***	(0.020)	0.219***	(0.010)	0.451
Real estate	0.945***	(0.034)	-0.244***	(0.021)	0.150***	(0.007)	0.519

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

Technology	1.117***	(0.045)	-0.297***	(0.029)	0.164***	(0.011)	0.519
Utilities	1.001***	(0.047)	-0.176***	(0.029)	0.121***	(0.012)	0.554

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 12: Before Covid 19 Iraq

Sectors	γ_1		γ_2		α		R Sq.
Material	0.890***	(0.035)	-0.243***	(0.021)	0.198***	(0.008)	0.47
Cyclicals	1.006***	(0.038)	-0.227***	(0.018)	0.246***	(0.011)	0.471
Non-cyclicals	1.074***	(0.042)	-0.272***	(0.026)	0.193***	(0.010)	0.544
Energy	1.003***	(0.041)	-0.270***	(0.027)	0.150***	(0.010)	0.518
Financials	1.007***	(0.036)	-0.255***	(0.023)	0.178***	(0.008)	0.568
Healthcare	1.230***	(0.057)	-0.420***	(0.050)	0.176***	(0.011)	0.497
Industrials	0.990***	(0.039)	-0.270***	(0.020)	0.219***	(0.010)	0.451
Real estate	0.945***	(0.034)	-0.244***	(0.021)	0.150***	(0.007)	0.519
Technology	1.117***	(0.045)	-0.297***	(0.029)	0.164***	(0.011)	0.519

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 13: After Covid 19 KSA

Sectors	γ_1		γ_2		α		R Sq.
Material	0.753***	(0.027)	-0.165***	(0.010)	0.175***	(0.007)	0.488
Cyclicals	0.986***	(0.032)	-0.225***	(0.012)	0.197***	(0.009)	0.53
Non-cyclicals	0.943***	(0.034)	-0.217***	(0.014)	0.177***	(0.008)	0.508
Energy	0.933***	(0.033)	-0.218***	(0.014)	0.139***	(0.010)	0.511
Financials	0.826***	(0.028)	-0.182***	(0.011)	0.182***	(0.008)	0.507
Healthcare	0.862***	(0.029)	-0.190***	(0.011)	0.138***	(0.008)	0.518
Industrials	0.981***	(0.031)	-0.212***	(0.011)	0.178***	(0.009)	0.547
Real estate	0.855***	(0.028)	-0.186***	(0.013)	0.133***	(0.006)	0.574
Technology	1.099***	(0.035)	-0.228***	(0.017)	0.138***	(0.010)	0.604
Utilities	0.774***	(0.036)	-0.0154	(0.021)	0.093***	(0.008)	0.627

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

Vol. 2 No. 5 (December) (2024)

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

Table 14: After Covid 19 Iraq

Sectors	γ_1		γ_2		α		R Sq.
Material	1.209***	(0.037)	-0.128***	(0.042)	0.051***	(0.004)	0.808
Cyclicals	1.763***	(0.060)	-0.778***	(0.088)	0.062***	(0.006)	0.674
Non-cyclicals	1.150***	(0.020)	-0.00337*	(0.002)	0.092***	(0.006)	0.947
Energy	-0.540***	(0.042)	0.557***	(0.013)	0.085***	(0.013)	0.836
Financials	1.670***	(0.052)	-0.314***	(0.057)	0.065***	(0.005)	0.71
Healthcare	0.953***	(0.011)	0.003***	(0.001)	0.060***	(0.006)	0.964
Industrials	1.240***	(0.029)	-0.020***	(0.003)	0.054***	(0.004)	0.942
Real estate	1.032***	(0.017)	-0.0107*	(0.006)	0.041***	(0.004)	0.942
Technology	1.184***	(0.037)	-0.118***	(0.034)	0.044***	(0.004)	0.814

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Herding Contagion – Wahyudi et al. (2018) CSAD Model

The results of the regression analysis described by equation No.4 are exhibited at Tables No. 15 to 18. Upon reviewing this table, we observed that herding behavior in the Iraqi stock market has influenced by herding activity in the KSA stock market. The Iraqi stock market display similar chrematistics regarding herding contagion from the stock market of KSA. Further, investors in the Iraqi stock market demonstrate similar behavior when reacting to information originating from the KSA stock market. This observation is evident in the occurrence of herding contagion observed in the Iraqi stock market originating from the KSA stock market.

The evidence recommends that the dispersion in returns within the Iraqi stock market is influenced by the dispersion in returns of KSA stock markets, as Iraqi stock market is an integrated stock market with the KSA Stock market. Therefore, it can be concluded that the variance in returns of the Iraqi stock market is positively impacted by KSA stock market, given the bilateral integration between the both stock markets. Another explanation is that oil rich countries, such as the KSA and Iraqi stock markets, exhibit strong correlations with each other except Energy and healthcare sectors. During the Covid 19 financial crisis, which severely impacted the global financial markets, the Iraqi stock market experienced significant issues originating from the KSA stock market. This is supported by analysis conducted before and after the Covid 19 period, indicating that non-fundamental factors such as herding behavior in the KSA stock market has influenced herding activity in the Iraqi stock market. This suggests the presence of contagion effects in integrated stock markets. Additionally, fundamental factors affecting changes in return dispersion, as outlined in (Galariotis, Rong, & Spyrou, 2015), include alterations in the interest rates, trade balance, base rates, inflation rate, and consumer confidence.

Hence, our examination confirmed strong presence of herding contagion in both stock

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

markets over the short, medium, and long run at aggregate and sectoral level before and after the Covid 19 crisis.

Table 15: Aggregate Herding Contagion

Variables	Before COVID 19	After COVID 19	Complete Sample
KSA	0.143***	0.193***	0.168***
	(0.0283)	(0.0311)	(0.0208)
γ_0	0.186***	0.152***	0.168***
	(0.0135)	(0.0130)	(0.00935)
Obsns	1,008	1,008	2,016
R Sq.	0.025	0.037	0.031

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 16: Sectoral Herding Contagion Complete Sample

Sectors	KSA		γ_0		R Sq.
Material	0.204***	(0.014)	0.289***	(0.006)	0.097
Cyclicals	0.539***	(0.024)	0.289***	(0.009)	0.204
Non-cyclicals	0.132***	(0.012)	0.338***	(0.008)	0.053
Financials	0.440***	(0.022)	0.259***	(0.008)	0.173
Industrials	0.193***	(0.018)	0.354***	(0.008)	0.054
Real estate	0.136***	(0.010)	0.244***	(0.006)	0.090
Technology	0.320***	(0.026)	0.330***	(0.009)	0.068

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 17: Sectoral Herding Contagion Before Covid 19

Sectors	KSA		γ_0		R Sq.
Material	0.532***	(0.055)	0.096***	(0.025)	0.084
Cyclicals	0.403***	(0.024)	0.077***	(0.014)	0.216
Non-cyclicals	0.379***	(0.028)	0.102***	(0.015)	0.152
Energy	0.138**	(0.059)	0.081***	(0.028)	0.005
Financials	0.380***	(0.028)	0.090***	(0.013)	0.158
Healthcare	0.492***	(0.049)	0.140***	(0.026)	0.092
Industrials	0.307***	(0.024)	0.070***	(0.013)	0.138
Real estate	0.778***	(0.067)	0.096***	(0.026)	0.118
Technology	0.205***	(0.026)	0.102***	(0.014)	0.057

Standard errors in parentheses

Dialogue Social Science Review (DSSR)
www.thedssr.com

ISSN Online: 3007-3154
ISSN Print: 3007-3146

DIALOGUE SOCIAL SCIENCE REVIEW

Vol. 2 No. 5 (December) (2024)

*** p<0.01, ** p<0.05, * p<0.1

Table 18: Sectoral Herding Contagion After Covid 19

Sectors	KSA		γ_0		R Sq.
Material	0.359***	(0.029)	0.042***	(0.011)	0.133
Cyclicals	0.349***	(0.023)	0.095***	(0.012)	0.186
Non-cyclicals	0.449***	(0.075)	0.143***	(0.034)	0.034
Financials	0.404***	(0.026)	0.069***	(0.012)	0.189
Industrials	0.245***	(0.048)	0.072***	(0.023)	0.026
Real estate	0.514***	(0.065)	0.104***	(0.023)	0.058
Technology	0.221***	(0.023)	0.084***	(0.012)	0.083

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Conclusion

This study aimed to investigate the presence of herding behavior and its contagion effects in the oil-rich stock markets of Saudi Arabia (KSA) and Iraq from January 2016 to December 2023. Using the Cross-Sectional Absolute Deviation (CSAD) model, the findings confirmed the existence of herding behavior across both markets at aggregate and sectoral levels. Additionally, we observe that information flow from dominant to integrated markets, joined with investor relations can trigger coordinated trading activity. While Covid 19 does not seem to have noticeable effect on herding activities of investors within both markets. The research findings also reveal that herding contagion spread from dominant stock market to others, investors of regional leader market play a key role in spreading herding across the market.

The CSAD analysis shows a strong correlation between the KSA stock market and Iraqi stock market throughout the study period. Our outcomes propose that investor herding has a contagious effect emphasizing the importance of herding behavior in portfolio management. These conclusions are critical for investors and regulators seeking to understand stock market dynamics among the oil rich markets. Moreover, our results align with the philosophies of behavioral finance and indicating the effectiveness of herding behavior in forecasting volatility and guiding decision-making particularly in the context of the integrated markets.

In conclusion, the contagion effect arising from herding behavior across various stock markets is linked to the process of financial globalization. Greater integration between stock markets through global or bilateral integration can intensify this behavior. These results lend support to the contagion theory related with non-fundamental factors. Herding activity stemming from dominant country's stock market acts as a catalyst for herding behavior in other markets thus generating a contagion effect. For instance, during the credit market crisis, herding behavior emerged in the US stock market and spread to others. Hence, market participants should adopt a more cautious approach in anticipating the

ISSN Online: 3007-3154
ISSN Print: 3007-3146

Vol. 2 No. 5 (December) (2024)

onset of herding behavior, particularly in integrated stock markets, during crisis periods, especially originating from the dominant market. Our results indicated that investor herding behavior has a contagious impact, highlighting the necessity for investors to consider this behavior when managing their portfolios. Additionally, our findings hold significance for both investors and regulators seeking to enhance their understanding of stock markets. Furthermore, our findings align with the cognitive bias observed in behavioral finance, where herding behavior is deemed influential in predicting volatility and guiding decision-making among international investors, particularly amidst the COVID-19 crisis.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The authors received no financial support for the research, authorship and/or publication of this article.

References

Afrin, T. (2024). Cross-sectional herding behavior in dhaka STOCK exchange: a case OF behavioral finance. *Journal of Business Administration, 45*(1), 65-86.

Asaad, Z., & Al-Delawi, A. (2022). Iraqi stock exchange reactions to the oil price, Covid-19 aftermath, and the Saudi Stock exchange movements pre-during vaccination program. *International Journal of Energy Economics and Policy, 12*(5), 18-30.

Aslam, F., Ferreira, P., Ali, H., & Kauser, S. (2022). Herding behavior during the COVID-19 pandemic: A comparison between Asian and European stock markets based on intraday multifractality. *Eurasian Economic Review, 12*(2), 333-359.

Avery, C., & Zemsky, P. (1998). Multidimensional uncertainty and herd behavior in financial markets. *American economic review*, 724-748.

Bukhari, S. F. H., Ahmad, H., Hanif, H., & Shah, S. F. (2022). Volatility contagion (spillover) between Chinese and Pakistani stock markets during COVID-19: pre and post analysis of trade-level data. *International Journal of Monetary Economics and Finance, 15*(4), 309-330.

Bukhari, S. F. H., Yasir, W., Méndez, C. E., & Mustafa, Z. (2023). Sectoral Comparison of Herding During Global Financial Crisis and Covid-19: Comparative Analysis of Shariah Compliant and Conventional Stocks. *Journal of Economic Impact, 5*(3), 202-210.

Camara, O. (2017). Industry herd behaviour in financing decision making. *Journal of Economics and Business, 94*, 32-42.

Chang, E. C., Cheng, J. W., & Khorana, A. (2000). An examination of herd behavior in equity markets: An international perspective. *Journal of Banking & Finance, 24*(10), 1651-1679.

Chiang, T. C., & Zheng, D. (2010). An empirical analysis of herd behavior in global stock markets. *Journal of Banking & Finance, 34*(8), 1911-1921.

Christie, W. G., & Huang, R. D. (1995). Following the pied piper: do individual returns herd

ISSN Online: 3007-3154
ISSN Print: 3007-3146

Vol. 2 No. 5 (December) (2024)

around the market? *Financial Analysts Journal, 51*(4), 31-37.
Economou, F., Hassapis, C., & Philippas, N. (2018). Investors' fear and herding in the stock market. *Applied Economics, 50*(34-35), 3654-3663.
Economou, F., Kostakis, A., & Philippas, N. (2011). Cross-country effects in herding behaviour: Evidence from four south European markets. *Journal of International Financial Markets, Institutions and Money, 21*(3), 443-460.
Epstein, L. G., & Schneider, M. (2008). Ambiguity, information quality, and asset pricing. *The Journal of Finance, 63*(1), 197-228.
Espinosa-Méndez, C., & Arias, J. (2021). COVID-19 effect on herding behaviour in European capital markets. *Finance Research Letters, 38*, 101787.
Espinosa-Méndez, C., Gorigoitía, J., & Vieito, J. (2020). Stock exchange mergers: a dynamic correlation analysis on Euronext. *Portuguese Economic Journal, 19*, 81-98.
Espinosa-Méndez, C., & Maquieira, C. P. (2023). Herding Behavior of Business Groups During COVID-19: Evidence in Chile. *Investigación económica, 82*(324), 98-125.
Fang, H., Chung, C.-P., Lee, Y.-H., & Yang, X. (2021). The effect of COVID-19 on herding behavior in Eastern European stock markets. *Frontiers in Public Health, 9*, 695931.
Ferreruela, S., & Mallor, T. (2021). Herding in the bad times: The 2008 and COVID-19 crises. *The North American Journal of Economics and Finance, 58*, 101531.
Galariotis, E. C., Rong, W., & Spyrou, S. I. (2015). Herding on fundamental information: A comparative study. *Journal of Banking & Finance, 50*, 589-598.
Ghorbel, A., Snene, Y., & Frikha, W. (2023). Does herding behavior explain the contagion of the COVID-19 crisis? *Review of Behavioral Finance, 15*(6), 889-915.
Guney, Y., Kallinterakis, V., & Komba, G. (2017). Herding in frontier markets: Evidence from African stock exchanges. *Journal of International Financial Markets, Institutions and Money, 47*, 152-175.
Hudson, Y., Yan, M., & Zhang, D. (2020). Herd behaviour & investor sentiment: Evidence from UK mutual funds. *International Review of Financial Analysis, 71*, 101494.
Hwang, S., & Salmon, M. (2009). Sentiment and beta herding. *SSRN: http://ssrn. Com/abtract, 299919*.
Jlassi, M., & Naoui, K. (2015). Herding behaviour and market dynamic volatility: evidence from the US stock markets. *American journal of finance and accounting, 4*(1), 70-91.
Kizys, R., Tzouvanas, P., & Donadelli, M. (2021). From COVID-19 herd immunity to investor herding in international stock markets: The role of government and regulatory restrictions. *International Review of Financial Analysis, 74*, 101663.
Lao, P., & Singh, H. (2011). Herding behaviour in the Chinese and Indian stock markets. *Journal of Asian economics, 22*(6), 495-506.
Litimi, H. (2017). Herd behavior in the French stock market. *Review of Accounting and Finance, 16*(4), 497-515.
Litimi, H., bensaïda, A., & Bouraoui, O. (2016). Herding and excessive risk in the American stock market: A sectoral analysis. *Research in International Business and Finance, 38*, 6-21.
Lobão, J., & Almeida, B. (2024). Exploring market-wide herding behavior in the major stock markets of Latin America. *Academia Revista Latinoamericana de*

ISSN Online: 3007-3154
ISSN Print: 3007-3146

Administración, 37(4), 601-616.

Luu, Q. T., & Luong, H. T. T. (2020). Herding behavior in emerging and frontier stock markets during pandemic influenza panics. *The Journal of Asian Finance, Economics and Business, 7*(9), 147-158.

Mishra, P. K., & Mishra, S. K. (2023). Do banking and financial services sectors show herding behaviour in Indian stock market amid COVID-19 pandemic? Insights from quantile regression approach. *Millennial Asia, 14*(1), 54-84.

Peltomäki, J., & Vähämaa, E. (2015). Investor attention to the Eurozone crisis and herding effects in national bank stock indexes. *Finance Research Letters, 14*, 111-116.

Pochea, M. M. (2021). Intentional and spurious herding during unconventional events and high sentiments. *Available at SSRN 3948847*.

Shiller, R. C. (2000). Irrational exuberance. *Philosophy & Public Policy Quarterly, 20*(1), 18-23.

Shrotryia, V. K., & Kalra, H. (2022). Herding in the crypto market: a diagnosis of heavy distribution tails. *Review of Behavioral Finance, 14*(5), 566-587.

Tan, L., Chiang, T. C., Mason, J. R., & Nelling, E. (2008). Herding behavior in Chinese stock markets: An examination of A and B shares. *Pacific-Basin finance journal, 16*(1-2), 61-77.

Vieito, J. P., Espinosa, C., Wong, W.-K., Batmunkh, M.-U., Choijil, E., & Hussien, M. (2024). Herding behavior in integrated financial markets: the case of MILA. *International Journal of Emerging Markets, 19*(11), 3801-3827.

Wahyudi, S., Najmudin, L. R., & Rachmawati, R. (2018). Assessing the contagion effect on herding behaviour under segmented and integrated stock markets circumstances in the USA, China, and ASEAN-5. *Economic annals-XXI*(169), 15-20.

Wang, G., & Wang, Y. (2018). Herding, social network and volatility. *Economic Modelling, 68*, 74-81.

Wu, G., Yang, B., & Zhao, N. (2020). Herding behavior in Chinese stock markets during COVID-19. *Emerging Markets Finance and Trade, 56*(15), 3578-3587.

Yao, J., Ma, C., & He, W. P. (2014). Investor herding behaviour of Chinese stock market. *International Review of Economics & Finance, 29*, 12-29.

Yuan, H. (2021). *Herding Effect in China's A Share Stock Market under COVID-19 Pandemic*. Paper presented at the 2021 7th International Conference on E-Business and Applications.

Zheng, D., Li, H., & Chiang, T. C. (2017). Herding within industries: Evidence from Asian stock markets. *International Review of Economics & Finance, 51*, 487-509.

Zorgati, I., Albouchi, F., & Garfatta, R. (2024). Financial contagion during the COVID-19 pandemic: the case of African countries. *International Journal of Accounting, Auditing and Performance Evaluation, 20*(1-2), 23-42.

Zulhelfi, Z., & Novianty, R. (2024). When the Market Daily Volatility is High During 2021-2023, is there Any Herding Behavior on the Indonesia Stock Exchange? *Jasa (Jurnal Akuntansi, Audit dan Sistem Informasi Akuntansi), 8*(3), 711-721.