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Herd effect and retail investors' behavior in the Palestine exchange

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Abstract: This study aims to analyze the presence and impact of the herd effect in the Palestine Exchange (PEX). By utilizing the cross-sectional standard deviation (CSSD) methodology on pooled cross-sectional data, the research investigates whether investor behavior exhibits characteristics of a herd mentality and how this affects market efficiency. The findings reveal that herd mentality alone is insufficient to produce a significant herd effect in PEX. Furthermore, record market return fluctuations do not result in significant market anomalies within this context. The results suggest that the presence of herd behavior does not translate into impactful market outcomes in PEX. The market structure and investor dynamics may limit the manifestation of strong herding patterns, despite observable behavioral tendencies. These findings have important policy implications, offering policymakers a more skeptical notion of the PEX as an inefficient market. Additionally, the study contributes to the literature by producing empirical outcomes that are committed to the specific context of PEX.

Keywords: *Herd behavior, Herd effect, Market anomaly, PEX.*

1. Introduction

The Efficient Market Theory has several criticisms relying on the differences between the predicted outcomes and the actual happenings in the real world (e.g., [1, 2]). These differences refer to the nuances and flaws of the Efficient Market Hypothesis (EMH) that raise controversies among scholars and practitioners regarding its application in real life. For instance, anomalies like the reversal effect, the momentum effect, the calendar anomaly, the value anomaly, and the equity premium puzzle have been extensively documented in all markets, contrary to EMH hypotheses. They are significant in the sense that they refute the theory and indicate the intricate nature of market participants' behavior, which is not a rational expectation. Therefore, this phenomenon encourages policymakers to examine these market anomalies (e.g., reversal effect anomaly, momentum effect anomaly, calendar anomaly, value anomaly, and equity premium puzzle) more closely in an effort to develop a more integrated theory [3].

Out of these anomalies, the behavioral anomaly known as the herd effect is one that has been given extensive attention in the literature. Patel, et al. [4] espouse a behavioral anomaly, popularly known as the herd effect, and elucidate it as humans' tendency to do what others do rather than what is optimal, which causes stock market prices to drift and results in an anomaly. This behavior is an example of the psychological inclination of individuals to imitate the behavior of a larger group, sometimes neglecting their own judgment or analysis. Herd behavior may drive asset prices higher or lower and cause a sharp market fall, as it boosts the collective response to market signals, whether justified or not. Recognizing this anomaly is important since it helps understand the non-rational influences behind market dynamics.

Contrarily, according to Awad and Daraghma [5] the Palestine Stock Exchange (PEX) does not evidence the efficient market hypothesis on a weak foundation, which means the PEX might be susceptible to certain market anomalies. This is a significant finding that necessitates additional research to test whether specific kinds of anomalies occur in the PEX. It should be added that published works on PEX are on calendar effect anomaly (e.g., [6-8]). Calendar anomalies, such as "January effect"

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or "weekend effect," have been a persistent focus of research on PEX, reflecting systematic patterns of stock returns for specific times within the year or week. Nevertheless, these studies are narrow-based, and up to my knowledge, other types of market anomalies remain to be explored in terms of PEX.

Thus, an issue is raised due to the fact that one should acquire an understanding of the decision-making process of market participants in PEX and determine whether investors make rational or herd choices. The aforementioned problem-created literature gap presents an opportunity to study the behavior of PEX. Nevertheless, this study attempts to build a broader picture of the inefficient PEX by exploring the prevalence of the herd effect anomaly among investors, providing the literature with the first evidence of the herd effect for PEX, and facilitating a clearer understanding of how PEX operates in an inefficient market environment. By plugging this knowledge gap, this study not only contributes to overall research on market anomalies but also offers policymakers, regulators, and investors practical implications. With an understanding of the existence and impact of herd behavior in PEX, relevant stakeholders are able to make informed investments and design measures to mitigate the impact of such distortions on the stability of their respective markets.

2. Literature Review

2.1. Theoretical Concepts

Over the past decade, scholars and researchers have established the foundation for a comprehensive conceptual framework that explains the phenomenon of herd behavior and the resultant herd effect. These behaviors have also been of concern to researchers in many fields, such as economics, psychology, sociology, and finance, because they have direct implications for decision-making processes and market forces. By definition, herd behavior is the tendency of individuals to follow others' behavior, typically at the cost of their own independent judgment or private information. Theoretical underpinnings of the phenomenon can be traced back to several seminal studies, each offering a different view of how to investigate the mechanisms and consequences of herding.

One of the first to conduct research in this field was Bikhchandani, et al. [9] who first developed the theory of informational cascades. They suggested that individuals tend to behave on the basis of what other individuals do around them, as opposed to what they know or have information about. This is because individuals assume that the actions of individuals in front of them imply superior knowledge or information. Therefore, a cascade effect is created whereby the following decision-makers replicate the same action, leading to a collective action that may or may not align with reality. The authors depicted how a highly minor initial bias, which is amplified by iterative imitation, can generate the spread of behavior that could be irrational or suboptimal. This idea has been applied to various contexts, including consumer behavior, political voting, and the stock market. Drawing from this idea, Welch [10] pushed the application of informational cascades to the context of initial public offerings (IPOs). His research affirmed that investors end up copying the actions of earlier movers in IPO markets without attention to their evaluation of the shares. Such behavior can create momentum, where a perception of a successful IPO will be driven by popular frenzy instead of the intrinsic value of the issuing company. Welch's critique points out the vulnerability of herd behavior to warp market forces to an end that results in the overvaluation or underestimation of assets.

Banerjee [11] also proposed a sequential decision model to explain herd behavior. In this model, individuals consider the actions of their predecessors when making choices. The premise here is that prior decision-makers are supposed to possess superior information, and their actions represent a valuable signal about the optimal action. Banerjee's model demonstrates how sequential dependence can result in herding, even when individuals are able to apply their own private information. This effect is strongest in contexts such as product adoption, investment strategy, and technology uptake, where the seeming success of leaders influences choices.

Herd behavior has been extensively studied among financial markets. Froot, et al. [12] investigated how herding is generated through inefficiencies in short-run handling of trading information. They observed that speculators would cluster on the same points of data and attempt to predict the moves of

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knowledgeable traders. This herding could cause price action larger and market volatility greater as a cluster of traders respond to what they believe. The study urges the distinction between rational herding, driven by informational efficiency, and irrational herding driven by cognitive biases or social pressure.

The role of herd behavior in market bubbles was researched by Lux [13] who offered a plausible explanation of speculative excess. For Lux, bubbles often take the form of market agents herding together due to fear of being left behind or expectation that prices simply will continue to rise. Herd optimism can make asset prices unmoored from their underlying values and lay the ground for abrupt corrections or crashes. Lux's research identifies systematic risks embodied in herd behavior, particularly in speculative markets where sentiment is a dominating force.

While such studies have generally focused on specific informational dimensions of herding, Shiller [14] offered a criticism of prevailing models that depicted informational cascades, namely those constructed by Banerjee [11] and Bikhchandani, et al. [9]. Shiller [2] states that, while informative, these models have limited relevance. He argued that differences in behavior among groups in a herd could not be based on the indiscriminate decisions made by early adopters alone. Instead, he focused on how human communication and social interaction were responsible for describing how information distributed through discussion tends to have inherent biases inserted from the agents conducting the exchange of information. This perspective broadened the definition of herd behavior by bringing into play psychological and sociological factors, emphasizing the relationship between individual cognition and group behavior.

The effects of herd behavior in financial economics were further elaborated by Dave and Welch [15] who identified three primary motivators: direct payoff externalities, agency problems, and informational cascades. There is a direct payoff externality when the payoff to some act by one individual increases with how many others take the same act, for example, network effects or social approval. Agency problems occur when the decision-makers seek their own interests, rather than their clients', leading to herd behavior to avoid blame or criticism. Finally, informational cascades are the tendency to imitate others based on seeming better information. These drivers illustrate the multifaceted nature of herding, including rational and irrational motives.

Furthermore, Avery and Zemsky [16] contributed another significant aspect by studying the asset price and the relationship of herding. In their paper, they discover that herding occurs when traders follow previous transactions, particularly in conditions of uncertainty. They identified three levels of uncertainty that influence herding: the impact of a shock on stock price, the presence and effect of the shock, and the quality of investors' information. While herding under the first two levels of uncertainty does not necessarily misprice, the third level—where the quality of information is questionable—can lead to extreme mispricing. This intuitive realization highlights the conditions under which herding exasperates market inefficiencies. A subsequent study, Bikhchandani, et al. [17] went back to theory on observational learning and highlighted its implications for economics and business strategy. They proposed using the insights in informational cascades to inform decisions on market entry, product launching, and competitor positioning. Since firms understand how individuals view and respond to things seen to happen, they may design interventions for influencing choice, mitigating danger from herding, and seizing new trends.

However, empirical work on herd behavior and its consequences became an established field of research that describes the machinery of collective choice. From information cascade theories to models of sequential decision-making, all these theories have something to provide in terms of useful insight into the correspondence between individual action and group behavior. Although in some instances herding creates noisy outcomes, such as diffusion of innovation with haste, in most instances herding creates inefficiencies, that is, market bubbles or mis-pricing. Detecting drivers and outcomes of herding behavior poses an essential dilemma to scholars and professionals, a task that promises better decision-making, market stabilizing, and robustness toward collective behavior. With the research arena still

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under development, its augmenting importation from psychology, sociology, and behavioral economics will guarantee building a more consistent theory for translating this ubiquitous behavior.

2.2. Previous Empirical Findings

Several scholars have conducted empirical studies across different zones, producing varying outcomes. Such studies have provided a rich and varied insight into the behavior of herds across different markets, at different periods in time, and under changing economic conditions [18]. For instance, they made use of a new database consisting of assets of individual accounts from 1996 to 2000 and studied the mutual fund behavior of emerging economies. Their research established that the herd behavior of funds is statistically significant, but only to a moderate extent. Moreover, the research identified an interesting discrepancy between closed-end and open-ended funds, arguing that more of the former engage in herding. Contrary to conventional wisdom, the study illustrated that herding is not necessarily more frequent in the midst of crises compared to non-crisis periods, suggesting that herding dynamics need not always rest on external market volatility.

In addition, Hwang and Salmon [19] established evidence of herd behavior by using a generalized least squares (GLS) regression model. Their research, which was carried out in the National Stock Exchange (NSE) in India from 2011 to 2016, presented robust statistical evidence for the existence of herding among investors in the market. The evidence indicates herding behavior as an important determinant of market dynamics with implications for investor decision-making and market efficiency.

In contrast to these findings, Drehmann, et al. [20] demonstrated the lack of herd behavior among professional investors worldwide. Their research debunks the common view that herding is an overall phenomenon within any investor group and posits the idea that professional investors are likely to utilize less reliance on mimicry based on others' behaviors and greater dependency on individualistic analysis. This distinction between retail and professional investors highlights the importance of considering the composition of market participants in identifying herding behavior. Henker, et al. [21] used the case of Australia and determined that intraday on the market or in factory areas, herding never takes place. Their study adds an additional layer of complexity to herding knowledge, as its presence or absence relies heavily on industries and trading horizons. Intraday trading without herding could be a consequence of the application of real-time information and quick decision-making mechanisms that reduce the application of imitation. Economou, et al. [22] examined the frequency of herding in European markets, with substantial regional variations. They detected herding activity in the Greek and Italian markets but not the Spanish market. These findings illustrate the importance of cultural, regulatory, and country-specific factors to the determination of herding forces. The occurrence of herding in some markets but not in others illustrates how the local environment propels group investor sentiment. Herding activity was observed in most of the markets considered by Chen [23]. This large-scale research encompassed 23 developed markets, 20 emerging markets, and 26 frontier markets, providing a global perspective to the phenomenon. The most unexpected finding was that the developed markets displayed the strongest herding behavior, followed by frontier markets and then emerging economies. Such a counterintuitive finding suggests that herding can be triggered not just by an information deficit but by other factors such as market sophistication, the level of information availability, and institutional investor influence. Miceli [24] examined 52 sovereign wealth funds (SWFs) from different countries and did not find any indication of SWF managers' herding in the stock market. This study provides a useful exception to the general trends of herding in other contexts. Sovereign wealth funds, often managed by extremely professional personnel with access to a great amount of information, can be more driven by strategic decision-making rather than imitating others.

On the other hand, Stavroyiannis and Babalos [25] tested the herd effect on the American citizens' stock market and supported the existence of herd behavior in financial markets. Their findings validate patterns of herding in retail investor behavior overall, where social and psychological factors can overwhelm decision-making. Validation of herding in the American market also validates that even in mature and transparent markets, herding can drive price movements. Yang, et al. [26] investigated the

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performance evaluation influence on herd behavior by fund managers. Their observations revealed that herding is relatively less prevalent under variable prices as opposed to fixed. Further, they found that herding is largely eliminated when relative performance assessment goes hand-in-hand with flexible pricing. Such observations reflect the role of incentive systems and regimes in the market influencing the inclination of herding, and consequently, the scope of curtailing the same through reforms at the organization and policy levels.

Empirical evidence by Youssef and Mokni [27] confirms the existence of herding behavior across all GCC markets, excluding Bahraini and Kuwaiti markets. The exceptions illustrate that herding behavior is different in all locations, even between closely linked markets. Market maturity, liquidity, and regulation are explanatory variables used to explain differences and provide insightful information to regional market participants and policymakers [28]. Herding asymmetry in up and down markets was examined by Kumar, et al. [28] in Asian economies. They concluded herding asymmetry in up and down markets and indicated that during periods of high volatility, herding is more pronounced. Their research also highlights the time-varying nature of herding, indicating that herding varies over time and is greatly influenced by volatility. This research points to the volatility of herding, which cannot be understood without considering changing market conditions and investor sentiment.

In general, the empirical work on herd behavior is very different geographically, by market type, investor class, and by economic conditions. There is very wide variation of herding behavior, from considerable herding among emerging market mutual funds [18] to no herding among sovereign wealth fund managers [24] and professional investors [20]. Regional research by Economou, et al. [22] and Youssef and Mokni [27] supports the influence of local conditions on herd behavior, while global research by Chen [23] finds universal trends in developed, emerging, and frontier markets. The dynamic nature of herding, as evidenced by Kumar, et al. [28] and Yang, et al. [26] further supports the influence of market conditions and performance incentives. These findings combined augment the understanding of herding behavior, contributing useful implications to policymakers, regulators, and investors in addressing and managing its impact.

After perusing the existing empirical literature, it can be seen that the issue of herding behavior has yet to be addressed, as evidenced by the reflective findings around the world. In this research, however, the following hypothesis is created in order to examine the herding effect under the PEX.

Ha: The herd effect is present in PEX.

3. Methodology

3.1. Data Collection and Modeling

To achieve the objective, the study conducts pooled cross-sectional data from all listed firms (49 firms) in PEX from 2018 to 2022 (all data are available at https://web.pex.ps).

According to Christie and Huang [29]; Chang, et al. [30]; Gleason, et al. [31] and Gleason, et al. [32] the methodology's key concept is the claim that the existence of herd behavior would cause stock returns to follow overall market returns closely; this argument is founded on the presumption that people ignore their own beliefs and base their investment decisions completely on the market's collective behavior.

The first step of the method is determining the deviation between stock returns and market returns during the study period using the following cross-sectional standard deviation:

$$S.D.t. = \sqrt[2]{\frac{\sum_{f=1}^{n}(f.r.t - m.r.t)^2}{n-1}} \quad (1)$$

Where:

S.D.t = the cross-sectional standard deviation of stock returns from the market returns at the time (t).

S.r.t = the firm's stock return (f) for the day (t).

m.r.t = Al-Quds index return for the day (t).

n = the number of firms listed in PEX.

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The next step of the method is Testing the significance of the measured S.D.t using the following linear regression model:

$$S.D.t. = \alpha + \beta 1 * Q_{l.t} + \beta 2 * Q_{u.t} + \varepsilon \quad (2)$$

$Q_{l.t}$ = 1 if the return of Al- Quds index on day t lies in the lower tail of the return distribution, zero otherwise.

$Q_{u.t}$ = 1, if the return of Al- Quds index on day t lies in the upper tail of the return distribution, zero otherwise.

According to the literature, an extreme market return is one that falls in the bottom or upper 1% or 5% of the return distribution [33]. Market participants' herd formation would be indicated by the presence of negative and statistically significant βL (for down markets) and βU (for up markets) coefficients, as herd formation denotes conformity with market consensus.

4. Results and Discussion

Starting with the descriptive statistics of the conducted data, the final count of observations after excluding the days of no trading transactions is (858) records, as shown in Table 1. The mean of the cross-sectional standard deviations is equal to (0.22).

Table 1.
Descriptive Statistics.

	Mean	Std. Deviation	N
Sdt	0.022575	0.0235340	858
Dlt	0.05	0.221	858
Dut	0.05	0.223	858

Theoretically, (0.22) is a low percentage of standard deviation, which is a good indicator considering that the individual stock returns are consistent with the market return. Thus, according to the methodology, the investors act like a herd and make their decisions based on the market movements. On the other hand, the mean of (Q.l.t) and (Q.u.t) are (0.05), while (44) records of (858) have a value of (1), and the residual observations have a zero value. Hence, it is possible to consider that the extreme movements in PEX are insufficient to create an anomaly; this idea can be confirmed by the insignificant Pearson correlations between the dependent variable and other factors -as shown in the Pearson correlation Table 2 which is a conflict with the rational logic behind the theory which claims that the extreme movements of market returns are linked to the high deviation of the stock returns.

Table 2.
Correlations.

	Sdt	Dlt	Dut
Pearson Correlation	1.000	0.052	0.026
	0.052	1.000	-0.055
	0.026	-0.055	1.000
Sig. (1-tailed)	.	0.064	0.221
	0.064	.	0.055

On the other side of the analysis, as shown in Table 3, the R square of the regression model is equal to (0.004), and the Sig. The model's value in Table 4 is (0.217), which means that extreme market movements cannot explain the stock return deviations.

Table 3.
Model Summary.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.060a	0.004	0.001	0.0235195

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Table 4.
ANOVA.

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	0.002	2	0.001	1.530	0.217b
Residual	0.473	855	0.001		
Total	0.475	857			

Finally, the Beta coefficients of the upper tail and down tail of market returns are both insignificant, as shown in the Table 5. Thus, the study hypothesis claims that the herd effect is present in PEX is rejected.

Table 5.
Coefficients.

Model	B	Std. Error	Beta	t	Sig.
(Constant)	0.022	0.001		26.080	0.000
Dlt	0.006	0.004	0.054	1.571	0.117
Dut	0.003	0.004	0.029	0.854	0.393

However, the previous analysis can prove the absence of the herd effect in PEX but can't prove the absence of herd behavior between market participants. It is worth noting that we used the same methodology during the prior periods of COVID-19 (2018-2019) and concluded the same results to ensure that the COVID-19 effect was avoided.

The findings of this study indicate the absence of a significant herd effect in the Palestine Exchange (PEX), which stands in contrast to several prior empirical studies that confirmed the existence of herding in various financial markets. For instance, Hwang and Salmon [19] provided robust evidence of herding in the Indian National Stock Exchange, while Economou, et al. [22] confirmed its presence in the Greek and Italian markets. Similarly, Chen [23] found herding behavior to be particularly prevalent in developed markets, and Youssef and Mokni [27] reported its existence across most Gulf Cooperation Council (GCC) markets, excluding Bahrain and Kuwait. However, the absence of a significant herd effect in PEX aligns with the conclusions of Drehmann, et al. [20] who observed no herding among professional investors, and Miceli [24] who found no evidence of herding among sovereign wealth fund managers. This study's results also support Henker, et al. [21] who found that herding did not occur during intraday trading sessions in Australia. The observed absence of a herd effect in PEX, despite the presence of herd mentality, can be attributed to the market's limited trading momentum and low speculative activity, as highlighted by the chairman of PEX. These structural limitations appear to mitigate the conditions under which herding leads to significant market anomalies, emphasizing the importance of market liquidity and investor diversity in influencing the manifestation of the herd effect.

5. Conclusion and Policy Implications

The results of the research strongly support the validity of modeling the behavior of stocks in an efficient market. The outcome highlights the validity of examining the operations of the market under the assumption of efficiency, which provides highly valuable information to investors and policymakers. For the Palestine Exchange (PEX), however, the lack of market efficiency and the poor applicability of asset pricing models highlight the need to examine other market anomalies. This kind of investigation is imperative in ascertaining and explaining how PEX works precisely and in determining the factors that affect its performance.

Although the results of the study acknowledge the presence of herd mentality among the investors in PEX, they also confirm the absence of a significant herd effect. The distinction is significant in the sense that it suggests that while investors are capable of displaying similar trends in behavior, they are not intense enough to culminate in excessive market aberrations. The subdued trading momentum in PEX provides a plausible account of this phenomenon. Due to this lack of momentum, collective action

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does not result in dramatic market movements, and this is reflected in the mismatch between the descriptive statistics and regression results of the study variables.

Moreover, PEX chairman addressed these issues in a seminar held in December 2022 on the Arab American University (AAUP) campus. In his speech, he mentioned the slow rate of speculative transactions in PEX and invited researchers to examine more closely the dynamics of the exchange. The findings of the study validate his statements, and the necessity to overcome these problems. To counter this, policymakers need to make an attempt to place high priority on activities that will attract more investors to PEX. Increased investor presence would create trading momentum and enable the market to grow and become more stable as a whole. With the more active and vibrant trading environment, PEX is better able to reach its full potential as a beneficial contribution to the regional economy.

Transparency:

The author confirms that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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