

Foreign exchange market herd behaviour: empirical study in ASEAN-5 countries

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Abstract

Purpose – The study examines the herd behaviour in Association of Southeast Asian Nations (ASEAN)-5 foreign exchange markets: Indonesia, Malaysia, Philippines, Singapore and Thailand.

Design/methodology/approach – We use the daily data as a sample. Cross-sectional absolute deviation (CSAD) and quantile regression are employed to identify the herding behaviour in these markets.

Findings – The findings report that all the foreign exchange markets in ASEAN-5 do not exhibit herding behaviour. Diversity of the fundamental economic, such as economic growth rate, rate of inflation and economy structure, produce monetary and exchange rate policies, is among the reasons for the absence of herd behaviour.

Practical implications – Maintaining macroeconomic stability and promoting market resilience to outside shocks should remain a priority for policymakers. As for investors, diversification is still a vital risk-management strategy.

Originality/value – This study provides a novel investigation into herd behaviour in ASEAN-5 foreign exchange market.

Keywords Foreign exchange market, ASEAN-5, Herding, Currency

Paper type Research paper

Introduction

The Association of Southeast Asian Nations (ASEAN) members use the ASEAN foreign exchange (forex) market as an essential marketplace for currency exchange and other monetary transactions. Free-market principles are the basis of the market with an established infrastructure to facilitate domestic and cross-border currency trading. One of the ASEAN foreign exchange market's primary goals is to foster stability and liquidity in the region's currency markets. To that end, ASEAN member nations have undertaken several steps, including forming bilateral currency exchange agreements and harmonising regulatory regimes. However, just like in another market, the market participants might not behave rationally; in other words, herd behaviour might exist.

Regarding herd behaviour, numerous studies are conducted in financial markets, most of which are in the stock market and relationship between cryptocurrencies and foreign

JEL Classification — F3, G40

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exchange. For example, Danila (2023), Bharti and Kumar (2022), Ramadan (2015), Kabir (2018), Chen (2020), Kaya and Engkuchik (2017), Raza *et al.* (2022), Aloui *et al.* (2021), Danila *et al.* (2021), Eki Rahman and Ermawati (2020), Khanthavit (2019), Nor *et al.* (2013), Rashid *et al.* (2014) and Tetlock (2007) reported that some ASEAN stock markets are driven by market sentiment. In the foreign exchange market, researchers more interested in cryptocurrencies, such as Stavroyiannis and Babalos (2019), Vidal-Tomás *et al.* (2019), Kumar (2020), Kyriazis (2020), Coffee *et al.* (2021), Papadamou *et al.* (2021), Deighton Chrisostomides (2022) and Lobão (2022), suggested the existence of herding behaviour in this market. On the traditional currency, Yasir *et al.* (2022) looked into the behaviour by using six currencies – dollar, pound sterling, euro, yen AED and Saudi riyal – in the Pakistan market. They come up with the same outcome as in the cryptocurrency market. Nevertheless, to our knowledge, herd behaviour in the ASEAN foreign exchange market has not received any attention yet.

Our study aims to investigate herd behaviour in the ASEAN-5 foreign exchange market. The study is essential as it helps assess forex market efficiency, price stability and market stability. Herd behaviour may cause a financial crisis through the contagion effects. Knowing herding behaviour is also crucial to investors. They can get information about the behaviour of other market players and make better decisions. It can assist investors in distinguishing between noise and fundamental-driven price fluctuation, lowering the risk of being influenced by irrational market behaviour.

Furthermore, the behaviour might have important implications for risk management since a similar strategy adopted by a large number of markets significantly can lead to increased systematic risk; thereby, the benefit of portfolio diversification is decreased. As for policymakers and regulatory authorities, acknowledging the elements that contributed to behaviour assists them in designing suitable policies to overcome the negative impacts. Furthermore, policymakers should create programs to increase transparency in the market, boost investor education and build a more diversified and knowledgeable investor base.

The ASEAN-5 countries are selected for several reasons. The ASEAN-5 nations are incredibly significant in Southeast Asia and globally from an economic, political and geopolitical standpoint. While their distinct qualities and achievements make them prominent participants in the international arena, their combined power as a regional alliance promotes economic development, stability and partnership.

Our study contributes to the literature by presenting no evidence of herding behaviour in the ASEAN-5 currencies. The remainder of the study proceeds as follows: in the second section, we provide the literature review; the data and methodology used for the study are described in the third sections; The fourth section elaborates on the discussion and recommendation based on data analysis and finally, The fifth section presents the conclusion that indicates the relevance of our findings.

Literature review

An information cascade occurs when an individual adopts a decision based purely on the decisions of others while disregarding their unique insight (Alevy *et al.*, 2007). A cascade effect is the outcome of this imitative behaviour, in which many market players follow the activities of a few initial movers, irrespective of the rationality or correctness of such moves. In the frame of forex markets, this theory implies that traders can take part in the act of herding by imitating the trading actions of others, hence contributing to the establishment and maintenance of patterns.

Bikhchandani and Sharma (2000) distinguish between spurious and intentional herding in herd behaviour. When market participants make identical trades because they have the same underlying information, this is known as spurious herding. Here, investors are not

directly imitating one another but instead reacting similarly to the same stimulus. Investors, for example, respond similarly to news about economic indicators such as inflation, interest rate increases and currency depreciation. Moving averages, as technical indicators, can lead to similar trading behaviour among many investors. As a result, the key components of spurious herding behaviour are independent decision-making, common responses and market impact due to rational responses.

In the meantime, intentional herding occurs when traders deliberately follow one another in buying and selling. A number of factors could potentially contribute to this phenomenon. The first is superior information. Investors may imitate others if they believe that others possess superior information. As the number of people who stick to the idea increases, the belief becomes stronger, resulting in a domino effect. The second is a reputational concern. Fund managers and analysts engage in herding behaviour to protect their professional standing. The risk of ruining their reputation is higher when they deviate from the herd and are incorrect than when they commit the same mistakes as the rest of the herd. Third, investors engage in herding behaviour to avoid failure in comparison to their peers, which raises performance concerns. This is especially important in institutional settings, where performance comparison is critical. As a result, the key element of intentional herding is copycat behaviour.

Both kinds of behaviour have implications for the financial markets. Intentional herding leads to much higher market volatility than spurious herding. In addition, intentional herding definitely causes bubbles, crashes and market inefficiencies. However, the spurious herd might still be compatible with the efficiency of the market.

Large numbers of herding behaviour studies on stock markets and the cryptocurrency market. The findings are mixed; some studies suggested that there is no herding evidence in the USA stock market (Chang *et al.*, 2000; Gleason *et al.*, 2004; Galariotis *et al.*, 2016) and in the UK stock market (Galariotis *et al.*, 2015). On the contrary, Chiang and Zheng (2010) and Khan *et al.* (2011) argued that herd behaviour existed in the developed market. Moreover, Bui *et al.* (2015) reported the herding occurred in Southeast Asian stock markets, namely Indonesia, Malaysia and Vietnam, except the Philippines. However, Muharam *et al.* (2021) suggested that herding behaviour existed in the Philippine Stock Exchanges.

Moving on to the forex market, it has been noticed that most research in herd behaviour is dedicated to cryptocurrency. Cheah and Fry (2015), Baur *et al.* (2018) showed that bitcoins are mostly utilised as a speculative investment rather than as a currency or medium of exchange. Following this insight, Stavroyiannis and Babalos (2019) investigated eight famous cryptocurrencies for herd behaviour. The authors argued that herding exists based on a traditional CSAD model and a time-varying parameter model. However, when the robust model is implemented, herding is absent in the market. Vidal-Tomás *et al.* (2019) came up with a similar conclusion; the cryptocurrency market exhibits herding, especially during the down-side market.

Furthermore, market participants construct their investment choices on the performance of the major cryptocurrencies, such as Bitcoin, Ripples, Litecoin, Dash and Stellar. More on the downside and upside of the market (Kyriazis, 2020), using 240 cryptocurrencies argued the opposite result; the evidence of behaviour is revealed in the episode of a bull market. Many more studies show that the cryptocurrency market is characterised by herding solid phenomena (Kallinterakis and Wang, 2019; Silva *et al.*, 2019; Ballis and Drakos, 2020; Kaiser and Stöckl, 2020).

The preceding explanation is about cryptocurrencies. Now, let us move on to traditional currency. As previously stated, research on conventional money-herding behaviour is limited. To mention, Kaltwasser (2010) suggested that the excess volatility, volatility clustering and disruption in the fundamental model are caused by divergent opinions (optimism and pessimism) regarding the currency's fundamental value, as well as the

non-linear herding pattern that motivates trader opinion shifts. As [Alfarano *et al.* \(2006\)](#) noticed that fundamentalists dominate the forex market, the unpredictability of fundamentals makes the life of traders difficult, which leads to heterogeneous insights into the equilibrium value of the currency. Once market players agree on currency equilibrium, clustering volatility will be significantly decreased. In addition, [Carpenter and Wang \(2007\)](#) reach a similar conclusion, which indicates strong and unique herding behaviour within forex traders, and herding greatly amplifies the price impact of transactions. The authors also proposed that the details content of foreign currency trades is affected by who is trading and market players' actions. They illustrate heterogeneous information among forex participants by jointly assessing the price impact of trades from different investor groups.

Similarly, [Sherman \(2012\)](#) detected strong herding in the less frequently traded currencies from emerging markets in the currency mutual fund. As in an information cascade, institutional investors may attempt to discover extra, not traditionally available, information from earlier transactions of better-informed management. A lack of knowledge could also explain the high degree of linked trade among small-country currencies. The minimal amount of public information on emerging markets may improve professional asset managers' capacity to derive private fundamental information because they can recruit individuals from the area or send specialists to investigate the country. In this situation, worldwide institutional investors' beneficial knowledge of developing nations could explain the connected trading in small-country currencies.

ASEAN-5 countries currency

"ASEAN-5" refers to the Association of Southeast Asian Nations (ASEAN) regional bloc's five significant economies: Indonesia, Malaysia, the Philippines, Singapore and Thailand. Each nation has a national currency, and its value can fluctuate depending on many factors, including the economy, monetary policies, geopolitical circumstances and market trends worldwide. Historically, the currencies of the ASEAN-5 countries have undergone times of strength as well as periods of instability. Economic factors, including gross domestic product (GDP) growth, inflation rates, interest rates and political stability, all substantially impact currency performance. Singapore, for example, has a highly advanced and free-market economy, and its local currency is often viewed as stable. On the contrary, the rest of the ASEAN-5 country currencies volatility may be higher due to variables such as commodity price variations, political upheavals and sentiment of the market.

Looking at the behaviour of their exchange rate, [Klyuev and Dao \(2017\)](#) found that the ASEAN-5 country central banks have yet to have a particular exchange rate target level against any other currencies or currency basket in the last ten years. They focus on smoothing the short-term volatility of their currencies against US dollars. However, the degree of currency smoothing dropped significantly after the Asia Financial Crisis and the Global Financial Crisis. Regarding the contagion effect, [Ain Shahriar \(2022\)](#) showed that the ASEAN-5 exchange rates are cointegrated during the COVID-19 pandemic and are at the disequilibrium level. Three countries – Indonesia, Malaysia and Singapore – experienced the longest exchange rate volatility. Meanwhile, only the Philippines face minor fluctuation in the short term, with no increased volatility in the long run.

Data and methodology

We use ASEAN-5 – Indonesia, Malaysia, the Philippines, Singapore and Thailand – currencies against US\$ as data samples for the analysis. [Table 1](#) shows the details of the data. All the data are obtained from Bloomberg.

We used random time series data sampling, i.e. daily price of ASEAN-5 currencies against US\$ for 10 years. Herding analysis needs a market portfolio to examine how currency performs in comparison to the market agreement. This market portfolio is made up of 5 currencies. Following Vidal-Tomás *et al.* (2019), an equally-weighted market portfolio estimates market returns to avoid the data bias. Below is the formula to calculate the market returns:

$$r_{m,t} = \frac{\sum_{i=1}^N r_{i,t}}{N} \quad (1)$$

where N is the number of currencies, $r_{m,t}$ is the market return and $r_{i,t}$ is each currency's daily return, which is computed as follows:

$$r_{i,t} = (P_t - P_{t-1})/P_{t-1} \quad (2)$$

P_t denotes the price at time t

We employ two models to analyse the herding: the cross-sectional absolute deviation (CSAD) and the quantile regression model.

Cross-sectional absolute deviation (CSAD) model

We follow Chang *et al.* (2000) to measure herding by calculating the CSAD.

$$CSAD_t = \frac{1}{N} \sum_{i=1}^N |R_{i,t} - R_{m,t}| \quad (3)$$

where $CSAD_t$ is the portfolio return absolute deviation, N is the number of currencies, $R_{i,t}$ is the asset i return at time t and $R_{m,t}$ is a return of stock index at time t .

The next step is to regress the average market return to the CSAD. The model is as follows:

$$CSAD_t = \alpha + \beta_1 |R_{m,t}| + \beta_2 R_{m,t}^2 + \varepsilon_t \quad (4)$$

where α is an intercept; β_1, β_2 are loadings of $|R_{m,t}|$ (absolute cross-sectional average returns) and $R_{m,t}^2$ (squared cross-sectional average returns), respectively, and ε_t is the error term. When β_2 has a significantly negative value, it shows the existence of herding as market consensus states that the non-linearity relationship between $CSAD_t$ and $R_{m,t}^2$ must be captured when the market is herd during the market swings episodes. Following Arjoon *et al.* (2020), we include $CSAD_{t-1}$ in the equation to handle the serial correlation issue.

| Currency | Period |
|-------------------------|---------------------|
| Indonesia Rupiah (Rp) | 3/1/2012–31/12/2022 |
| Malaysia Ringgit (MYR) | 3/1/2012–31/12/2022 |
| Philippines Peso (Peso) | 3/1/2012–31/12/2022 |
| Singapore Dollar (S\$) | 3/1/2012–31/12/2022 |
| Thailand Baht (Baht) | 3/1/2012–31/12/2022 |

Source(s): Bloomberg

Table 1.
Data and periods

$$CSAD_t = \alpha + \beta_1 |R_{m,t}| + \beta_2 R_{m,t}^2 + \beta_3 CSAD_{t-1} + \varepsilon_t \quad (5)$$

To check the robustness of the result, quantile regression is proposed in the next part.

Quantile regression model

It is an effective method for finding herding behaviour at market distribution extremes, i.e. identifying herding in other areas when a whole market distribution is analysed. The method is more robust to outliers because it considers all possible data points that could be observed from the model. The model is as (Ampofo *et al.*, 2023) follows:

$$y_i = Q_\tau(Y|X = x) = x_i' \gamma^* \quad (6)$$

where y_i and x_i are dependent and vectors of independent variables consecutively and γ^* is a vector of the quantile regression parameters. Median absolute deviation is below:

$$MAD = \frac{1}{n} \sum_{i=1}^n \rho_\tau(y_i - x_i' \gamma^*) \quad (7)$$

The function ρ is the check function that gives asymmetric weights to the error depending on the quantile and the overall sign of the error. ρ takes the form:

$$\rho_\tau(u) = \tau \max(u, 0) + (1 - \tau) \max(-u, 0) \quad (8)$$

The $CSAD_t$ model in Equation (5) is expressed in quantile as follows:

$$CSAD_{t,\tau} = \alpha + \beta_{1,\tau} |R_{m,t}| + \beta_{2,\tau} R_{m,t}^2 + \beta_{3,\tau} CSAD_{t-1} + \varepsilon_t \quad (5)$$

The herding behaviour was estimated at 10, 20, 30, 40, 50, 60, 70, 80 and 90% quantiles. Negative and statistically significant of $\beta_{2,\tau}$ in Equation (5) indicates the herding behaviour.

Empirical findings

Table 2 reports the summary statistics of CSAD and R_m . The mean values for all three periods of CSAD and R_m are close to zero. The value of the standard deviation of both variables is slightly different, even though the values are identical in the whole and during (after) period. Regarding the skewness, both variables indicate deviating from the normal distribution curve, i.e. beyond the range of -0.5 – 0.5 . Only market return before the COVID-19 period shows a relatively symmetrical curve. Moreover, the skewness is positive, meaning that the value of both variables is less than average. CSAD and R_m data exhibit leptokurtic distributions, suggesting that the data have significant outliers.

Table 3 summarises the result of the regression model for herding behaviour. From Table 3, the coefficient of R^2 (β_2) is insignificant, suggesting that herding does not exist in the ASEAN-5 currencies. Furthermore, we test the autoregressive conditional heteroscedasticity (ARCH) effect in our regression model. The results show that the ARCH effect is present for all sample periods. Therefore, we run generalised autoregressive conditional heteroscedasticity (GARCH) (1,1) for our model to investigate the consistency of the results. Table 4 shows the GARCH (1,1) estimations.

Again, the results confirm no evidence of herding behaviour – insignificant of β_2 – after controlling the ARCH effect. The next step is to check the robustness of our previous model by performing quantile regression. It is an effective method for finding herding behaviour at

| Statistics/variables | CSAD | R _m |
|---------------------------------|--------|----------------|
| <i>Whole period</i> | | |
| Mean | 0.0029 | 0.0005 |
| Std. Dev | 0.0256 | 0.0256 |
| Skewness | 50.347 | 2575.9 |
| Kurtosis | 49.690 | 2546.5 |
| <i>Before Covid</i> | | |
| Mean | 0.0024 | 0.0000 |
| Std. Dev | 0.0016 | 0.0025 |
| Skewness | 2.8541 | -0.1477 |
| Kurtosis | 18.652 | 5.6568 |
| <i>During (and After) Covid</i> | | |
| Mean | 0.0045 | 0.0017 |
| Std. Dev | 0.0490 | 0.0490 |
| Skewness | 26.382 | 703.92 |
| Kurtosis | 26.199 | 701.65 |

Note(s): Using the Chow test for testing the structural break, there is an indication for a structural break in our sample, and then we divide the data into three periods: all periods, before the COVID-19 period and during (and after) the COVID-19 period

Source(s): Prepared by the authors

Table 2.
Summary statistics of
CSAD and market
returns (R_m)

$$CSAD_t = \alpha + \beta_1 |R_{m,t}| + \beta_2 R_{m,t}^2 + \beta_3 CSAD_{t-1} + \varepsilon_t$$

| Variables | α | β_1 | β_2 | β_3 | Adj- R ² |
|---|--------------------|--------------------|---------------------|---------------------|------------------------|
| <i>All period</i> | 0.0006 (0.0000)*** | 0.9646 (0.0000)*** | 0.0289 (0.2577) | -0.0003 (0.2577) | 0.9992 |
| <i>Before covid</i> | 0.0008 (0.0000)*** | 0.6896 (0.0000)*** | 16.1511 (0.0000)*** | 0.0972 (0.0000)*** | 0.8382 |
| <i>During (and after) covid</i> | 0.0007 (0.0000)*** | 0.9940 (0.0000)*** | 0.0066 (0.5589) | -0.0005 (0.0001)*** | 0.9997 |

Note(s): *p*-values are in parentheses. *** indicates significance at 1% of significant level. We used HAC robust standard errors (Huber–White standard errors), which are robust in the presence of heteroscedasticity (and, in the case of the HAC estimator, autocorrelation)

Source(s): Prepared by the authors

Table 3.
Estimates of herding
behaviour

market distribution extremes, i.e. identifying herding in other areas when a whole market distribution is analysed.

The outcomes of quantile regression are presented in Table 5. All quantiles have a positive and significant coefficient unless the coefficient of 90% quantile during (and after) the COVID-19 period is negative but not significant. The findings suggest no evidence of herding, which contradicts [Ain Shahrir's \(2022\)](#) finding, which stated that the ASEAN-5 exchange rates are cointegrated during the COVID-19 pandemic and are at the disequilibrium level. However, the finding is consistent with [Lobão's \(2022\)](#) and [Deighton Chrisostomides's \(2022\)](#) studies on cryptocurrency behaviour.

Thus, we conclude that the investors in ASEAN-5 currency do not herd for constructing their portfolio. The reasons behind the findings might be as follows. Diversity of the fundamental economic, such as economic growth rate, rate of inflation and structure of the economy, produce monetary and exchange rate policies, which leads to less possibility for

Table 4.
Estimates of herding
behaviour –
GARCH (1,1)

$$CSAD_t = \alpha + \beta_1 |R_{m,t}| + \beta_2 R_{m,t}^2 + \beta_3 CSAD_{t-1} + \varepsilon_t$$

$$\sigma^2 = \omega + \theta_1 \varepsilon_{t-1}^2 + \theta_2 \sigma_{t-1}^2$$

| Variables | α | β_1 | β_2 | β_3 | θ_1 (ARCH) | θ_2 (GARCH) |
|---------------------------------|--------------------|--------------------|---------------------|---------------------|--------------------|--------------------|
| <i>All period</i> | 0.0008 (0.0000)*** | 0.8382 (0.0000)*** | 0.1270 (0.0000)*** | 0.0075 (0.3995) | 0.2482 (0.0078)*** | 0.0000 (1.000) |
| <i>Before covid</i> | 0.0008 (0.0000)*** | 0.6963 (0.0000)*** | 16.1511 (0.0000)*** | 0.0931 (0.0000)*** | 0.1463 (0.0777)* | 0.0656 (0.4870) |
| <i>During (and after) covid</i> | 0.0006 (0.0000)*** | 0.9984 (0.0000)*** | 0.0032 (0.6606) | -0.0005 (0.0001)*** | 0.0576 (0.0432)** | 0.8792 (0.0000)*** |

Note(s): *p*-values are in parentheses. *** indicates significant at 1% of significant level; ** indicates significant at 5% of significant level; * indicates significant at 10% of significant level. We used Bollerslev–Wooldridge robust standard errors and covariance

Source(s): Prepared by the authors

$$CSAD_{i,\tau} = \alpha + \beta_{1,\tau}|R_{m,t}| + \beta_{2,\tau}R_{m,t}^2 + \beta_{3,\tau}CSAD_{t-1} + \varepsilon_t$$

| Variables | $\beta_{2,10\%}$ | $\beta_{2,20\%}$ | $\beta_{2,30\%}$ | $\beta_{2,40\%}$ | $\beta_{2,50\%}$ | $\beta_{2,60\%}$ | $\beta_{2,70\%}$ | $\beta_{2,80\%}$ | $\beta_{2,90\%}$ |
|---------------------------------|-----------------------|-----------------------|------------------------|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| <i>All period</i> | 0.0889 (0.000)*** | 0.0999 (0.000)*** | 0.0845 (0.000)*** | 0.0807 (0.000)*** | 0.0926 (0.000)*** | 0.1096 (0.000)*** | 0.1184 (0.000)*** | 0.1128 (0.000)*** | 0.0965 (0.045)** |
| <i>Before covid</i> | 9.7902 (0.0000)*** | 9.4912 (0.0000)*** | 10.5160 (0.0000)*** | 10.1277 (0.0000)*** | 15.8439 (0.000)*** | 26.7520 (0.000)*** | 34.2073 (0.000)*** | 41.4920 (0.000)*** | 38.5423 (0.000)*** |
| <i>During (and after) covid</i> | 0.0691 (0.0000)*** | 0.0781 (0.0000)*** | 0.0688 (0.000)*** | 0.0747 (0.0001)*** | 0.0871 (0.0432)** | 0.0897 (0.0000)*** | 0.0751 (0.000)*** | 0.0493 (0.000)*** | -0.0013 (0.4479) |

Note(s): *p*-values are in parentheses. *** indicates significant at 1% of significant level and ** indicates significant at 5% of significant level. We only present the related variable (R^2 or β_2) of herding behaviour

Source(s): Prepared by the authors

the currencies to move in the same direction. Having monetary policy independent for each country with different priorities and targets provides the different movement of interest rates and exchange rates, suggesting different strategies investors adopt for building their portfolio; as a result, currency herding is less likely to happen.

Moreover, some analysts might argue that similar external shocks – e.g. geopolitical events, changes in global commodity prices, pandemic and shifts in investor sentiment – to the region will have the same impacts on the currencies in the region. However, it might not be true since each country in the region will react differently due to the differences in trade exposure, the stage of financial market development or commodity independence. Another factor that might contribute to the finding is the central bank exchange rate intervention. The central bank often conducts intervention in their market to stabilise the exchange rate movement and to overcome excess volatility. The intervention has a vital role in balancing the economy of the country. The operation brings different outcomes of the currency movements, leading to a different reaction of the investors and consequently reducing the likelihood of herding.

Conclusion

Our study aims to investigate herd behaviour in the ASEAN-5 foreign exchange market. The study is essential as it helps assess forex market efficiency, price stability and market stability. Herd behaviour may cause a financial crisis through the contagion effects. Knowing herding behaviour is also crucial to investors. They can get information about the behaviour of other market players and make better decisions. It can assist investors in distinguishing between noise and fundamental-driven price fluctuation, lowering the risk of being influenced by irrational market behaviour.

Our study suggested no evidence of herd behaviour in the ASEAN-5 currencies. Diversity of the fundamental economic, such as economic growth rate, rate of inflation and structure of the economy, produce monetary and exchange rate policies, which leads to less possibility for the currencies to move in the same direction. Even if the ASEAN-5 nations have made progress towards greater regional economic integration, there is still room for improvement. Despite the fact that they are expanding, inter-regional trade and financial ties still need to be at a point where they would encourage herding behaviour. Exchange rates continue to be significantly influenced by external shocks and country-specific variables.

It implies the significance of sound fiscal and monetary policy. Maintaining macroeconomic stability and promoting market resilience to outside shocks should remain a priority for policymakers. Although herding can be disruptive, promoting a fair and knowledgeable investment environment remains a priority. As for investors, the lack of herd behaviour indicates that they might discover various possibilities in the ASEAN-5 currency markets. Each currency is likely to be affected by particular economic fundamentals, political decisions and other external variables. Thus, diversification is still a vital risk-management strategy. A diverse currency portfolio can help reduce risk and increase profits because individual currencies in the ASEAN-5 nations are less likely to move in simultaneously.

References

- Ain Shahrier, N. (2022), "Contagion effects in ASEAN-5 exchange rates during the Covid-19 pandemic", *North American Journal of Economics and Finance*, Vol. 62, p. 101707, doi: [10.1016/j.najef.2022.101707](https://doi.org/10.1016/j.najef.2022.101707).
- Alevy, J.E., Haigh, M.S. and List, J.A. (2007), "Information cascades: evidence from a field experiment with financial market professionals", *Journal of Finance*, Vol. 62 No. 1, pp. 151-180, doi: [10.1111/j.1540-6261.2007.01204.x](https://doi.org/10.1111/j.1540-6261.2007.01204.x).

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- Alfarano, S., Lux, T. and Wagner, F. (2006), "Estimation of a simple agent-based model of financial markets: an application to Australian stock and foreign exchange data", *Physica A: Statistical Mechanics and Its Applications*, Vol. 370 No. 1, pp. 38-42, doi: [10.1016/j.physa.2006.04.018](https://doi.org/10.1016/j.physa.2006.04.018).
- Aloui, C., Shahzad, S.J.H., Hkiri, B., Helal, B.H. and Khan, M.A. (2021), "On the investors' sentiments and the Islamic stock-bond interplay across investments' horizons", *Pacific Basin Finance Journal*, Vol. 65, p. 101491, doi: [10.1016/j.pacfin.2020.101491](https://doi.org/10.1016/j.pacfin.2020.101491).
- Ampofo, R.T., Aidoo, E.N., Ntiamoah, B.O., Frimpong, O. and Sasu, D. (2023), "An empirical investigation of COVID-19 effects on herding behaviour in USA and UK stock markets using a quantile regression approach", *Journal of Economics and Finance*, Vol. 47 No. 2, pp. 517-540, doi: [10.1007/s12197-022-09613-8](https://doi.org/10.1007/s12197-022-09613-8).
- Arjoon, V., Bhatnagar, C.S. and Ramlakhan, P. (2020), "Herding in the Singapore stock exchange", *Journal of Economics and Business*, Vol. 109, p. 105889, doi: [10.1016/j.jeconbus.2019.105889](https://doi.org/10.1016/j.jeconbus.2019.105889).
- Ballis, A. and Drakos, K. (2020), "Testing for herding in the cryptocurrency market", *Finance Research Letters*, Vol. 33, p. 101210, doi: [10.1016/j.frl.2019.06.008](https://doi.org/10.1016/j.frl.2019.06.008).
- Baur, D.G., Hong, K.H. and Lee, A.D. (2018), "Bitcoin: medium of exchange or speculative assets?", *Journal of International Financial Markets, Institutions and Money*, Vol. 54, pp. 177-189, doi: [10.1016/j.intfin.2017.12.004](https://doi.org/10.1016/j.intfin.2017.12.004).
- Bharti and Kumar, A. (2022), "Exploring herding behaviour in Indian equity market during COVID-19 pandemic: impact of volatility and government response", *Millennial Asia*, Vol. 13 No. 3, pp. 513-531, doi: [10.1177/09763996211020687](https://doi.org/10.1177/09763996211020687).
- Bikhchandani, S. and Sharma, S. (2000), "Herd behavior in financial markets", *IMF Staff Papers*, Vol. 47 No. 3, pp. 279-310, doi: [10.5539/ibr.v6n6p31](https://doi.org/10.5539/ibr.v6n6p31).
- Coffee, J.C., Lowenstein, L. and Roseackerman, S. (2021), "Knights, raiders, and targets – the impact of the hostile takeover", *Journal of Banking and Finance*, Vol. 37 No. 1.
- Bui, N.D., Nguyen, L.T.B. and Nguyen, N.T.T. (2015), "Herd behaviour in Southeast Asian stock markets - an empirical investigation", *Acta Oeconomica*, Vol. 65 No. 3, pp. 413-429, doi: [10.1556/032.65.2015.3.4](https://doi.org/10.1556/032.65.2015.3.4).
- Carpenter, A. and Wang, J. (2007), "Herding and the information content of trades in the Australian dollar market", *Pacific Basin Finance Journal*, Vol. 15 No. 2, pp. 173-194, doi: [10.1016/j.pacfin.2006.06.002](https://doi.org/10.1016/j.pacfin.2006.06.002).
- Chang, E.C., Cheng, J.W. and Khorana, A. (2000), "An examination of herd behavior in equity markets: an international perspective", *Journal of Banking and Finance*, Vol. 24 No. 10, pp. 1651-1679, doi: [10.1016/S0378-4266\(99\)00096-5](https://doi.org/10.1016/S0378-4266(99)00096-5).
- Cheah, E.T. and Fry, J. (2015), "Speculative bubbles in Bitcoin markets? An empirical investigation into the fundamental value of Bitcoin", *Economics Letters*, Vol. 130, pp. 32-36, doi: [10.1016/j.econlet.2015.02.029](https://doi.org/10.1016/j.econlet.2015.02.029).
- Chen, W. (2020), "An examination of herding behavior in Chinese A-share market by cross-sectional absolute deviation (CSAD)", *Modern Economy*, Vol. 11 No. 04, pp. 785-792, doi: [10.4236/me.2020.114058](https://doi.org/10.4236/me.2020.114058).
- Chiang, T.C. and Zheng, D. (2010), "An empirical analysis of herd behavior in global stock markets", *Journal of Banking and Finance*, Vol. 34 No. 8, pp. 1911-1921, doi: [10.1016/j.jbankfin.2009.12.014](https://doi.org/10.1016/j.jbankfin.2009.12.014).
- Danila, N. (2023), "Herding behaviour in ESG stock index: evidence from emerging markets", *Global Business Review*. doi: [10.1177/09721509231199300](https://doi.org/10.1177/09721509231199300).
- Danila, N., Kamaludin, K., Sundarasan, S. and Bunyamin, B. (2021), "Islamic index market sentiment: evidence from the ASEAN market", *Journal of Islamic Accounting and Business Research*, Vol. 12 No. 3, pp. 380-400, doi: [10.1108/JIABR-05-2020-0166](https://doi.org/10.1108/JIABR-05-2020-0166).
- Deighton Chrisostomides, L. (2022), "Herding in cryptocurrencies: CSSD and CSAD approaches", *Proceedings of the 9th International Scientific Conference - FINIZ 2022*, Belgrade, Singidunum University, pp. 52-56, doi: [10.15308/finiz-2022-52-56](https://doi.org/10.15308/finiz-2022-52-56).

-
- Eki Rahman, R. and Ermawati, E. (2020), "Analysis of herding behavior in the stock market: a case study of the ASEAN-5 and the US", *Buletin Ekonomi Moneter Dan Perbankan*, Vol. 23 No. 3, pp. 297-318, doi: [10.21098/BEMP.V23I3.1362](https://doi.org/10.21098/BEMP.V23I3.1362).
- Galariotis, E.C., Rong, W. and Spyrou, S.I. (2015), "Herding on fundamental information: a comparative study", *Journal of Banking and Finance*, Vol. 50, pp. 589-598, doi: [10.1016/j.jbankfin.2014.03.014](https://doi.org/10.1016/j.jbankfin.2014.03.014).
- Galariotis, E.C., Krokida, S.I. and Spyrou, S.I. (2016), "Bond market investor herding: evidence from the European financial crisis", *International Review of Financial Analysis*, Vol. 48, pp. 367-375, doi: [10.1016/j.irfa.2015.01.001](https://doi.org/10.1016/j.irfa.2015.01.001).
- Gleason, K.C., Mathur, I. and Peterson, M.A. (2004), "Analysis of intraday herding behavior among the sector ETFs", *Journal of Empirical Finance*, Vol. 11 No. 5, pp. 681-694, doi: [10.1016/j.jempfin.2003.06.003](https://doi.org/10.1016/j.jempfin.2003.06.003).
- Kabir, M.H. (2018), "Did investors herd during the financial crisis? Evidence from the US financial industry", *International Review of Finance*, Vol. 18 No. 1, pp. 59-90, doi: [10.1111/irfi.12140](https://doi.org/10.1111/irfi.12140).
- Kaiser, L. and Stöckl, S. (2020), "Cryptocurrencies: herding and the transfer currency", *Finance Research Letters*, Vol. 33, p. 101214, doi: [10.1016/j.frl.2019.06.012](https://doi.org/10.1016/j.frl.2019.06.012).
- Kallinterakis, V. and Wang, Y. (2019), "Do investors herd in cryptocurrencies – and why?", *Research in International Business and Finance*, Vol. 50, pp. 240-245, doi: [10.1016/j.ribaf.2019.05.005](https://doi.org/10.1016/j.ribaf.2019.05.005).
- Kaltwasser, P.R. (2010), "Uncertainty about fundamentals and herding behavior in the FOREX market", *Physica A: Statistical Mechanics and Its Applications*, Vol. 389 No. 6, pp. 1215-1222, doi: [10.1016/j.physa.2009.11.012](https://doi.org/10.1016/j.physa.2009.11.012).
- Kaya, H.D. and Engkuchik, E.N.S. (2017), "The effect of financial crises on stock market liquidity across global markets", *Investment Management and Financial Innovations*, Vol. 14 No. 2, pp. 38-50, doi: [10.21511/imfi.14\(2\).2017.04](https://doi.org/10.21511/imfi.14(2).2017.04).
- Khan, H., Hassairi, S.A. and Viviani, J.-L. (2011), "Herd behavior and market stress: the case of four European countries", *International Business Research*, Vol. 4 No. 3, doi: [10.5539/ibr.v4n3p53](https://doi.org/10.5539/ibr.v4n3p53).
- Khanthavit, A. (2019), "Weather, investor sentiment, and stock returns in the stock exchange of Thailand", *ABAC Journal*, Vol. 39 No. 1, pp. 1-14, doi: [10.13140/RG.2.2.29145.21606](https://doi.org/10.13140/RG.2.2.29145.21606).
- Klyuev, V. and Dao, T.N. (2017), "No more clubbing: the evolution of exchange rate behaviour in the ASEAN-5 countries", *Journal of Southeast Asian Economies*, Vol. 34 No. 2, pp. 233-265, doi: [10.1355/ae34-2a](https://doi.org/10.1355/ae34-2a).
- Kumar, A. (2020), "Empirical investigation of herding in cryptocurrency market under different market regimes", *Review of Behavioral Finance*, Vol. 13 No. 3, pp. 297-308, doi: [10.1108/RBF-01-2020-0014](https://doi.org/10.1108/RBF-01-2020-0014).
- Kyriazis, N.A. (2020), "Herding behaviour in digital currency markets: an integrated survey and empirical estimation", *Heliyon*, Vol. 6 No. 8, p. e04752, doi: [10.1016/j.heliyon.2020.e04752](https://doi.org/10.1016/j.heliyon.2020.e04752).
- Lobão, J. (2022), "Herding behavior in the market for green cryptocurrencies: evidence from CSSD and CSAD approaches", *Sustainability (Switzerland)*, Vol. 14 No. 19, p. 12542, doi: [10.3390/su141912542](https://doi.org/10.3390/su141912542).
- Muharam, H., Dharmawan, A., Najmudin, N. and Robiyanto, R. (2021), "Herding behavior: evidence from southeast Asian stock markets", in *International Symposia in Economic Theory and Econometrics*. doi: [10.1108/S1571-038620210000028012](https://doi.org/10.1108/S1571-038620210000028012).
- Nor, F.M., Ibrahim, I. and Rashid, M. (2013), "Exposure to investor sentiment in Malaysia: services versus manufacturing stocks", *Global Business and Economics Anthology*, Vol. 1, pp. 239-248.
- Papadamou, S., Kyriazis, N.A., Tzeremes, P. and Corbet, S. (2021), "Herding behaviour and price convergence clubs in cryptocurrencies during bull and bear markets", *Journal of Behavioral and Experimental Finance*, Vol. 30, p. 100469, doi: [10.1016/j.jbef.2021.100469](https://doi.org/10.1016/j.jbef.2021.100469).
- Ramadan, I.Z. (2015), "Cross-sectional absolute deviation approach for testing the herd behavior theory: the case of the ASE index", *International Journal of Economics and Finance*, Vol. 7 No. 3, doi: [10.5539/ijef.v7n3p188](https://doi.org/10.5539/ijef.v7n3p188).

- Rashid, M., Kabir Hassan, M. and Yuen Yein, N. (2014), "Macroeconomics, investor sentiment, and islamic stock price index in Malaysia", *Journal of Economic Cooperation and Development*, Vol. 35, pp. 219-234.
- Raza, S.A., Ahmed, M. and Aloui, C. (2022), "On the asymmetrical connectedness between cryptocurrencies and foreign exchange markets: evidence from the nonparametric quantile on quantile approach", *Research in International Business and Finance*, Vol. 61, p. 101627, doi: [10.1016/j.ribaf.2022.101627](https://doi.org/10.1016/j.ribaf.2022.101627).
- Sherman, R. (2012), "Herding in the foreign exchange market", *SSRN Electronic Journal*. doi: [10.2139/ssrn.1907847](https://doi.org/10.2139/ssrn.1907847).
- Silva, P.V.J.G., Klotzle, M.C., Pinto, A.C.F. and Gomes, L.L. (2019), "Herding behavior and contagion in the cryptocurrency market", *Journal of Behavioral and Experimental Finance*, Vol. 22, pp. 41-50, doi: [10.1016/j.jbef.2019.01.006](https://doi.org/10.1016/j.jbef.2019.01.006).
- Stavroyiannis, S. and Babalos, V. (2019), "Herding behavior in cryptocurrencies revisited: novel evidence from a TVP model", *Journal of Behavioral and Experimental Finance*, Vol. 22, pp. 57-63, doi: [10.1016/j.jbef.2019.02.007](https://doi.org/10.1016/j.jbef.2019.02.007).
- Tetlock, P.C. (2007), "Giving content to investor sentiment: the role of media in the stock market", *Journal of Finance*, Vol. 62 No. 3, pp. 1139-1168, doi: [10.1111/j.1540-6261.2007.01232.x](https://doi.org/10.1111/j.1540-6261.2007.01232.x).
- Vidal-Tomás, D., Ibáñez, A.M. and Farinós, J.E. (2019), "Herding in the cryptocurrency market: CSSD and CSAD approaches", *Finance Research Letters*, Vol. 30, pp. 181-186, doi: [10.1016/j.frl.2018.09.008](https://doi.org/10.1016/j.frl.2018.09.008).
- Yasir, A., Safdar, U. and Javaid, Y. (2022), "Herd behaviour in foreign exchange market", *Journal of Economic Structures*, Vol. 11 No. 1, p. 11, doi: [10.1186/s40008-022-00270-y](https://doi.org/10.1186/s40008-022-00270-y).

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