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RATIONALITY OF INSTITUTIONAL INVESTOR AND INVESTMENT DECISIONS IN CRISIS (A CASE STUDY IN INDONESIA'S TOP-4 BANKS)

Yudha Pradipta Putra[*)1], Wita Juwita Ermawati[*)], Gendut Suprayitno[*)]

[*)] Department of Management, Faculty of Economics and Management, IPB University
Jl. Agatis, IPB Dramaga Campus, Bogor 16680, Indonesia

Abstract: The Covid-19 pandemic triggered fluctuations on the Indonesia Stock Exchange (BEI), particularly in 2020 and 2021. Using data from 720 institutional investors from Indonesia's four largest banks (known as KBMI 4), this study aims to (1) examine the rationality of institutional investors during the pandemic by focusing on investment changes and (2) identifying variables associated with macroeconomics, financial fundamentals, and stock performance that may influence their investment decision. This study employed the Kruskal-Wallis test followed by Dunnett's Multiple Comparison Test. The analysis of the entire sample of investors revealed no statistically significant differences in the value of their investments during the observation period. Further clustered based analysis reveals that investors with high investment value (>$98,700) exhibit investment dynamics, as investment values rose from pre-pandemic levels. The conclusion is that institutional investors have a distinct rationality than individual investors and are generally less susceptible to bias. Panel data modeling: inflation rate, Loan at Risk (LAR) ratio, LAR coverage and Return on Equity (ROE) have a statistically significant impact on the stock investments made by institutional investors in KBMI 4 banks. This identifies asset quality and profitability as two crucial considerations for investors during the pandemic-induced crisis.

Keywords: behavioral finance, covid-19, determinant factors, institutional investors, stock investment

Abstrak: *Pandemi covid-19 memicu fluktuasi di Bursa Efek Indonesia (BEI) khususnya tahun 2020 dan 2021. Menggunakan data 720 investor institusi dari empat bank terbesar di Indonesia (KBMI 4), penelitian ini bertujuan untuk (1) menguji rasionalitas investor institusi selama pandemi dengan berfokus pada perubahan nilai investasi dan (2) mengidentifikasi variabel-variabel yang terkait dengan makroekonomi, fundamental keuangan, dan kinerja saham yang dapat mempengaruhi keputusan investasi mereka. Penelitian ini menggunakan uji ragam Kruskal-Wallis dan Dunnett's Multiple Comparison Test. Analisis terhadap seluruh sampel investor menunjukkan tidak ada perbedaan yang signifikan secara statistik pada nilai investasi mereka selama periode observasi. Analisis berbasis klaster lebih lanjut mengungkapkan bahwa investor dengan nilai investasi tinggi (>USD98,700) menunjukkan dinamika investasi, dengan nilai investasi meningkat dari posisi pra-pandemi. Disimpulkan bahwa investor institusi memiliki rasionalitas yang berbeda dibandingkan investor individu dan umumnya kurang rentan terhadap bias. Pemodelan data panel: tingkat inflasi, rasio Loan at Risk (LAR), LAR Coverage dan Return on Equity (ROE) berpengaruh signifikan terhadap investasi saham yang dilakukan investor institusi pada bank KBMI 4. Menunjukkan kualitas aset dan profitabilitas sebagai dua pertimbangan penting bagi investor selama periode krisis akibat pandemi.*

Kata kunci: *perilaku keuangan, covid-19, faktor determinan, investor institusi, investasi saham*

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[1] Corresponding author:
Email: yudha34483@gmail.com

INTRODUCTION

The global pandemic of Covid-19 poses significant challenges because it differs from previous crises, which were rooted in economics. Market expectations for the rapid spread of infection increased investor panic, resulting in a sharp decline in the stock market and increased share price volatility (Li 2022; Budiarso et al. 2020). In Indonesia, compared to the previous economic crisis, Covid-19 has caused a significant reaction on the capital market as illustrated by the Jakarta Composite Index (JCI), which experienced a sharp correction of 37.8% in less than three months especially since the announcement of the first Covid-19 case in Indonesia on March 2nd, 2020 (Bloomberg, 2023).

In addition to the immediate impact of investor panic, the Covid-19 pandemic accompanied by social restriction policies has caused an economic slowdown (Gong et al. 2022). In 2020, Indonesia's economic growth contracted by -2.1% compared to 2019 of +5.0% (BPS, 2021). Additionally, the banking sector was impacted by this condition. The banking sector faces challenges in the form of weakening demand for credit and a decline in debtors' ability to fulfill credit obligations (Awad et al. 2020; Sukerta et al. 2021). This has an impact on asset quality and requires banks to carry out aggressive credit restructuring, as well as a decrease in fee-based income as indicated by a decline in bank profitability in 2020 and 2021 (OECD, 2021). This condition also occurred in the four largest banks in Indonesia, namely Bank Rakyat Indonesia (BBRI. IJ), Bank Mandiri (BMRI.IJ), Bank Central Asia (BBCA.IJ), and Bank Negara Indonesia (BBNI.IJ), which recorded a decrease in net profit and fluctuations in share prices. The four largest banks in Indonesia have significant value in the market, with combined total assets in June 2022 reaching IDR 5,649 trillion or 55.5% of total banking assets. The total market capitalization of these 4 banks as of April 2022 reached IDR 2,214 trillion or equivalent to 24.8% of total IDX market cap. In addition to their significant market cap, total foreign investor ownership in BBRI, BMRI, and BBNI is also dominant, accounting for almost a third of total foreign ownership in the Indonesia Stock Exchange (IDX) (Bloomberg, 2023).

An outflow of foreign investment followed the sharp-flow contraction from JCI. The share of foreign institutional investor ownership in IDX decreased from 52% in 2019 to 45% in 2021, with the total trading value decreasing from 32% in 2019 to 25% in June 2021 (IDX, 2021). In contrast, during 2020-2021, IDX was marked by high growth in domestic investors mainly retail investors. The presence of institutional investors has value for the company because it can influence the formation of market prices (Huo et al. 2021). Its presence is perceived as a long-term investor because the duration of its investment is multiyear and is considered capable of increasing the company's value (Chen et al. 2022), which influences the direction of company policy. This is done through the mechanism of submitting concerns and interests to management (Ferreira & Matos, 2008).

The decline in share ownership by institutional investors, especially foreign investors, amidst market volatility in 2020 was also observed at KBMI 4 bank where the proportion of foreign investors fell by 3.8%, with the steepest decline occurring at BBNI where foreign investors ownership fell from 26.4% to 18.5% of free float (BBNI, 2022). This cannot be separated from the investment decisions each investor makes. Numerous studies have linked behavioral biases such as trait anger, anxiety, overconfidence, and herding effect on investment decisions, especially by individual investors (Rahman & Gan, 2020). Aren et al. (2016) conducted a literature review on the behavior of institutional investors using journals published on Thomson Reuters Web of Science between 2005 and 2014. It was stated that research on institutional investor behavior focuses on three biases: home bias, disposition effect, and herding behavior, with the conclusion that numerous studies demonstrate the existence of home bias and herding behavior but not disposition effect. A literature review conducted by Blaszke (2021) on the most pertinent studies on the effect of institutional investors on stock price volatility concluded that current research focuses more on differences in the characteristics of institutional investors that can be considered to be significant contributors to stock price volatility, such as granular investor characteristics, level of proficiency and expertise, and portfolio diversification. For this reason, this research is expected to provide additional literature regarding the behavior and rationality of institutional investors, especially in the midst of the crisis caused by the pandemic, for which the researcher believes the literature is still limited in Indonesia.

In an ideal environment, institutional investors are considered rational (Carpentier, 2020). This relates to several influencing factors, such as compliance with investment regulations contained in the form of a constitution, investment limits set by the beneficial owner, compatibility of asset risk characteristics with liabilities. This is supported by the findings of Zunara et al. (2022), who demonstrate that institutional investors are more influenced by rational sentiments than irrational ones, whereas individual investors are more influenced by the reverse. Assuming that institutional investors prioritize a rational approach when making investment decisions (Candy & Guseriwan, 2020; Sakinah et al. 2021), It can be argued that financial fundamentals should be the primary basis for valuation, including financial ratios (Idawati et al. 2018). These relate to business growth rates, profitability ratios such as Return on Assets (ROA) and Return on Equity (ROE), as well as market ratios including Price to Book Value (PBV), Price to Earnings Ratio (PER), Dividend Yield (PER), and Price Earning Growth (PEG). In addition, technical analysis usually includes consideration of stock performance factors and macroeconomic indicators as integral components (Patil & Bagodi, 2021).

Given the research problem of share prices volatility and the decline of institutional investors investment during pandemic, the objectives of this study are (1) to examine the response of institutional investors in the four major banks in Indonesia (KBMI 4) to the Covid-19 pandemic, specifically to investigate the alterations made to their stock investment portfolios; and (2) analyze the pertinent macroeconomic indicators, financial fundamentals, and stock performance as determinant factors in this regard. The anticipated outcomes of this research endeavor are poised to provide valuable understanding regarding the responses and inclinations of investors, particularly institutional investors, in relation to capital market during periods of crisis. The findings of this study, in addition to being scientific literature, are anticipated to serve as a valuable resource for banks in the development of communication strategies and the effective management of relationships with investors. By doing so, banks can strive to optimize institutional investors' investments.

METHODS

This research employed panel data in the form of institutional investor share ownership data and the financial performance of the four largest banks in Indonesia, namely BRI (BBRI.IJ), Bank Mandiri (BMRI.IJ), BCA (BBCA.IJ), and BNI (BBNI.IJ), collectively referred to as KBMI 4 (banks with a substantial core capital or CET-1 exceeding IDR 70 trillion) from January 2019 to June 2022. This data is obtained from each bank's monthly financial reports, a report on institutional investor share ownership in KBMI 4 banks owned by BBNI.IJ, reports from the Central Statistics Agency (BPS), and stock performance data sourced from Bloomberg and RTI Analytics platforms. The population in this study are institutional investors of KBMI 4 banks. The sample was selected using a purposive technique specifically consisted of investors who possessed a pre-determined investment style, namely value investment, growth investment, and GARP (Growth-At-Reasonable-Price), with a total sample size of 720 investors meeting the criteria.

The obtained data is evaluated using the variance test as the omnibus test. If the data are not normally distributed, the Kruskal Wallis test is used as substituted for ANOVA, followed by Dunnett Multiple Comparison Test to determine if institutional investors' preferences and investment values change over time. In doing so, we divide the observation period into three, namely pre-pandemic (January 2019 to February 2020), pandemic (March 2020 to June 2021), and recovery (July 2021 to June 2022). Hypothesis is formulated as H_0: $\mu1=\mu2=\mu3$ (where 1: pre-pandemic; 2: pandemic; and 3: recovery phase), and H_1: at least one comes from a different distribution than the others $\mu i \neq \mu j$.

In order to examine the factors influencing investment decisions for institutional investors, this study employs panel data modeling with regression analysis to analyze the impact of various macroeconomic indicators (presented in Table 1), financial fundamentals (presented in Table 2), and stock performance (presented in Table 3). The dependent variable in this study refers to the investment value of institutional investors at Bank KBMI 4, while the independent variable and its relationship hypothesis with the dependent variable.

RESULTS

The rationality of investors in their response to the pandemic

An exploratory data analysis was conducted to provide an overview of the sample data's distribution and behavior (Figure 1). The range of data for the investment value of 720 institutional investors in Indonesia Top-4 banks (KBMI 4) appears to be comparable. The investment value is below the lower limit of Ln 0 to 20 (equivalent to USD 485.2 million) for the upper limit, and there are no outlier values in the three observation periods.

The size of the box decreased slightly during the pandemic and increased again during the recovery, but the difference in value is not significant. This indicates that institutional investors at KBMI 4 bank have adjusted their investment values in response to the pandemic so that they no longer fluctuate significantly with the market, but they are not overly reactive to the pandemic because the mean and median were not much different. In line with the descriptive explanation, the analysis of variance using the non-parametric test showed no difference in the average investment value of institutional investors at the KBMI 4 bank in the three periods, as presented in Table 4.

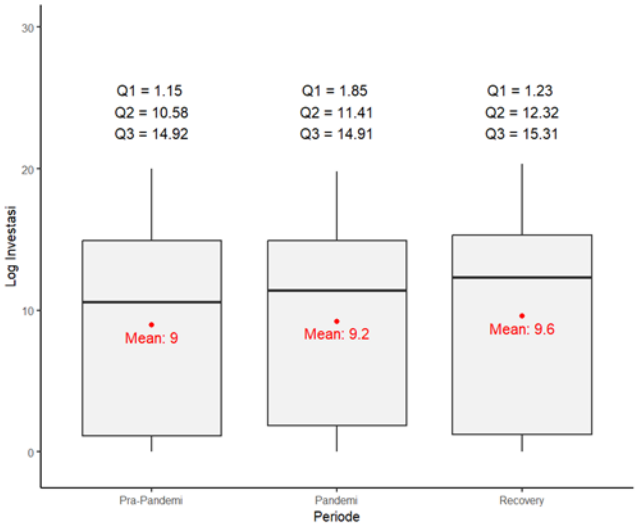

Figure 1. Boxplot of investment value of institutional investors in KBMI 4 banks during the observation period (BBNI subscription report, 2022)

Table 1. Macroeconomic

Indicators	Directional Hypothesis	Reference
GDP Growth (GDP)	Positive	Zuhroh (2020)
Inflation rate (INF)	Positive	Vezar (2022), Kurniawan & Yuniati (2019)
Reference Rate (BIR)	Positive	Adwiyah (2014)
Covid-19 cases (C19)	Negative	Guven et al (2022)

Table 2. Financial fundamentals

Indicators	Directional Hypothesis	Reference
Loan at Risk (LAR)	Negative	OECD (2021), Abbas et al (2019)
LAR coverage (LCO)	Negative	OECD (2021), Abbas et al (2019)
Return on Equity (ROE)	Positive	Pennacchi & Santos (2021)
Net Interest Margin (NIM)	Positive	Saksonova (2014)
PPOP growth (PPO)	Positive	Setiawan & Tjiasaka (2017)
Loan to Deposit (LDR)	Positive	Chen et al (2018)
CASA ratio (CAS)	Positive	Khabibah et al (2020)
Loan Growth (LON)	Positive	Bosshardt & Cerutti (2020)
Capital Adequacy (CAR)	Positive	Demirguc-Kunt et al (2010)

Table 3. Stock performance

Indicators	Directional Hypothesis	Reference
Share Price Volatility (SPV)	Negative	Li (2022)
Price to Book (PBV)	Positive	Daniswara & Daryanto (2019)
Price to Earnings (PER)	Positive	Lajevardi (2014)
Price Earning Growth (PEG)	Negative	Lajevardi (2014)
Dividend Yield (DIV)	Positive	Raza et al. (2018)
Sell Side Analyst Recommendation (REC)	Positive	Qasem et al. (2021)

Table 4. Summary of the variance test on the investment by institutional investors between periods

	Analysis of Variance Pr (>F)	Kruskal Wallis Pr (>F)
Period (Pre-Pandemic vs Pandemic vs Recovery)	0.18	0.18
Shapiro-Wilk	< 0.00	
Levene's	0.81	

The Shapiro-Wilk test was used to determine normality. When compared to other tests, this test has a relatively good test power for short-tailed symmetric data and long-tailed data (Razali & Yap, 2011). Levene's test was also used to do the variance homogeneity test. For asymmetric (exponential) distribution data, Levene's test is the best approach to analyze variance homogeneity. Violating the assumption of variance homogeneity might result in a loss of efficiency of the estimator of variance in measuring treatment effects, which can lead to erroneous findings (Hatidja, 2000).

Normality test using Shapiro-Wilk with a 90% confidence interval concluded that the data was not normally distributed. Meanwhile, the Levene test shows that the assumption of homogeneity of variance is met, meaning that the data group comes from a population that has the same variance (homogeneous). The Kruskal-Wallis test was chosen over one-way ANOVA test due to the non-normal distribution of data, which then produce a p-value= 0.18 greater than= 0.1, indicating that H_0 (populations median are equal) cannot be rejected. The interpretation of these results supports the contention that institutional investors, who tend to be more experienced than individual investors, are less influenced by behavioral biases and have a higher degree of rationality when responding to the Covid-19 pandemic. This is consistent with previous research findings (Carpentier, 2020; Zunara et al. 2022) that demonstrate the rationality of institutional investors.

Given the wide range of investor investment values, a clustered based analysis was used for further analysis. The goal was to determine if there were differences in investor rationality across investor groups with different investment value scales. From 720 observed data, a scree plot and silhouette analysis determined that 2 clusters were the ideal number, and their composition is displayed in Table 5. Cluster 1 is a group of investors with an immense investment value above ln 11.5 or equivalent to ~USD 98.7 thousand. Of the 720 observed data, 308 (43%) fall into this category.

Table 6 summarizes the Kruskal Wallis Test on both clusters. The Kruskal-Wallis test in Cluster 1 produces a P-value (0.10) which is not greater than α (0.10), so H_0 (populations median are equal) is rejected. Meanwhile, in Cluster 2, a P-value (0.38) was obtained, which was more significant than α (0.10), so H_0 failed to be rejected. The results of this general test show that differences in investment between periods only occur in Cluster 1, namely, investors with high investment values. A further test was carried out using Dunnett's Multiple Comparison Test to identify how these differences occurred between treatments. The Dunnet test is carried out by comparing pairs of mean scores. The Dunnett test results with α 10% for Cluster 1 (Table 7) conclude that there was an increase in the mean investment during the pandemic period compared to pre-pandemic.

Table 5. Cluster characteristics

Cluster	n	Average log of investment	Median	Min	Max
Cluster 1	308	15.0	14.8	11.5	19.8
Cluster 2	412	4.9	4.4	0.3	11.3

Table 6. Summary of Kruskal Wallis' Test on Data Cluster

	Analysis of Variance P r (>F)		Kruskal Wallis P r (>F)	
	Cluster 1	Cluster 2	Cluster 1	Cluster 2
Period (Pre-Pandemic vs Pandemic vs Recovery)	0.01	0.07	0.10*	0.38
Effect (Grouping)				
Pre-Pandemic			15.02	2.74
Pandemic			15.23	3.05
Recovery			15.29	3.31
Shapiro-Wilk	<0.00	<0.00		

Table 7. Summary of P-values in the Dunnet Test for Cluster 1

	Pandemic	Pre-Pandemic
Pre-Pandemic	0.0487*	
Recovery	0.3558	0.0213

Reject H0 if $p \leq \alpha/2$, $\alpha = 10\%$

The finding of increasing share investment by investor group with high investment value warrants further investigation. Amidst the ongoing pandemic, the KBMI 4 bank experienced a decline in its valuation, specifically in terms of Price to Book Value. Consequently, the share price has become more affordable compared to the historical average, indicating an undervalued status. Investors find the company appealing due to its comparatively low price in relation to its intrinsic value and the potential for an imminent recovery. This bolsters the previous findings that institutional investors are not reactive and are typically rational. Improvements in bank internal performance have a positive impact on PBV (Pasaribu et al. 2019), so it is possible that KBMI 4 bank share prices will rise in the future alongside the pandemic recovery.

Determinants that influence investors' investment decisions

The examination of macroeconomic factors, financial performance fundamentals, and stock performance as influential factors in investment decision-making is of particular importance in the study of investors' financial behavior. This analysis also aids banks in devising strategies to optimize investors' investments. To begin with, the dataset employed in this study exhibits a substantial disparity between the number of individual observations (n) and the number of time periods (t). Consequently, the likelihood of encountering stationarity issues is theoretically minimal. Nevertheless, the application of the Augmented Dickey-Fuller (ADF) test is still conducted, with the null hypothesis (H_0)= non-stationary data and H_1= stationary data. If the p-value is greater than α (5%), H_0 is accepted and it is determined that the data are not stationary. The test results yielded a p-value of 0.01, thereby rejecting H_0 and concluding that the investment log data exhibits stationarity at a level. Table 8 presents the descriptive statistics for variables used in the study.

Table 9 shows the regression result for the preferences of aggregate institutional investors. Data on investor investment values during the pre-pandemic, pandemic, and recovery periods are aggregated to capture the overall investment pattern of investors over time, thereby capturing the factors that influence the changes in these investments. Chow test, Hausman test, and Lagrange Multiplier test are employed to assess the appropriateness and efficacy of the model in the panel data estimation technique. Table 10 shows the summary of panel model evaluation. The results of the Chow test, Hausman test, and Lagrange Multiplier test indicate that the random effect model is the best estimator.

Table 8. Summary Statistics

Variable	Tag	Mean	SD
Log Investment Value	Log Investment	9.25	7.40
GDP Growth	GDPg	2.66	3.68
Inflation Rate	INF	2.33	0.80
Reference Rate	BIR	4.33	0.93
Covid-19 cases	C19	4,235	7,541
Loan at Risk (LaR)	LAR	16.62	7.80
LaR Coverage	LCO	38.62	12.29
Return on Equity	ROE	15.19	3.82
Net Interest Margin	NIM	5.76	0.97
PPOP Growth	PPO	10.84	13.99
Loan to Deposit Ratio	LDR	84.60	8.88
CASA Ratio	CAS	68.02	7.27
Loan Growth	LON	7.30	5.05
Capital Adequacy Ratio	CAR	21.19	2.74
Price to Book Value	PBV	2.51	1.29
Price to Earnings	PER	19.35	9.99
Price Earning Growth	PEG	2.01	3.57
Share Price Volatility	SPV	-0.03	0.17
Dividend Yield	DIV	2.87	1.68

Table 9. The preferences of KBMI 4 bank's institutional investors

Independent variables	Pooled OLS	Fixed effects	Random effects	Independent variables	Pooled OLS	Fixed effects	Random effects
GDPg	-0.02	-0.02	-0.02	CAS	-0.08***	-0.07***	-0.06***
	(0.02)	(0.02)	(0.02)		(0.02)	(0.02)	(0.02)
Factor(REC) Hold	-0.24**		-0.27	LON	0.05***	0.06***	0.05***
	(0.15)		(0.58)		(0.02)	(0.01)	(0.01)
INF	0.18	0.17**	0.14**	CAR	0.02	-0.03	0.01
	(0.11)	(0.07)	(0.07)		(0.03)	(0.02)	(0.02)
BIR	-0.85***	-0.75***	-0.76***	PBV	0.73***	-0.27	0.38**
	(0.14)	(0.10)	(0.10)		(0.19)	(0.22)	(0.16)
C19	0.0000*	0.0000**	0.0000**	PER	0.01	0.01**	0.01*
	(0.0000)	(0.0000)	(0.0000)		(0.01)	(0.01)	(0.01)
LAR	-0.09***	-0.09***	-0.09***	PEG	0.06***	0.07	0.07***
	(0.02)	(0.01)	(0.01)		(0.02)	(0.01)	(0.01)
LCO	-0.03***	-0.04***	-0.03***	SPV	-0.07	1.19***	0.36
	(0.01)	(0.005)	(0.005)		(0.48)	(0.41)	(0.35)
ROE	0.05**	0.05***	0.05**	DIV	0.03	0.09**	0.09**
	(0.02)	(0.01)	(0.01)		(0.05)	(0.04)	(0.04)
NIM	0.24	-0.12	0.08	Constant	22.61***		21.48***
	(0.16)	(0.14)	(0.13)		(2.08)		(1.81)
PPO	-0.02***	-0.01***	-0.01***	Observations	30.24	30.24	30.24
	(0.01)	(0.004)	(0.004)	R2	0.05	0.02	0.02
LDR	-0.07***	-0.05***	-0.06***	Adjusted R2	0.04	-0.004	0.02
	(0.02)	(0.01)	(0.01)	F Statistic	61.91***	32.94***	653.96***

Notes: ***, **, * represent statistical significance at the 1%, 5%, and 10%, respectively

Following the selection of the random model as the best estimator, classical assumptions test in Table 11 reveals violations in the assumptions of autocorrelation, homoscedasticity, and cross-dependence. The assumptions of homoscedasticity and autocorrelation are crucial as the anticipated error distribution is expected to be random, homoscedastic, and normally distributed. In order to address deviations from these assumptions, adjustments are applied to the estimator errors through the utilization of Driscoll-Kray robust standard errors. The Driscoll-Kraay estimator is a correction method for violations of classic assumptions in panel data regression models, specifically violations of the homoscedasticity and non-autocorrelation assumptions. This method is appropriate to use when the number of individuals (cross section) exceeds the number of time periods (time series) (Marhazni, 2016).

Based on the estimation results obtained from the Robust Standard Error model (Table 12), we found certain independent variables have a significant impact on the model. Specifically, the inflation rate (INF) in the macroeconomic domain, as well as loan at risk (LAR), LAR coverage (LCO), and return on equity (ROE) in relation to performance fundamentals.

The coefficient of 0.1435 indicates a positive and significant impact of inflation on the investment value of KBMI 4 bank investors. This finding aligns with the research conducted by Vezar (2022), which asserts that the inflation variable exhibits a noteworthy positive correlation and impact on stock prices during the period of the pandemic. From a practical standpoint, it can be observed that Indonesia has experienced a decline in its inflation rate during the pandemic. Specifically, there has been a decrease from 2.72% in 2019 to 1.68% in 2020. This phenomenon is indicative of the deceleration in economic growth, which has concurrently resulted in a decline in individuals' ability to make purchases. It is reasonable for investors to consider the annual inflation rate as a significant indicator, as its upward trend signals economic recovery, thereby positively influencing the profitability of KBMI 4 banks.

The presence of Loan at Risk (LAR) and LAR coverage has a substantial and adverse impact on the investment value of investors, as evidenced by the coefficients of -0.0941 and -0.0334, respectively. The Loan to Asset Ratio (LAR) refers to the proportion of non-current loans held by individual banks, whereas LAR coverage represents the ratio of the allowance for impairment losses (CKPN) established to cover potential losses on these loans, relative to the total LAR. The observed inverse correlation aligns with the findings of the OECD publication (2021), which indicates that the Covid-19 pandemic has resulted in a decline in the quality of assets and a significant rise in the Loan-to-Asset Ratio (LAR). From a practical standpoint, it can be observed that an increase in LAR will result in a decline in bank interest income, consequently leading to a reduction in profitability. In the midst of the pandemic, the establishment of CKPN had a negative impact on the bank's financial performance, specifically in terms of profit. The expansion of LAR coverage played a role in the considerable decline in KBMI 4 bank profits.

Table 10. Summary of panel model evaluation (α= 10%)

Test	Hypothesis	P-Value	Conclusion
Chow	H0: pooled; H1: fixed	< 0.00	Fixed Effect Model
Hausman	H0: random; H1: fixed	0.46	Random Effect Model
Lagrange Multiplier	H0: pooled; H1: random	< 0.00	Random Effect Model

Table 11. Summary of the classical test assumptions

Test	Hypothesis	P-Value	Conclusion
Breusch-Godfrey test for autocorrelation	H0: no autocorrelation	< 0.00	H0 is rejected, the error term shows autocorrelation
Heteroscedasticity	H0: no heteroscedasticity	< 0.001	Heteroscedasticity is present
Cross Dependence	H0: no contemporaneous effect	< 0.00	contemporaneous effect is present

Table 12. Results of Driscoll-Kray Robust Standard Errors correction

Y	Coefficient	Robust Std. Error	t	P>|t|
GDPg	-0.0236	0.0296	-0.7971	0.4254
Factor (REC) Hold	0.1212	0.1808	0.6700	0.5029
INF	0.1435	0.0868	1.6537	* 0.0982
BIR	-0.7608	0.1286	-5.9156	0.0000
C19	0.00001	0.0000	2.1265	0.0335
LAR	-0.0941	0.0177	-5.3142	* 0.0000
LCO	-0.0334	0.0080	-4.1934	* 0.0000
ROE	0.0493	0.0145	3.4004	* 0.0007
NIM	0.0850	0.1307	0.6505	0.5154
PPO	-0.0140	0.0039	-3.6139	0.0003
LDR	-0.0620	0.0215	-2.8796	0.0040
CAS	-0.0562	0.0213	-2.6357	0.0084
LON	0.0488	0.0157	3.1053	0.0019
CAR	0.0078	0.0245	0.3199	0.7491
PBV	0.3767	0.2625	1.4351	0.1513
PER	0.0096	0.0069	1.3880	0.1652
PEG	0.0689	0.0251	2.7434	0.0061
SPV	0.3599	0.4658	0.7725	0.4398
DIV	0.0892	0.0886	1.0066	0.3141

Notes: * The variable is statistically significant at the 10% level and has a relationship with the dependent variable, per the initial hypothesis.

The investment value of KBMI 4 bank investors is significantly and positively influenced by Return on Equity (ROE). A higher ROE indicates the company's enhanced capacity to efficiently utilize capital in order to generate substantial returns for its shareholders. During the period of a global pandemic, the financial performance of KBMI 4 bank experienced considerable strain, leading to a notable impact on its profitability. As a result, investors commonly rely on the Return on Equity (ROE) ratio as a key indicator to evaluate the bank's performance relative to its peers and to gauge the extent of its recovery from the adverse effects of the pandemic.

Managerial Implication

The literature on the effects of the pandemic on the economy and capital markets in various regions is expanding, with conclusion that the market reacted negatively, as evidenced by an abnormal decline in returns. This paper contributes to managerial implications by providing further understanding of the reactions and preferences of investors, particularly institutional investors in the capital market, in response to drastic changes such as a pandemic. This is important for policymakers and banks in managing institutional shareholders. First, using aggregate data, this study demonstrates the rationality of institutional investors by failing to identify any significant differences in investment value during the pre-pandemic, pandemic, and recovery periods. Further testing by dividing the sample into two clusters revealed that investment dynamics existed only in the investor cluster with large investment values (above USD 98,7 thousand). There was an increase in investment during pandemic, but no significant differences during the recovery period. Based on these findings, banks are expected to adopt proactive, organized, and investor-focused communication strategies in the event of future crises. Considering that institutional investors are not reactive. Then, we identified four variables that significantly affect the value of investors' investments and have coefficients that are consistent with the hypothesized direction of the relationship: inflation rate (INF) on the macroeconomic side; loan at risk (LAR), loan at risk coverage (LCO), and return on equity (ROE) on the fundamental side. We then conclude that in the midst of the pandemic, investors are focusing on economic recovery indicators and performance fundamentals, particularly those pertaining to asset quality. Most certainly, the results of this research will be able to assist banks in formulating strategies to optimize investments by institutional investors that have strategic value because they have a long investment period, and can help increase the value of the company.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

No investment dynamics were detected between the pre-pandemic, pandemic, and recovery periods, based on analyses of institutional investor data from KBMI 4 bank. Nevertheless, additional testing by grouping the data into two clusters reveals that investment dynamics occur in clusters of investors with high investment values. The increase in investment occurred during the pandemic compared to pre-pandemic, but no significant difference was found between the pandemic and recovery periods. These findings bolster the argument that institutional investors are rational, as they do not react impulsively to share price volatility during the pandemic. In addition, this demonstrates that the management's efforts to increase communication with investors and send positive signals to calm the market are quite effective. There was an increase in investment value by institutional investors with large investment values, which can be attributed to the decrease in the KBMI 4 bank's valuation in the pandemic so that KBMI bank shares became cheaper than the historical average (undervalued), as well as the expectation that the KBMI 4 bank will have an aggressive growth projection above the post-pandemic market average and even have the potential to realize growth above market consensus.

Furthermore, according to panel data modeling, it can be inferred that the investment value of KBMI 4 bank investors is significantly influenced by certain independent variables. Specifically, inflation rate (INF) in macroeconomic perspective. Additionally, in terms of fundamental performance, variables such as Loan at Risk (LAR), LAR coverage (LCO), and Return on Equity (ROE) have a significant impact on the investment value, indicating that asset quality and profitability are essential criteria for investors when making equity investment decisions in the banking sector, particularly in an unfavorable business environment.

This research contributes to the elaboration regarding the reaction of investors, especially institutional investors in the capital market, to drastic changes such as the Covid-19 pandemic and can be used as reference material for further research on the concept of behavioral finance in the context of institutional investors whose behavior is different from individual investors in general. For the four largest banks in Indonesia that are the object of this research, the findings can be used as a reference in developing communication strategies and managing investor relations so that investment by institutional investors, especially foreigners, becomes more optimal.

Recommendations

Despite the fact that this is merely a case study of the four largest banks in Indonesia, the results are fairly representative due to the substantial market value of the four banks, which accounted for 55.5% of total Indonesian banking assets as of May 2022 and 24.8% of IDX's total market capitalization as of April 2022. in addition to being relevant for KBMI 4 bank, the findings of this study can be used as a reference by the banking sector in general, as well as by listed companies in other industries, in developing effective communication strategies to optimize investment from institutional investors. Future study is anticipated to broaden its focus to include industries other than banking to offer a distinct viewpoint and investigate behavioral elements like investing style and location base that affect investors' investment decisions.

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