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DIFFERENCES IN STOCK PERFORMANCE OF THE SRI-KEHATI AND LQ45 INDEX THROUGH RISK-ADJUSTED RETURN METHOD

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ABSTRACT

This research aims to examine differences in stock performance between the SRI-KEHATI and LQ45 indices using the risk adjusted return method through the Sharpe, Treynor and Jensen ratios. Testing was carried out from 2020 to 2022 on fifteen SRI-KEHATI index shares and fifteen LQ45 shares using the Mann-Whitney test, Independent Sample t Test, and Kruskal-Wallis test. The research results show that there are no differences in stock performance in the two indices using the Sharpe method, Treynor and Jensen methods. It was also found that there were differences between the three methods in the SRI-KEHATI and LQ45 indexes, where the Treynor method was the most consistent method in measuring the performance of the two indices. Overall, the LQ45 index is superior based on average stock performance, especially in the 2020 and 2021 periods, so it can outperform the increase in the SRI-KEHATI index in 2022.

Keywords: *Stock performance evaluation, Sharpe method, Treynor method, Jensen method*

1. INTRODUCTION

Investment among Indonesians is now turning into a lifestyle. The emergence of various fintech applications to facilitate access to the capital market has triggered people to realize the importance of investing. Based on data from the Kustodian Sentral Efek Indonesia (KSEI), capital market investors began to be dominated by the younger generation under 30 years of age, at 58.74% (Awal, 2023). In addition, the total number of stock investors in the capital market in December 2022 reached 4.44 million, which has increased by 28.64% from the previous year and tripled compared to 2020.

Stocks are the second most popular investment instrument for young people in the capital market because they provide the potential for substantial returns but also come with substantial risks. This is closely related to the term "high risk, high return," which shows that the relationship between the level of profit and the level of risk is called the risk-return trade-off. In practice, many investors focus more on the rate of return without paying attention to the risks involved. This can cause investors to make the wrong investment decisions and potentially suffer losses. Therefore, an approach is needed to help investors understand the relationship between return and investment risk.

Rooted in modern portfolio theory, which emphasizes the assessment of the overall level of return and risk in a portfolio and the importance of diversifying so as to obtain an optimal portfolio (Hakim & Sudaryo, 2022). Accompanied by the development of the Capital Asset Pricing Model (CAPM) theory which focuses more on asset valuation (Hakim & Sudaryo, 2022). The concept created a measure to assess portfolio performance based on its risk level called Risk-Adjusted Performance Measure (RAPM). RAPM has several methods, but this research only focuses on using three methods; the Sharpe, Treynor, and Jensen ratios. These three ratios use different measurements, with the Sharpe ratio focusing on total risk (standard

deviation), the Treynor ratio focusing on systematic risk (beta), and the Jensen ratio focusing on the comparison of excess return with expected return (alpha) (Siswanto, 2020).

This method is also often used to compare the performance of stock indices. For example, in their research, Azhar & Wulandari (2020) found that there are differences in performance between the JII and SRI-KEHATI stock indices as measured by the risk adjusted return method, and on average, the SRI-KEHATI index is superior. Similar research was also conducted by Sumarmo et al. (2019) and found that the performance of LQ45 stocks is superior to the JII stock index.

The LQ45 Index is one of the popular stock indices that investors often use as a reference to form investment decisions. This index is the most actively traded stock in the capital market. It is also often recommended for beginners who want to start investing because it contains 45 issuers that are actively traded in the capital market and have good fundamentals, which can be said that the performance of this index is relatively stable. Another index that has no less good performance is the SRI-KEHATI index with 25 issuers that support sustainable businesses and are relevant to the Sustainable Development Goals (SDGs). Some stocks in the SRI-KEHATI index are also found in the LQ45 index because they have some similar criteria. However, the performance of LQ45 stocks is still unable to outperform the JCI and the SRI-KEHATI index as shown in Figure 1 below.

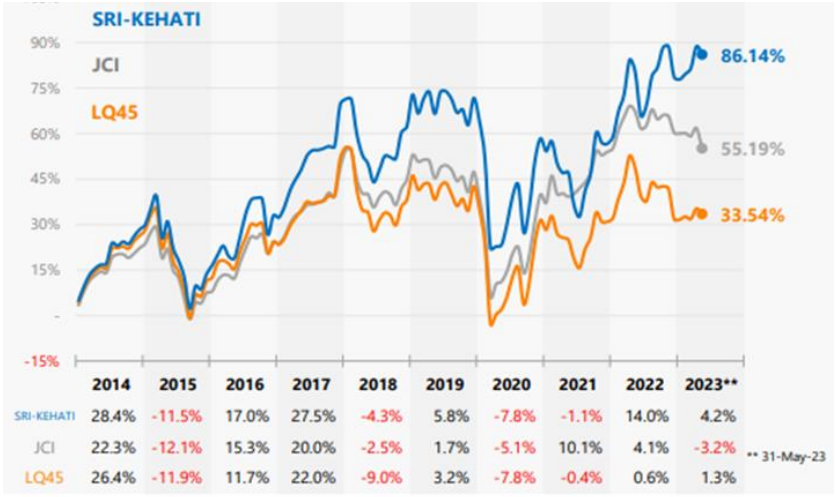

Figure 1. Stock Index Performance for the Period 2014 –2023
Image Source: www.idx.co.id

These two stock indices have been discussed in several studies. In their research, Yasya et al. (2023) found no difference in the level of risk between the LQ45 and SRI-KEHATI stock indices. Research Pertiwi & Meirinaldi (2016) measured, more specifically, the risk level of these two stock portfolios for the period 2010 – 2014 through the risk adjusted return method and found that LQ45 had superior performance. However, the study focused more on portfolio formation, resulting in only one aggregate value for each stock performance measurement method to find the stock index that provides the best performance.

In addition to finding performance differences between stock indices, there are other studies that also find the most consistent ratios. In their research, Yuri et al. (2022) showed that there were differences between the Sharpe, Treynor, and Jensen methods, with the Treynor method was the one that was able to provide consistent results. Research by Aprilianti et al. (2022)

provides opposite results with no difference between the Sharpe, Treynor, and Jensen methods, with the Sharpe method being a method capable of providing consistent results. The same thing was also found by Bukit et al. (2019) who found the Jensen method to be the recommended method because it is able to provide consistent results.

There has been no research that directly compares the performance differences of the SRI-KEHATI and LQ45 indices through the risk adjusted return method, and the inconsistencies in previous research related to the differences and between the three methods sparked the birth of research related to "Difference in Stock Performance of the SRI-KEHATI and LQ45 Index through Risk-Adjusted Return Method".

The main problem in this study is "How is the performance of the SRI-KEHATI and LQ45 stock indices for the period 2020–2022 through the risk adjusted return method?". The problem is then described more specifically as follows: (1) Is there a difference in stock performance between the SRI-KEHATI index and LQ45 through the Sharpe method? (2) Is there a difference in stock performance between the SRI-KEHATI index and LQ45 through the Treynor method? (3) Is there a difference in stock performance between the SRI-KEHATI index and LQ45 through the Jensen method? (4) Is there a difference between the Sharpe, Treynor, and Jensen methods in measuring SRI-KEHATI stock performance? (5) Is there a difference between the Sharpe, Treynor, and Jensen methods in measuring LQ45 stock performance?

The implications of this research can help investors in choosing to invest in stock indices that produce good performance and choose to use appropriate measurement methods in times of crisis.

2. LITERATURE REVIEW

Modern Portfolio Theory (MPT)

Modern Portfolio Theory (MPT) was created in 1952 by Harry Max Markowitz. This theory is based on the tendency of investors to avoid risk by forming portfolios so as to maximize expected profits. This theory states that there is a relationship between return and risk, which is described in the Efficient Frontier. The Efficient Frontier is a portfolio that can provide the lowest risk at a certain level of expected return or vice versa (Hidajat, 2021).

Capital Asset Pricing Model (CAPM)

CAPM is a development of the MPT theory initiated by William Sharpe in 1964, John Lintner in 1965, and Jan Mossin in 1969, which is a framework that helps in understanding the relationship between systematic risk and rate of return (Hakim & Sudaryo, 2022). CAPM is used in assessing the fair price of stocks and is also the basis of the Jensen ratio in comparing stock performance with market performance. This model is also the basis for creating stock performance measurements in Sharpe and Treynor ratios.

Sharpe Method or RVAR (Reward-to-Variability Ratio)

Sharpe method is a method developed by William Sharpe that compares excess return with total risk measured using a standard deviation (Siswanto, 2020). The greater the resulting value, the more optimal portfolio performance. The formula for this method is as follows:

$$RVAR = \frac{TR_p - R_f}{\sigma_p}$$

Treynor Method or RVOL (Reward-to-Volatility Ratio)

Treynor method is a method developed by Jack Treynor that compares excess return to systematic risk measured using beta (Siswanto, 2020). The better the portfolio, the higher the value of the Treynor measure. The formula for this method is as follows:

$$RVOL = \frac{TR_p - R_f}{\beta_p}$$

Jensen's Alpha Method

The Jensen method is a method to find the difference between actual return and expected return with excess return expressed using alpha (Siswanto, 2020). The higher the Jensen measure, the superior the portfolio performance. A positive excess return will consistently produce a positive alpha, and vice versa. The use of the formula for this method is as follows:

$$\alpha_P = [R_p - R_F] - \beta_p \,.\, [R_M - R_F]$$

Hypothesis Formulation

The hypotheses that arise in this study are as follows:
H_1: There is a performance difference between the SRI-KEHATI stock portfolio and LQ45 through the Sharpe method.
H_2: There is a performance difference between the SRI-KEHATI stock portfolio and LQ45 through the Treynor method.
H_3: There is a performance difference between the SRI-KEHATI stock portfolio and LQ45 through the Jensen method.
H_4: There is a difference between the Sharpe, Treynor, and Jensen methods in measuring the performance of SRI-KEHATI stocks.
H_5: There is a difference between the Sharpe, Treynor, and Jensen methods in measuring the performance of LQ45 stocks.

3. RESEARCH METHOD

Data collection techniques are in the form of observations on secondary data that can be accessed through www.investing.com and www.bi.go.id. The population used in this study is based on the LQ45 and SRI-KEHATI indices. This study uses a type of non-probability sampling in the form of purposive sampling based on the following criteria: (1) Companies listed consistently in the January 2020 – December 2022 period; (2) Companies listed on both indexes at the same time will be placed on SRI-KEHATI. It was found that 15 companies met the criteria for both the SRI-KEHATI and LQ45 indexes. Data was processed using Microsoft Excel and SPSS v.29.

4. ANALYSIS AND DISCUSSION

Normality Test

Table 1. Normality Test

	INDEX	Shapiro-Wilk			METHOD		Shapiro-Wilk		
		Statistic	df	Sig.			Statistic	df	Sig.
SHARPE	**SK**	.964	45	**.177**	**SK**	**SHARPE**	.964	45	**.177**
	LQ	.930	45	**.010**		**TREYNOR**	.349	45	**.000**
TREYNOR	**SK**	.349	45	**.000**		**JENSEN**	.981	45	**.665**
	LQ	.518	45	**.000**	**LQ**	**SHARPE**	.930	45	**.010**
JENSEN	**SK**	.981	45	**.665**		**TREYNOR**	.518	45	**.000**
	LQ	.972	45	**.344**		**JENSEN**	.972	45	**.344**

Source: SPSS for Windows version 29.0

The normality test was carried out using Shapiro Wilk because the amount of data for each variable was less than 50 (Yamin, 2021). Table 1 shows that the Sharpe and Treynor methods are not normally distributed because they dominantly have a significance value of less than 0.05, so hypothesis testing uses the Mann-Whitney non-parametric test, while the Jensen method shows different results with a significance value exceeding 0.05, so the data is normally distributed so that it uses the Independent Sample t-Test parametric test. In the SRI-KEHATI and LQ45 indices, there is a significance value of less than 0.05, so hypothesis testing uses the Kruskal-Wallis non-parametric statistical test.

Hypothesis Testing

Mann-Whitney Test

Table 2. Mann-Whitney Test

Ranks					Test Statistics			
	INDEX	N	Mean Rank	Sum of Ranks	Mann-Whitney	Wilcoxon W	Z	Asymp. Sig. (2-tailed)
SHARPE	**SK**	45	**40.31**	1814.00	779.000	1814.000	-1.884	**.060**
	LQ	45	**50.69**	2281.00				
	Total	90						
TREYNOR	**SK**	45	**42.36**	1906.00	871.000	1906.000	-1.142	**.254**
	LQ	45	**48.64**	2189.00				
	Total	90						

Source: SPSS for Windows version 29.0

The Mann-Whitney test results in Table 2 found a significance value in the Sharpe method of 0.060, which is more prominent than 0.05, showing no tremendous contrast between the two stock indices in the Sharpe method. The Treynor method also has a significance value of 0.254, which is more prominent than 0.05, so it is inferred that there is no tremendous contrast between the two stock indices in the Treynor method.

The average value in the Sharpe method for the SRI-KEHATI index is 40.31 and the LQ45 index is 50.69. These results indicate that the performance of the LQ45 index is superior to the performance of the SRI-KEHATI index. The same thing also happened in the Treynor method, with an average value for the SRI-KEHATI index of 42.36 and the LQ45 index of 48.64. These results indicate that the performance of the LQ45 index is superior to the performance of the SRI-KEHATI index.

Independent Sample t-Test

Table 3. Independent Sample t-Test

Group Statistic					Levene's Test for Equality of Variances			t-test for Equality of Means		
INDEX	**N**	**Mean**	**Std. Dev**	**Std. Error Mean**		**F**	**Sig.**	**t**	**df**	**Sig. (2-tailed)**
SK	45	**-.0905**	.8416	.1254	**Equal variances assumed**	3.184	**.078**	-.858	88	**.393**
LQ	45	**.0905**	1.1391	.1698	**Equal variances not assumed**			-.858	81.010	.394

Source: SPSS for Windows version 29.0

The Jensen method has a homogeneous data variance with a significance value on the Levene's test of 0.078 (> 0.05) so that the interpretation of the output results uses "Equal variances assumed". The results of the independent sample t Test obtained a significance value of 0.393 (> 0.05). The results of the study indicate that there is no significant difference between the two stock indices in the Jensen method. The average value in the Jensen method for the SRI-KEHATI index of -0.091 is lower than the LQ45 index of 0.091. These results indicate that the LQ45 performance index is superior to the SRI-KEHATI performance index.

Kruskal-Wallis Test

Table 4. Kruskal-Wallis Test

Ranks				Test Statistics		
	METHOD	**N**	**Mean Rank**	**Kruskal-Wallis H**	**df**	**Asymp. Sig.**
SK	**SHARPE**	45	**24.98**	87.725	2	**.000**
	TREYNOR	45	**79.36**			
	JENSEN	45	**99.67**			
	Total	135				
LQ	**SHARPE**	45	**39.18**	41.786	2	**.000**
	TREYNOR	45	**73.07**			
	JENSEN	45	**91.76**			
	Total	135				

Source: SPSS for Windows version 29.0

Both the SRI-KEHATI and LQ45 indices have a significance value of 0.000, which is more modest than 0.05. These results indicate that there are significant differences on the risk adjusted return method on the SRI-KEHATI index and also LQ45.

The largest average value on the SRI-KEHATI index of 99.67 is occupied by the Jensen method, the second rank of 79.36 is occupied by the Treynor method, and the last rank is occupied by the Sharpe method of 24.98. Similar results were also found in the LQ45 index, with the largest average value of 91.76 occupied by the Jensen method, the second rank of 73.07 occupied by the Treynor method, and the last rank occupied by the Sharpe method of 39.18.

These results also show a method that is consistent with the differences between the three methods. In the SRI-KEHATI index, the total mean rank difference value is 129.07 for the Sharpe method, 74.69 for the Treynor method, and 95.00 for the Jensen method, so the most consistent method is the Treynor method. On the LQ45 index, the total mean rank difference value is 86.47 for the Sharpe method, 52.58 for the Treynor method, and 71.27 for the Jensen method. It can be seen that the Treynor method has the lowest mean rank difference value, indicating that the most consistent method is the Treynor method.

Discussion

The first hypothesis test shows that there is no difference in the performance of the SRI-KEHATI and LQ45 stock indexes using the Sharpe method for the 2020 – 2022 period. This difference occurs because the volatility levels are almost similar even though the two indices have different stock compositions. Figure 2 shows that the standard deviation graph between the SRI-KEHATI and LQ45 stock indices has a slight difference in the range of values.

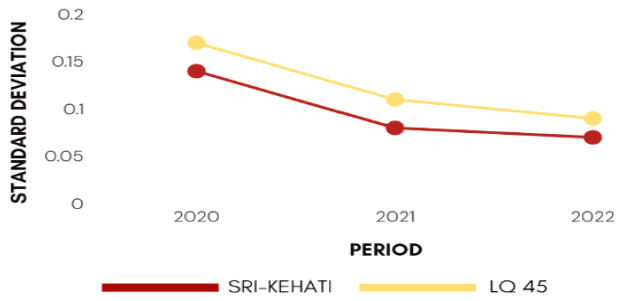

Figure 2. Standard Deviation Chart

It can be seen that the SRI-KEHATI index has a more modest total risk than the LQ45 index. However, the results of statistical tests show that the LQ45 performance index is superior to the SRI-KEHATI performance index. This is because the LQ45 index has a higher return than the SRI-KEHATI index, so it can cover risks and produce a more satisfactory performance.

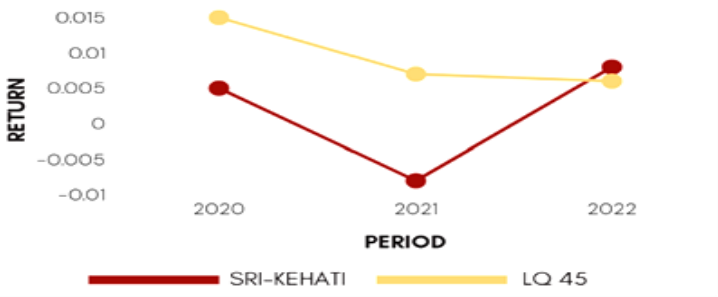

Figure 3. Return Chart

The results of this study are similar to Pertiwi & Meirinaldi (2016), which also found that the performance of the Sharpe LQ45 index method was superior to the SRI-KEHATI index. This result was also found in Fajar (2020), which found no difference in the Treynor method between conventional shares and Islamic shares.

The second hypothesis test shows that there is no difference in the performance of the SRI-KEHATI and LQ45 stock indexes using the Treynor method for the 2020 – 2022 period. This difference is caused by using IHSG as the reference of market return, and these two indices have movements that tend to be in the same direction as the market, resulting in relatively similar beta for the two indices (Fajar, 2020). Figure 4 shows the beta graph between the SRI-KEHATI and LQ45 stock indexes, which appear to have relatively similar values, although they have different patterns.

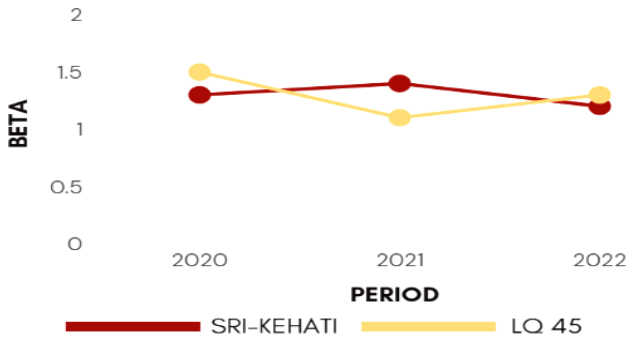

Figure 4. Beta Chart

It can be seen that the SRI-KEHATI index has a lower systematic risk than the LQ45 index, especially in 2020 and 2022. However, the results of statistical tests show that the LQ45 index has superior performance as measured by the Treynor method. The LQ45 index has a higher systematic risk but is balanced with a high return so that it can cover the risk, which causes a more satisfactory performance compared to the SRI-KEHATI index. The results of this study are similar to Pertiwi & Meirinaldi (2016), which also found that the LQ45 performance index using the Jensen method was superior to the SRI-KEHATI index. This result was also discovered by Fajar (2020), which found no difference in the Treynor method between conventional shares and Islamic shares.

The third hypothesis test shows that there is no difference in the performance of the SRI-KEHATI and LQ45 stock indexes using the Jensen method for the 2020 – 2022 period. This difference is caused by the use of similar risk-free market returns, which is reflected in the relatively similar betas in both indices (Fajar, 2020). Figure 4 shows the beta graph between the two indices, which appear to have relatively the same value, causing H0 to be accepted.
The SRI-KEHATI index has a more modest systematic risk than the LQ45 index. However, the results of statistical tests show that the LQ45 index is superior in performance as measured by the Jensen method. The LQ45 index has higher market risk but is balanced with high returns so that it can cover the risk, which causes a more satisfactory performance compared to the SRI-KEHATI index. The results of this study are similar to Pertiwi & Meirinaldi (2016), which also found that the LQ45 performance index using the Jensen method was superior to the SRI-KEHATI index. This result was also discovered by Fajar (2020), which found no difference in the Jensen method between conventional shares and Islamic shares.

The fourth hypothesis test shows that there are differences in the risk adjusted return method for the SRI-KEHATI index for the 2020 – 2022 period. These differences can be caused by differences in the calculation components: the Sharpe method, which focuses on measuring the rate of return based on total risk; the Treynor method, which measures the rate of return based on systematic risk; and the Jensen method, which measures the rate of return that can be generated more than expected return.

In addition, the results show that the Jensen method is superior because it has the highest mean rank value. The statistical test results also show the method that provides consistent results or has relatively the same variation by looking at the lowest mean rank difference value. In this index, the Treynor method is declared as a consistent method. The results of this study are similar to Nadeak et al. (2022) also Yuri et al. (2022) who found differences in the three methods and argued that the Treynor method is most consistent compared to other methods.

The fifth hypothesis test shows that there are differences in the risk adjusted return method for the LQ45 index for the 2020 – 2022 period. The cause of this difference is due to the differences in calculation components between the Sharpe method, the Treynor method, and the Jensen method as a differentiator from other methods.

In addition, the results show that the Jensen method is superior because it has the highest mean rank value. It was also found that the Treynor method has the lowest number of mean rank difference values, which indicates that the most consistent method is the Treynor method. The results of this study are similar to Pangesti et al. (2020) also Nadeak et al. (2022) who found that the Treynor method is the most consistent compared to other methods.

Table 5. Summary of Research Results

Measurement Method	Relationship between Stock Indices	Best Performance
Sharpe	No difference found	LQ45 Index
Treynor	No difference found	LQ45 Index
Jensen	No difference found	LQ45 Index

Stock Indices	Relationship between Measurement Method	Consistent Method
SRI-KEHATI	Difference found	Treynor Method
LQ45	Difference found	Treynor Method

Based on research, the LQ45 index has superior performance compared to the performance of the SRI-KEHATI index, meaning that the stocks in the LQ45 index are considered more resistant to crisis conditions from 2020 due to the COVID-19 pandemic until economic recovery in 2022. This is supported by the returns on the LQ45 index in 2020 and 2021 which are superior while in 2022 the SRI-KEHATI index is superior. The mining sector is the largest contributor in supporting the performance of the LQ45 index so that it can outperform the SRI-KEHATI index. Overall, the LQ45 index is superior based on average performance especially in the 2020 and 2021 periods so that it can outperform the increase in the SRI-KEHATI index in 2022. This study also found that the Treynor method is the most consistent method, which means it provides a more stable measurement during times of crisis.

5. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The research results show that there are no differences in stock performance in the two indices using the Sharpe method, Treynor and Jensen methods. It was also found that there were differences between the three methods in the SRI-KEHATI and LQ45 indexes, where the Treynor method was the most consistent method in measuring the performance of the two indices. Overall, the LQ45 index is superior based on average stock performance, meaning that stocks in the LQ45 index are considered more resistant to crisis conditions starting in 2020 when the COVID-19 outbreak emerged until economic recovery in 2022. It was also found that there were differences between the three methods on the SRI-KEHATI and LQ45 indexes. In addition, it was found that the Treynor method was the most consistent in measuring stock performance on both the SRI-KEHATI and LQ45 indexes.

Recommendations

The risk adjusted return method can be used to evaluate stock performance, but these methods cannot predict future stock conditions due to changes in market conditions. Apart from that, this research provides different results from the historical performance released by IDX due to the limited research period, which only used the last 3 years, differences in stock performance measurement methods, and other factors outside the research that influence the research results. Suggestions for further research are to add other measurement methods such as GARCH, Sortino, and so on, and add other stock indices to expand the measurement of stock index performance.

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