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## Predicting the Market Value of Shares Using Financial Data: A Study from the Iraqi Stock Exchange

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**Abstract:**

*The objective of the study is to identify the importance of financial data and its role in forecasting the market value of listed companies in the Iraqi Stock Exchange. The independent variables of the study model were the book value of the shareholders' equity in the company, as well as the size of the company as measured by sales, the return to shareholders' equity and the rate of growth in return on equity.*

*The study used the multiple regression model to demonstrate the effect of this financial information on stock prices. The results of this study, based on data of 21 companies for three years, indicate the positive and strong relationship between independent variables and the dependent variable in 2012 and the weak positive relationship for the years 2013 and 2014.*

*The study showed that the majority of these financial variables did not significantly affect the level of market prices of these companies, except for the growth rate of the return to shareholders' equity in the company, which had an important and positive effect on the market value of the company's shares for the year 2012.*

**Keywords:** Market Value, Return Ratio, Size of the Company, Rate of Growth in Return to Shareholders' Equity.

**JEL code:** B41, C12, C35, C81, D46, D53.

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## 1. Introduction

The vast amount of financial and non-financial information cannot be met without proper disclosure because of its obvious impact on the interpretation of the market value of the shares of companies. The published financial reports of the listed companies in the financial market are among the main components of the existence of the market and the continuation of its activities represented by the reports that reflect the results of the activities of these companies and their financial conditions (Asaad *et al.*, 2014; Khedr *et al.*, 2017; Almakrami, 2013), in addition to other information that may benefit investors when making investment decisions in shares (Thalassinos *et al.*, 2012; 2013; 2015). The Financial Standards Board has categorized the qualitative characteristics of financial information useful to decision makers in economically and professionally developed countries, with the main characteristics of appropriate and reliable characteristics and sub-characteristics of the comparability of financial information between similar enterprises in the same period and to the same establishment over time and consistency over selected financial principles and methods (FASB, 1999; IASB, 2008). Therefore, this study is complementary to the efforts of researchers in this regard by clarifying the role of financial information in explanation and interpretation of stock market prices.

## 2. Study problem and aims

The study problem in this article can be expressed through the following questions:

1. Does the increase in the book value of the equity of the company increase the market value of its shares?
2. Does the increase in the return ratio to equity increase the market value of its shares?
3. Does the increase in the size of the company increase the market value of its shares?
4. Does the increase in the rate of growth in return to shareholders' equity increase the market value of its shares?

The objective of the study is to predict the market value of listed companies' shares in the Iraqi market for securities through the testing of financial information in the determination of stock prices; so the need requires us to look for factors affecting the prices of traded shares. This study attempts to determine the quantitative factors that have an impact on the determination of these prices.

The aims of the study are as follows:

1. through the factors that guide the traders in process of forecasting future price trends to protect traders in the Iraqi financial market against any losses they may incur or to help them in making an additional profit;

2. to serve the interest of the national economy as a whole by assisting government agencies in formulating their general policies aimed at stabilizing the fluctuations in the general level of prices in the regular market of the Iraqi financial market.

The importance of the study is shown by trying to understand the factors affecting the volatility of the financial market, which is the financial information and its ability to predict the market value of stocks, which is the main issue addressed by scientific research to achieve realistic results, governs the mutual effects between the state of the financial market and the general economic performance of the country. Financial markets are a mirror of the economic situation of each country. The stability of these markets is a measure of the success of the general economic policy of the country.

According to the questions posed by the study problem, the following hypotheses can be formulated this way:

1. The increase in the book value of the Company's equity increases the market value of its shares.
2. The increase in the ratio of return to equity of the company increases the market value of its shares.
3. The increase in the size of the company increases the market value of its shares.
4. The increase in the rate of growth in return to shareholders' equity increases the market value of their shares.

### **3. Literature Review**

Several foreign, Arab and local studies were conducted to show how the market value of the shares of companies was determined, from which several pricing models were used (Ozlen, 2014; Al Haddidi and Abu Mousa, 2016). Foreign studies in this regard include (Oldfield, 1977; Thalassinou *et al.*, 2012; 2013; 2015; Kourtis *et al.*, 2017; Mahboob, 2017; Grima and Caruana, 2017), which sought to test the impact of the company's outstanding liabilities on its market capitalization on its employees' retirement fund, and proposed a model to explain the market value determined in light of the present value of the company's normal cash flows less interest Paid to creditors, dividends to preferred shareholders and outstanding liabilities to the staff pension fund plus the growth factor in the value of shares. The results of the study concluded the importance of the factors involved in the model at the level of statistical significance 1% and the interpretation of 35% of the changes in the market value of the shares of the company at the total sample of the study of 166 companies in 1974. When the study took the systematic risk factor in the shares of the company in consideration improved explanatory capacity to explain changes in the market value of shares, ranging between 61% and 79%, the average of 75%, but emerged one weakness in the model was the emergence of the fixed factor as a factor is constantly In determining the market value of the shares of the company, indicating that the measurement of some of the factors used in it was inaccurate or that the model lacks some important factors in explaining the market value of the shares of the company.

From the local studies, Al-Hasnawi (2007) focused on determinants and factors affecting the determination of the returns of the shares of the companies participating in the Iraqi market for securities. The study used the multiple regression method to identify the determinants of the rate of return on investment for listed companies. The variables were the turnover of the share, the share income, the rate of return on the total assets, the rate of return to the right of ownership and the fixed assets to the right of ownership and the degree of leverage. And based on data of 21 industrial, agricultural and service companies for two years from 1.01.2000 to 31.12.2001. The results of the study showed that there is no statistically significant impact on all the determinants used, except for the factor of fixed assets to the right of ownership, which had a significant impact on the rate of return on investment in shares traded in the Iraqi financial market. The results of the study showed that there is no statistically significant impact on all the used determinants, except for the factor of fixed assets to the right of ownership, which had a significant impact on the rate of return on investment in shares traded in the Iraqi financial market..

#### 4. Methodology

The variables are the book value of the shareholders' equity in the company, its size (as measured by its revenues or net sales), the ratio of return to equity and growth rate of return on equity. The majority of the above financial variables have a statistically significant impact on the level of market prices of these companies. It is clear that knowing the book value of the shareholders' helps to explain more than 60% of changes in the market value of their shares.

The study variables of this research are the following:

1. Market value of the shares of the company = Volume / number of shares issued, according to data and releases from the Iraqi financial market.
2. Book value of shareholders' equity = book value of the Company's assets – the book value of the Company's liabilities, according to the company's financial statements end of the year.
3. The size of the company: the total sales shown in its financial statements are used as a basis for measuring the size of the company (Noor and Matar, 2013).
4. Return to equity ratio = net profit after tax / book value of the Company's equity at the end of the year.
5. Growth rate of return to shareholders 'equity = (Return to equity for the current year / return to shareholders' equity for the previous year - 1).
6. Appendix A shows the average values of the variables extracted for the study's sample companies.

In order to improve the ability of the regression analysis method to balance sheet equation in the forecast, the missing factors in explaining the market value of the company's shares, repeated in most previous studies, were successfully applied by (Landsman, 1986), and the study carried out by (Noor and Matar, 2013), the study

will cover the financial information for three years (2012-2013-2014) and will be adjusted with the addition of other important financial factors. These factors are:

- Book value of the Company's equity.
- Ratio of return to equity in the company.
- Company size.
- Growth rate of return to owners' rights.

The regression model that will be used in this study is defined as follows: *Market value of the company's shares = book value of shareholders' equity + ratio of return to equity + company size + growth rate of return on equity*. It is necessary to weigh the factors of the study with appropriate variables because the previous studies found a problem in financial information when used absolutely. In selecting the appropriate factor, Dukes (1976) concluded that the sum of assets is one of the best factors that limit the problem and maintain the efficiency of the model.

Therefore, the final model of the study after using the total assets as a weight factor for absolute factor values becomes as follows: *Market Value of the Company's Share / Total Assets = Book Value of the Owners' Rights / Total Assets + Company Size / Total Assets + Ratio of Return to Equity + Growth Rate of Return on Equity*.

The study will cover the three-year financial information available at the beginning of 2012, 2013, 2014. The initial sample of this study consists of all companies. The study sample companies were selected on such a basis as:

1. it has been listed in the Iraqi Stock Exchange since its establishment in 2004;
2. the company sample study did not stop trading in its shares by a decision of the Board of Directors of the Market during the period from 2004 to 31.12.2014;
3. the quality of the company was not transferred or merged during the study period;
4. the financial year ends on December 31 of each year.

The number of companies to which the conditions apply is 21 companies, which constitutes 25% of the total companies listed in the Iraqi financial market, a total of 84 stock companies. The main source of data for this study is the index of the stock companies issued annually by the Iraqi financial market management and annual reports issued by companies.

Table 1 shows the descriptive statistics of the companies in the study sample. In order for the statistics to be more meaningful, they were extracted for all companies. The statistics are mostly composed of the averages of the study model factors for the three years 2012, 2013 and 2014.

**Table 1.** The descriptive statistics of the study sample

Variables						
Year	The market value of the shares of the company (1,000 dinars)	Book value of owner's rights (1,000 dinars)	Return to Owners' Equity (%)	Company size (thousand dinars)	Rate of growth in return on equity (once)	
2012	3.2	41512	5.6	79134	0.373-	Min. Limit
2013	3.4	35777	12	70552	0.706-	
2014	0.9	36032	5.3	30651	0.984	
2012	31.82	281492.2	68.88	1178166	0.71	Average
2013	55.29	108277.6	54.22	1245953	3.6-	
2014	69.67	1187695	63.12	3511489	8.12	
2012	143.1	873194	148.9	4798297	4.371	Mix. Limit
2013	240.7	2680996	97.2	4720614	0.94	
2014	302.8	5145472	102.3	4964629	5.299	
2012	40.88	228593.5	39.22	1263275	0.97	S.D.
2013	68.43	6284886	27.06	1509056.7	0.455	
2014	81.59	1415722.5	98.34	8883609.7	1.11	

Table 1 shows that the average statistics of these companies are distributed at very wide ranges. For example, the average market value of companies for the year 2012 ranged between 3.2 thousand dinars for a clothing production company and 143.1 thousand dinars for an Iraqi packaging company with a standard deviation of 40.88 thousand dinars. While the average market value for 2013 ranges between 3.4 thousand dinars for an Iraqi company for the manufacture of cartoons and 240.7 thousand dinars for a light industry with a standard deviation of 68.43 thousand dinars, while in 2014 was between 0.9 thousand dinars for light industries and 302.8 thousand dinars for the Arab Company for soft water with a standard deviation of 81.59 thousand dinars. It should be noted here that the existence of the Iraqi packaging company with a market value of 143.1 and the Arab company for soft water with a market value of 142.6 thousand dinars within the companies led to higher statistics for these companies for 2012. For 2013, the light industry company with a market value of 240, 7 thousand dinars for the year 2013 has fallen to the lowest level among all companies and the market value of 0.9 thousand dinars.

Note that this does not affect the efficiency of the model used in the study because the factors involved are not measured by their absolute value but by their weighted value (total assets) unless these factors are percentages in nature as the ratio of return to equity and growth rate of return on equity of the company where it is used.

In terms of the book value of the company's equity, we observe the great variation in the packaging company, which has the lowest book value to its shareholders' equity compared to the other companies amounting to 41512 thousand dinars, at the time the highest company by market value for 2012. The boundaries of these companies ranged between 41512 thousand dinars and 783194 thousand dinars for the company of the

manufacture of modern dyes with a standard deviation of 228593.49 thousand dinars for the year 2012. Between 35777 thousand dinars for the plastics company and 2680996 thousand dinars for the company of the manufacture of modern dyes with a standard deviation of 628488.67 thousand dinars for the year 2013. And between 36032 for the plastics company and 5145472 dinars for the Baghdad Company for soft drinks with a standard deviation of 1415722.5 thousand dinars.

As for the ratio of return to shareholders' equity in the company, the companies ranged from 5.6% to El Mansour for Pharmaceutical Industries Company and 148.9% to soft drinks company with a standard deviation of 39.22 thousand dinars for 2012. And between 12% for The Iraqi Company for Engineering Works, and 97.2% for light industry with a standard deviation of 27.06 thousand dinars for the year 2013. Between 5.3% for the El Mansour for Pharmaceutical Industries company and 102.3% for the Baghdad Company for soft drinks with a standard deviation of 98.34 thousand dinars for the year 2014.

As for the size of the company, ranging from 79134 thousand dinars to the packaging company, and 4798297 thousand dinars to Baghdad Company for soft drinks standard deviation is 1263275 thousand dinars for 2012. And between 70552 thousand dinars for the El Mansour for Pharmaceutical Industries company and 4720614 thousand dinars for soft drinks company standard deviation is 1509056.66 thousand dinars for the year 2013. And between 30651 thousand dinars for the plastics company and 4964629 thousand dinars for the light industry the standard deviation is 8883609.47 for the year 2014.

As for the rate of growth in the return to equity in the company, it ranged between -0.373 times for the National Company for Furniture Manufacturing and 4.371 times for the Packaging Company with a standard deviation of 0.97 for 2012. Between -0.7706 times for the packaging company and 0.94 times for the plastics company by a standard deviation of 0.455 for the year 2013. And between -0.984 times for the El Mansour for Pharmaceutical Industries company and 5.299 times for the Modern Dyes Company with a standard deviation of 1.11 for the year 2014.

## **5. Results and Discussion**

Before starting the results of the study, it is necessary to review the correlation matrix between the independent factors included in the study model to check the efficiency of the model due to the absence of a problem of great match between independent factors. The existence of such a problem in the data may help to difficulty of clarifying an individual importance of each of the factors used in the model or to increase the sensitivity of the model results in one way or another. In this regard, Gujurati (1986) stated that the degree of correlation between any independent factors in regression analysis of 80% or at least may not be critical or detrimental for determining the statistical significance of the factors used or the efficiency of their use in the model.

The correlation between factors is present, but it is important not to be too high to reduce the statistical significance of these factors.

**Table 2.** The independent factors correlation matrix used in the study sample for the years 2012, 2014

<b>2012</b>				
<b>Variables</b>	Book value of owner's rights	Return to Owners' Equity	Company size	Rate of growth in return on equity
Book value of owner's rights	1	-0.300	-0.747	0.325
Return to Owners' Equity (%)	-0.300	1	-0.007	-0.521
Company size (thousand dinars)	-0.747	-0.007	1	-0.115
Rate of growth in return on equity	0.325	-0.521	-0.521	1

<b>2014</b>				
<b>Variables</b>	Book value of owner's rights	Return to Owners' Equity	Company size	Rate of growth in return on equity
Book value of owner's rights	1	-0.575	-0.375	0.376
Return to Owners' Equity	-0.575	1	-0.002	-0.932
Company size (thousand dinars)	-0.375	-0.002	1	0.096
Rate of growth in return on equity	0.376	-0.932	0.096	1

Table 3 shows the correlation matrix for all the factors for the years 2012-2013-2014 based on the complete sample information. It is correlation between the dependent variable of the market value of the company's shares and the other independent variables in the study model after the factors were weighed by (total assets) to show its effect on the adjusted matrix by the existence of the dependent variable of the market value of the shares of the company.

The highest correlation for 2013 is 78% between the size of the company and the book value of its shareholders' equity. The highest correlation for 2014 is 93% on the one hand, and the return on shareholders' equity and the growth rate to shareholders' equity on the other hand, at 57%. In any case, the return to shareholders' equity and the rate of growth in return on equity are the most highly correlated factors with each other. Therefore, these factors may be more susceptible than others to the existence of problems in the use of the model.

A simple comparison between the matrix in Table 3 and the matrix of independent variables in Table (2) shows the effect of the weighting of the factors (total assets). There is no correlation between the independent variables in Table (3) except for a simple correlation for the year 2013 between the company's return ratio to equity and

the book value of its shareholders' equity with a 66% correlation, which indicates that the behavior of the factors has improved to avoid the match problem in them to show the efficiency of the model.

**Table 3.** The correlation matrix for all study sample factors for all years

Variables	2012				
The market value of the shares of the company	1	-0.060	0.180	0.028	0.535
Book value of owner's rights (1,000 dinars)		1	0.061	0.010	-0.164
Return to Owners' Equity (%)	0.180	0.361	1	0.335	-0.424
Company size (thousand dinars)	0.028	0.010	0.535	1	-0.150
Rate of growth in return on equity (once)	0.535	-0.164	0.424	-0.052	1

Variables	2013				
The market value of the shares of the company	1	0.009	0.201	-0.118	0.014
Book value of owner's rights (1,000 dinars)	0.009	1	0.660	0.391	0.488
Return to Owners' Equity (%)	0.201	0.660	1	0.08	0.439
Company size (thousand dinars)	0.039	0.084	0.064	1	-0.019
Rate of growth in return on equity (once)	0.098	0.17	-0.024	-0.019	1

Variables	2014				
The market value of the shares of the company	1	0.010	-0.038	-0.118	0.014
Book value of owner's rights (1,000 dinars)	-0.098	1	0.044	0.391	0.488
Return to Owners' Equity (%)	-0.038	0.044	1	0.014	0.080
Company size (thousand dinars)	-0.118	0.391	0.080	1	0.439
Rate of growth in return on equity (once)	0.014	-0.019	0.488	0.439	1

The regression coefficient value of the book value of the Company's equity in 2012 is 2.14. This means that a change of 1 ID (one Iraqi dinar) in the book value of the Company's equity will result in a change in the market value of its shares (B.V.C.E.M.V.Sh.) by (-2.14). T value is -0.037 corresponding to a significant level of 97% indicating that there is no statistically significant effect of the B.V.C.E.M.V.Sh. In 2013 it was -3.41 → + 1 ID = -3.41. T value is -0.701 at 49%, therefore it has a significant impact. For the year 2014 it is 1.50 → 1.50. T value is 0.798 at 43%, therefore lack of statistically significant effect of the B.V.C.E.M.V.Sh.

The value of the regression coefficient for the ratio of return to equity in the Company for the year 2012 is - 9.97 + 1 ID → -9.97, T value = -0.417 at 68% concluding that the hypothesis that the ratio of return to equity in the company (R.E.C.) has a statistically significant impact on the market value of its shares is invalid. For the year 2013 it is 1.029 + 1 ID → 1.029, T value = 1.435 at 16% significance level therefore the related hypothesis is rejected. For the 2014 it is 0.601 + 1 ID → 0.601, T value = - 0.942 at 35% significance level indicating that there is no statistically significant effect of the ratio of R.E.C. on the market value of its shares.

The value of the regression coefficient for the size of the company for 2012 is  $3.21 + 1 \text{ ID} \rightarrow 3.21$ . T value is 0.322 at 75% significance level leading to the lack of impact with statistical significance of the size of the company on the market value of its shares (S.C.M.V.Sh.). For 2013 it is  $1.42 + 1 \text{ ID} \rightarrow 1.42$ . T value is 0.066 at 94% significance level with no significant statistical impact. For 2014 it is  $-1.38 + 1 \text{ ID} \rightarrow -1.38$ . T value is -0.646 at 52% significance level contrary to the researcher's hypothesis that there is a significant statistical impact on the S.C.M.V.Sh.

The value of the regression coefficient for the growth rate of the return on equity of the company for the year 2012 is  $24.14 + 1 \text{ ID} \rightarrow 24.14$ . T value is 2.69 at 1% = the validity of the researcher's statistical effect on the market value of its shares. For 2013 it is  $31.41 + 1 \text{ ID} \rightarrow -31.41$ , T value is -1.001 at 32% significance level which means absence of significance. For 2014 it is  $41.40 + 1 \text{ ID} \rightarrow 41.40$ . T value is 0.834 at 41% significance level invalidating the approval of the related hypothesis.

Table 4 shows that the growth rate of the company's return to equity in 2012 is the key factor in the interpretation of the market value of the company's shares showing a positive and significant relationship. For the year 2013, it has a negative impact on the market value of the shares of the company, and for the year 2014 has shown a positive impact as expected, despite the fact that the relationship is not significant between the market value of the shares of the company. The book value of the company's equity has a negative impact on the market value of the company's shares for 2012, 2013 and has a positive impact for 2014 while it is insignificant for all years. The company's ratio of return to shareholders' equity has a negative impact on the market value of the company's shares for the years 2012-2014 and the positive impact for the year 2013. The size of the company has a positive impact on the market value of the shares of the company for 2012 and 2013 and the negative effect for 2014 and not significant for all years.

The results of these tests were confirmed by the statistical F test of their statistical acceptance for 2012 where their calculated value 2.31 was higher than the Table value 2.087 at significant level (S.L.) 5%. This can give confidence and security to the model as a whole. The value of R<sup>2</sup> is 0.269. This indicates that the entire independent variables can explain the equivalent of 26.9% of the changes in the market value of the shares of the company, i.e., the effect is weak on the dependent variable. The value of Durbin Watson (D.W) is 1.269 confirms less than 2, to weakness the model for future forecasting purposes. The correlation value R being 0.544 is a strong relationship between the dependent variable and the independent variables. The F- test for the model for 2013 confirms that there is not statistical acceptance, as the calculated value of F test 0.668 was less than the F Table value of 1.106 at a S.L. 5% and the R<sup>2</sup> 0.108 indicates that the independent variables as a whole may explain the equivalent of 10.8% of the changes in the market value of the shares. The value of DW is less than 2 and equal to 1.532 indicating weakness of the model for future forecasting purposes. The correlation value R 0.329 indicates the weak correlation between the independent variables and the dependent variable. The F-test of the model

for 2014 confirms its statistical non-acceptance, as it was calculated 0.856, less than the scale 5.016 at a S.L. 5%. The R<sup>2</sup> 0.05 is the most significant factor. This indicates that the entire independent variables can explain the equivalent of 5.6% of the changes in the market value of the shares of the company. The value of the DW confirms less than 2 and equal to 1.169 the possibility of relying on the model for future forecasting purposes. The value of correlation R 23.7% indicates the weak correlation between independent and dependent variables.

**Table 4. Results of regression analysis based on sample information for all years**

Year	Independent Variable	Reg. Coef.	T test		R <sup>2</sup>	R	T test		DW
			Calculated	Tabular			C	T	
2012	Book value of owners' rights	2.14-	0.037-	97%	227%	0.544	2.087	2.31*	16.269
	Ratio of return to owners' rights	9.79-	0.417-	68%					
	Company size	3.21	0.322	75%					
	Growth rate of return to owners' rights	24.14	2.69	1%					
2013	Book value of owners' rights	3.41-	0.701-	49%	110.8%	0.329	1.706	0.668*	1.532
	Ratio of return to owners' rights	1.029	1.435	16%					
	Company size	1.42	0.066	94%					
	Growth rate of return to owners' rights	-31.41	1.001-	32%					
2014	Book value of owners' rights	6.5	0.798	43%	0.56%	23.7%	5.016	0.856*	16.196
	Ratio of return to owners' rights	0.601	0.942-	35%					
	Company size	-1.38	0.646-	52%					
	Growth rate of return to owners' rights	41.40	0.834	41%					

\* Significant level 5%.

In the light of the previous results, in general we see a strong and positive correlation between the independent variables and dependent variable of 2012, and positive for 2013 and 2014. For each variable alone, it is possible to say that the research hypotheses were rejected except for the variable growth rate of return on shareholders' equity in the company, which had a positive and strong impact on the market value of the company's shares for the year 2012 only. The researcher believes that the results reached in this study is due, without any doubt, to the unstable economic situation of the country. The financial information on the book value of the shareholders' equity, the ratio of return on equity to the size of the company did not acquire statistical importance in interpreting the market value of the shares of the company based on the sample information used in this study. However, it cannot be accepted that this information is not important to explain the market value of the company's shares, the problem may be how to measure or represent the model or the ability of the management of companies to control those variables.

## 6. Conclusion and Recommendations

In general, it can be said that the findings of this study support the idea of a reasonable level of compatibility between the outputs of financial information systems in companies participating in the Iraqi market for securities information to determine the

market value of the shares of the company. Despite the attempts made by the researcher did not succeed, however, the model succeeded in identifying the following:

1. A positive and strong relationship between the independent variables and the market value of the company's shares for the year 2012 and a weak positive for the years 2013 and 2014.
2. There is a statistically significant positive relationship between the rate of growth in the return on equity of the Company and the market value of its shares.
3. Accepting the model for 2012.

In light of the results of the statistical test of the hypotheses of the study, the researchers recommends the following:

1. The possibility of repeating such studies on other companies to ascertain the results reached.
2. Regular publication of corporate data in daily newspapers and various means of advertising for publication in economic programs.
3. The need for attention and development of the Department of Studies and Information Analysis of the Iraqi Stock Exchange.

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