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Maximizing the Value of the Origin Through Cash Management According to Baumel's Model to Face the Corona Pandemic: An Analytical Study of a Sample of the Industrial Sector Companies Listed on the Iraqi Stock Exchange[1]

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ABSTRACT

The study aims to measure the impact of cash management on maximizing the company's value by using Baumel's model in the face of the Corona pandemic, and 4 companies listed on the Iraq Stock Exchange were selected as a sample of the study, and the study was based on five Time series for the year (2016-2020).

The researcher used the analytical method in interpreting the results, a number of statistical methods and methods were used to analyze the study variables and test hypotheses. And through the outputs of statistical programs approved in this field (SPSS). After analyzing the data and hypotheses of the study.

A number of conclusions were reached, most notably the existence of an important impact of cash management in maximizing the value of the company through the use of Baumel's model. In particular, short-term bank financing (financing through short-term bank loans), as it has a low cost compared to other types of financing, which will therefore lead to a reduction in the average cost of financing, and thus contribute to maximizing the value of the facility and facing crises caused by abnormal conditions, study recommended benefiting from the financial accounting models for cash management in practice, as it showed a difference in the return from what was shown in the usual financial statements, and as evidenced by its analysis on the practical side.

Keywords: *Baumel's model; cash management; company value*

INTRODUCTION

Cash management and temporary financial investments is one of the vital and important topics in the field of financial management, which has increased attention, especially in recent years as a result of the high opportunity cost of holding idle cash due to the high rates of return on short-term financial investments, and in the forefront of what is important in the framework of Cash management is to reduce the costs of holding cash of both kinds, the increase costs represented by the opportunity costs, and the decrease costs represented by the transaction costs to the lowest possible value, because of the possibility of its connection with the profitability of the facility, and therefore its value in the financial market expressed by its normal share price in that market despite being implicit costs. As the financial statements that are prepared in business companies are based on the accounting principles and conventions (Hillier et al.,2010).

The problem of the study was that the studies and intellectual problems of researchers and intellectuals did not reach the level of cognitive maturity in an attempt to explain the maximization of the company's value. It has become clear from a review of the literature of contemporary financial thought that the main and contemporary

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goal of financial management in commercial companies, towards which all financial decisions must be directed, is to maximize the value of the enterprise (maximizing the wealth of shareholders) by maximizing the value of ordinary shares in it, and therefore the secret of the success of facilities and management Finance lies in maximizing value, especially after the Corona pandemic and the paralysis it caused in the economy.

Therefore, this study sought to show the effect of cash management and temporary financial investments on the value of common shares as a measure of the value of the enterprise using Baumel's model by studying the remaining treatment costs of cash management, especially costs. Increasing cash from the target cash level that is meant to be held, represented by a loss of cash proceeds or a potentially certain impact on the net income earned and available to common shareholders (McMenamin, 2002).

LITERATURE REVIEW

Enterprise Value

Value is defined as the price that the investor is willing to pay for acquiring a specific asset (share), while the value of the enterprise (FirmValue) is defined as the market value of the company's liabilities, i.e. the left side of the balance sheet (Rao,1995), and it is defined by another view is that it is the logical approximate value of the market price of the company if its shares or debts are sold in the active market (Archer et al.,1983), and accordingly, the value of the enterprise in the framework of contemporary financial theory is the market value of the rights of the owners of the enterprise (ordinary shareholders).

The importance of adopting the goal of maximizing the value of the enterprise stems from the fact that it takes into account the volume of returns expressed in the net cash flow, the risk, the timing of the flow of returns, and the effect of profit distribution and retention on the behavior of shareholders (Hampton,1989), and the term value is used as a synonym for the term price when determining the value of the enterprise i.e. when evaluating its common shares (Brealey et al.,2018).

The value of ordinary equity financing (total enterprise value) can be estimated by multiplying the market price of one ordinary share by the number of ordinary shares issued in that market (Jones,2007). As in the following equation:

Vo = no po

whereas:

Vo = the total value of the facility.
no = number of shares issued.
Po = Market value of one common share.

a. Company valuation based on dividend-divided discount

Most of the models for calculating the real value of the share according to this method were derived from the general evaluation model, which was prepared by (JoneWilliams) in 1938, indicating that the real value of the share is the sum of the current values of all future dividend payments. And as shown in the transaction formula below: (Gup,1983)

$$P0 = \frac{Eps}{Ke}$$

whereas :

P0 = the current (real) value of the stock
Eps = expected earnings per share
Ke = required rate of return (risk-weighted discount rate)

Cash Management Concept

A distinction should be made between two basic concepts in the general framework of cash management: cash and cash management. The first concept is cash, which is defined as the amount of currency kept in the company's fund and the money deposited on demand, that is, in its current account with the bank. Cash is listed on the right

side of the balance sheet as one of the elements. Working capital, and it is characterized as the most liquid asset (full liquid) compared to the other assets of the company, in addition to being a means of exchange in buying and selling, as its availability is necessary for the conduct of the company's business and for the continuation of its operational operations, as well as to fulfill its financial obligations when they are due (Weston & Brigham,1996).

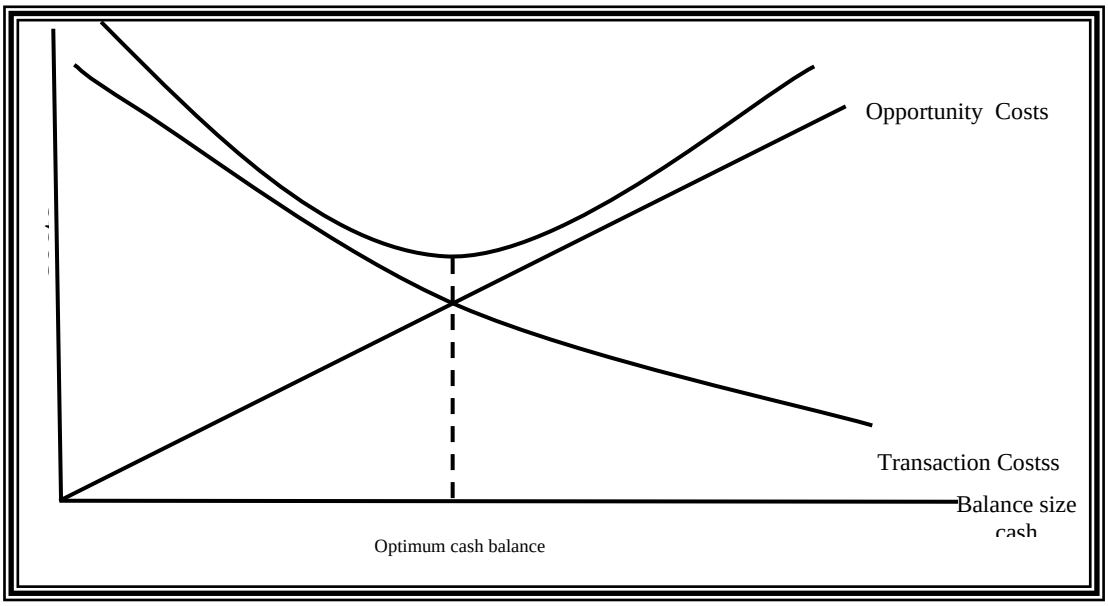
Cash management is critical to a company's operational and financial performance. Because cash is not a productive asset, the goal of cash management is to have enough cash to cover the firm's day-to-day running expenses while having as little surplus cash as feasible. The corporation will lose the potential interest (an opportunity cost) generated by investing surplus cash in securities if it keeps it in the cash account. This means that businesses must maintain a balance between cash in the cash account and cash invested in securities (Nukpezah & Abutabenjeh, 2018).

It is defined as the process of managing the company's liquid assets (cash and marketable securities), and it is defined from another point of view as the process of managing the company's cash balances (currency and demand deposits), cash flows (receipts and payments), and short-term investments in securities (Schall & Haley, 1980). According to Madura, cash management can be defined to refer to "optimizing cash flows and investing excess cash" (Madura, 2020).

Although the increase in cash improves the company's liquidity, and thus its ability to meet its short-term financial obligations, that is, it reduces the risk of liquidity, but at the same time it leads to a decrease in profitability and the value of the enterprise (Rao,1995), because the increase in cash from the level. What is required is an increase in the opportunity cost and a rise in this cost increases the company's loss of the opportunity to earn a return from it, which leads to an implicit decrease in net income, and thus a decrease in the return on equity, which in turn affects the value of the company in the financial market.

From the foregoing, it is clear that there are two types of costs resulting from maintaining cash, there are retention costs or opportunity costs, which increase directly with the increase in the level of cash balance, and there are shortage costs, which are represented by transaction costs, which decrease with the increase in the level of cash balance, and the relationships between those costs appear. And the cash balance in Figure (1), determining the optimal cash balance includes the exchange between these two costs. This is the point (C*) at which the total cost curve of the cash balance is less than possible (ie, at a minimum).

Figure (1) Cash holding costs and optimum cash balance



Source *Ross, S. A., Westerfield, R., & Jordan, B. D. (2008). Fundamentals of corporate finance. Tata McGraw-Hill Education.*

In terms of importance, cash management is an issue of great importance to financial management, and the importance of cash management can be demonstrated through the following aspects:

- The main benefit of cash management is manifested in the returns derived from the temporary investment of the surplus cash available for investment in securities, or from the use of this cash in reducing short-term financing needs (reducing or returning short-term loans), and thus borrowing costs, and in both cases it can be Counting cash is a means of generating revenue (returns) for the company (Schall & Haley,1980).

- Cash management affects the profitability and liquidity of the company. Retaining cash is required to provide liquidity to the company. When there is insufficient liquidity, the company will not be able to pay its financial obligations on the time specified for payment. On the other hand, large cash has an opposite effect on profitability, as it leads to a reduction in it. Because cash does not generate returns (Mayo, 2001).

- The retention of excess cash leads to a decrease in the real purchasing power of the cash currency due to the effects of monetary inflation, which causes a decrease in the value of (purchasing power) unused cash. With the increase in inflation rates, the loss of purchasing power of the currency increases (McLaney, 2005), so companies have begun to tighten control on its cash to avoid holding uninvested or used cash, and as a result cash management has increased in importance in recent years (Atrill, 2003).

Baumol Model

This model was developed by Professor William Baumol (William Baumol) in 1952 using the stock model, and studies cash held for transaction purposes only, and neglects monetary needs for prudential and speculative motives. The basic idea of the model is derived from the idea of the optimal economic size of the stock, which is known as the Model for Determining the Economic Order Quantity of Commodity Stock (EOQ), where Baumol adapted the inventory model for the purpose of determining the optimal cash balance for the company after introducing an amendment in the definition of the variables included in this model (McMenamin,2002).

The purpose of the model is to find the optimal level of cash balance, which minimizes the total costs related to holding cash (Milbourne,1983). The model was used by a number of researchers, led by Aronson, to determine the optimal cash balances for the state and local governments in the United States of America, and it was suggested that it is an acceptable and practical model to reach the ideal cash balances for governments, because government receipts and payments are more expected than those in business firms (Aronson,1986).

a. Model Equation

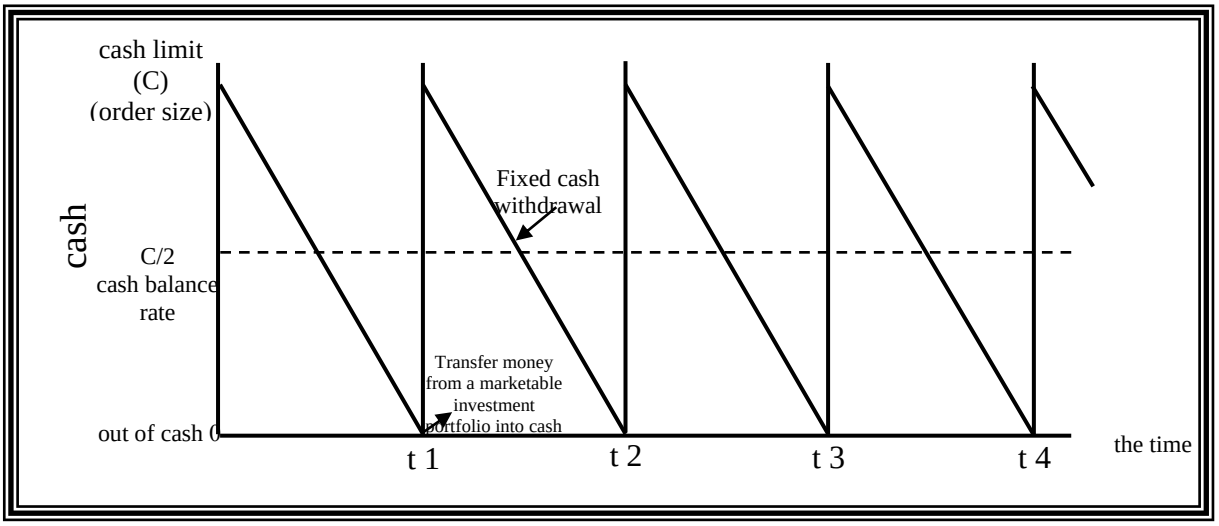
The mathematical formula of Baumol's model equation used to find the optimal cash balance value for the company can be expressed as follows: (Besley & Brigham,2000)

$$C^* = \sqrt[2]{\frac{2TF}{R}}$$

whereas :

C *= The optimal balance (amount) of cash, which the company obtains by selling (temporary) marketable financial investments, or through bank borrowing.
T = the total amount of cash required for transactions during the period as a whole (usually for one year).
F = Fixed transaction cost for selling a one-time investment or obtaining a bank loan.
R = the opportunity cost of holding cash, represented by the lost rate of return on marketable financial investments, or the cost of short-term borrowing.

Figure (2)Movement of cash balance according to Baumol's model



Besley, S., & Brigham, E. F. (2000). Essentials of managerial finance. South-Western Pub.

As it appears from the aforementioned figure that when using this model, the company starts with an amount of cash (C), which represents the cash balance at the beginning of the period and when this amount is spent or spent as a result of the company's practice of its normal natural activities, the company compensates for this decline and recovers this. The amount is through two methods: the first is the borrowing of an additional amount of (C), that is, short-term borrowing from banks, and the second: it is the sale of short-term securities from the investment portfolio in the amount of (C), and as a result of the model assuming the stability of cash withdrawals every time (Assuming that cash payments occur in equal amounts over time) and the continued repetition of withdrawals and financing operations (depletion and return) on cash every time and over the specified period of time, this leads to the formation of a scheme similar to the sawtoothed batten that reflects the movement of cash balances in the light of the application of the model For cash management.

The Economic Impact of the Corona Virus Pandemic

The calamity produced by the Corona epidemic has had a greater impact than natural calamities (earthquakes, volcanoes, tsunamis), as all countries throughout the world have closed their borders totally or partially, and the sequence of economic measures implemented have been questioned.

As a result of the global markets' paralysis, this scenario necessitates the creation of proper processes and plans to deal with the epidemic (Koirala and Acharya, 2020), The following are some of the economic implications of the Corona crisis: (Koshle et al., 2020).

• A decrease in workforce leads to a reduction in output capacity.
• A fall in demand is caused by a reduction in consumption (people staying at home).
• Lower revenues lead to lower earnings and eventually financial bankruptcy, resulting in lower taxes paid.
• As income drops, consumption declines even more, and consumption becomes more focused on essentials (healthcare insurance may become a luxury).
• Low income, resulting in lower expenditure and a concentration of consumption on essentials;
• Business failures Because small and medium firms have low cash reserves, they will suffer.

THE STUDY DATA AND METHODOLOGY

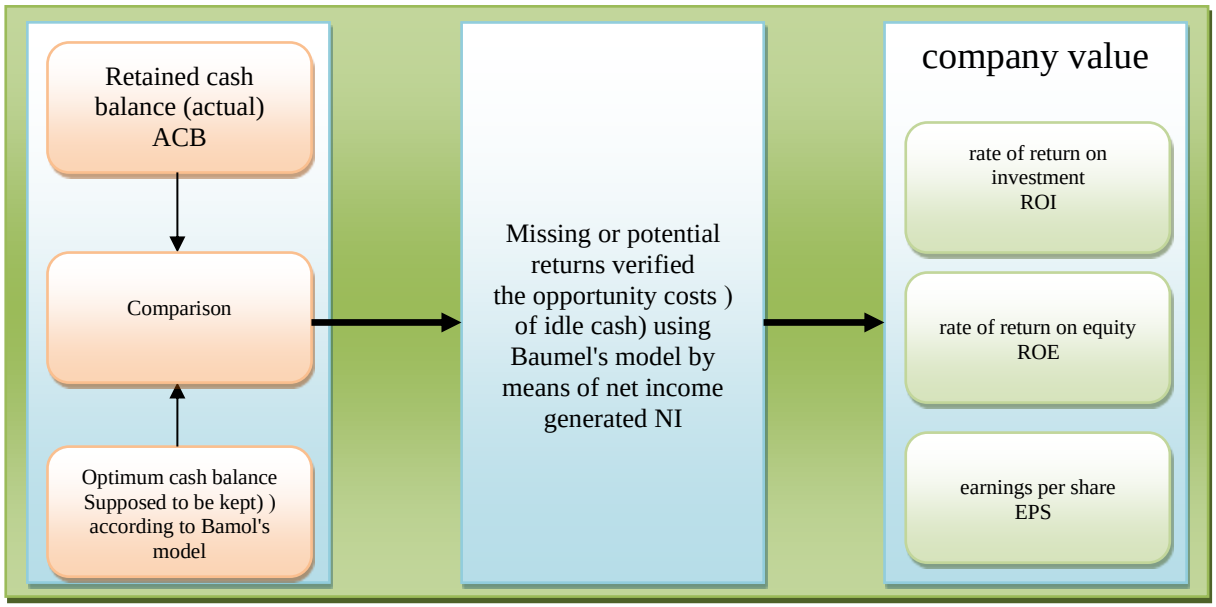
When the need arose to maintain cash balances, but the reality did not support this temporal and quantitative compatibility as well as the uncertainty associated with these flows, and this is why it is imperative for the company to maintain a cash balance, and in light of this the problem of the current study is embodied in two main dimensions, the first dimension of which is that this balance. It may be in excess (exceeding) of the required target cash balance without the company taking appropriate measures to address it, which leads to a decrease in the risk of liquidity risk, but in return there is a decrease in the return, because at the same time this indicates the disruption of part of the company's financial resources And its survival without investment or use, What this means is that

the company bears other additional costs that are not visible in the financial statements, and thus the possibility of a decrease in the value of the enterprise by treating those costs in the income statement by deducting them from the net income realized and available to ordinary shareholders.

There is two main Hypothesis that will be investigated in this study as listed below:

- The treatment of lost cash returns resulting from the increase in the cash balance held in relation to the optimal balance calculated according to Baumel's model in the income statement, leads to an increase in the net income achieved, and the effect of this is reflected in the increase in the rate of return on investment, the rate of return on equity, and earnings per ordinary share.
- A rise in the rate of return on investment, rate of return on equity, and earnings per common share increases after using Baumol's cash management model.

The hypothetical study plan was created by reviewing a variety of literature and recent studies that are relevant to the study's variables. as the hypothetical study plan represents a picture resulting from ideas and visions generated by analyzing the reality of the working environment (along with conducting a survey of intellectual products) and attempting to solve problems faced by businesses. The possible study plan is shown in Figure 3.



Model for a Hypothetical Study (Figure 1)
Figure 3: Hypothetical Study Model

This study was created with the use of a set of statistical techniques that were used to collect both theoretical and practical data. This can be seen in the following list:

DATA COLLECTING METHODS BASED ON THEORY

To build a knowledge of the variables included in this study, the researchers used a variety of research and literature relevant papers. Online Electronic Libraries are also credited for their contributions (Databases).

The study variables in the workplace were detailed using financial statistics and publications released by the Iraqi Stock Exchange, as well as face-to-face interviews with important stakeholders. The study used a set of indicators to conduct financial analysis, including return on assets, return on equity, earnings per share and the required return on the share, to analyze this data. The statistical program (SSPS) was used to provide some statistical measurements of the relationships. The study's target audience is decided before the sample is chosen, so that the vocabulary has the same qualities. The study population is determined in light of the study's goals, and the study community is represented by industry. The Iraqi Stock Exchange has a number of companies listed. The study sample was selected in accordance with the requirements of the current study, where a sample of (4) industrial companies listed in the Iraq Stock Exchange was selected in the light of cooperation regarding providing the required information that you need. Reviewed by companies, and the availability of financial data for the period from (2016) to (2020).

RESULTS

Actual cash balance analysis (actually held)

The cash balance in any business company consists of the amount of currency kept in its treasury (box) in addition to the amount of demand deposits (current) deposited with commercial banks dealing with it.

Table (1) presents the results of the Actual Cash Balance analysis of the study sample companies, and for the period that was analyzed and studied, extending from (2016-2020).

And, as Table (1) shows, we find that there is a discrepancy in the level of the cash balance actually held among the sample companies during the studied period, and the reason for this is due to the variation in the nature and volume of each company's activity, and to the extent of its willingness to bear the risk of running out of cash, and to its policy in relation to cash or working capital as to whether it is risky (Aggressive), moderate (moderate), or conservative (conservative), and to the level of investment in other components of working capital such as inventory and accounts receivable, and to its relations with suppliers.

Table (1)Actual cash balance analysis results (in thousand dinars)

Companie / years	Baghdad Soft Drinks	AI-Mansour Pharmaceuticals Industries	Modern Sewing	Baghdadfor Packing Materials	The general average of companies
2016	25,816,156,459	1,391,965,231	453,744,864	280,347,717	
2017	29,645,190,532	1,447,114,582	172,872,182	348,661,425	
2018	49,805,038,739	1,961,151,398	156,648,080	157,230,098	
2019	43,517,842,468	2,160,748,254	193,384,387	45,680,652	
2020	23,968,269,804	1,096,895,378	193,952,146	11,060,236	
average	34,550,499,600	1,611,574,968	234,120,331	168,596,026	9,141,197,731

- Note: The average actual cash balance was calculated for each year and for all the companies studied in the above table by adding the cash balance at the beginning of the year to the actual cash balance at the end of the year and dividing the result by two. The reason for the calculation process is to ensure the logicality of the comparison process with the calculated optimal average cash balance. Under cash management models, the researcher relied on the study of Aronson, 1968, and the study of Maldonado and Ritter, 1971.

Analysis of the optimal cash balance in the framework of Baumol's model

Baumol's model determines the optimal cash balance (OCD), at which opportunity costs and transaction costs are equal, and at which the total costs of holding cash (opportunity costs plus transaction costs) are at the lowest value, assuming the state of certainty and the stability of the demand for cash during Period. This model is governed by three basic variables when determining this balance: the total annual requirement of cash, the cost of fixed transactions to convert marketable financial investments into cash, and the opportunity cost of holding cash.

For the purpose of giving a clear picture of the mechanism and impact of using the model in cash management, this paragraph will be divided into two sub-paragraphs, the first: to analyze the cash balance of the model, and the other: to analyze the annual lost returns resulting from the use of the model in cash management.

Table (3-2) reveals the results of analyzing the optimal cash balance according to Baumol's model for the study sample companies during the analysis period, and from it it becomes clear that there is a difference in the level of this balance between companies, and as a result of the stability of the opportunity cost represented by the lost rate of return on financial investments. Temporary, which was calculated by adopting the interest rate on saving deposits for a period of one year, as determined by the Central Bank of Iraq at (10%) for each year of the analysis, and as a result of the stability of the cost of fixed transactions, which was estimated in agreement with a number of financial intermediaries in the financial market at (50,000) Dinars for each year of the analysis, this difference is due to the discrepancy in the total annual cash needs required for those companies.

Table (2)The results of analyzing the optimal cash balance according to Baumol's model (thousand dinars)

companies / year		2016	2014	2015	2016	2020	The general average of companies
Baghdad Soft Drinks	OCB*	14,072,085,126	13,320,660,034	14,096,499,517	14,540,996,299	15,173,382,633	
	AOCB**	7,036,042,563	6,660,330,017	7,048,249,759	7,270,498,149	7,586,691,317	7,120,362,361
AI-Mansour Pharmaceuticals Industries	OCB*	1,615,526,500	1,369,866,741	1,550,473,459	1,496,845,003	1,436,124,932	
	AOCB**	807,763,250	684,933,371	775,236,729	748,422,501	718,062,466	746,883,663
Modern Sewing	OCB*	575,977,072	76,493,064	105,329,712	178,549,250	140,497,286	
	AOCB**	287,988,536	38,246,532	52,664,856	89,274,625	70,248,643	107,684,638
Baghdadfor Packing Materials	OCB*	352,325,420	383,527,474	167,833,046	10,356,920	2,490,454	
	AOCB**	176,162,710	191,763,737	83,916,523	5,178,460	1,245,227	91,653,331
Average							2,016,645,998

* The scientific symbol (OCB) represents the optimal cash balance extracted according to Baumol's model.
** The scientific symbol (AOCB) represents the average annual optimal cash balance according to Baumol's model. It was calculated by dividing the optimal cash balance by two OCB/2 = AOCB.

Analysis of lost cash returns after using Baumol's cash management model

For the purpose of analyzing lost cash returns (opportunity costs), idle (excess) cash balances should be estimated*. In order to calculate those balances, the cash balances actually held, as presented in Table (3), were compared with the ideal cash balances that are supposed to be kept, calculated according to Baumol's model, and as shown in Table (3-2), and then the difference between Those balances (estimated surplus cash balances) are at the rate of return on temporary financial investments, which was represented by the interest rate on savings deposits with commercial banks, which amounted to (10%) for each year of the analysis.

Table (3) shows the results of the analysis of lost cash returns after using Baumol's cash management model. As the table shows, these returns were high in most companies, especially in those companies where the actual cash balances were high.

Analysis of lost cash returns after using Baumol's model in cash management

For the purpose of analyzing lost cash returns (opportunity costs), idle (excess) cash balances should be estimated*. In order to calculate those balances, the cash balances actually held, as presented in Table (3), were compared with the ideal cash balances that are supposed to be kept, calculated according to Baumol's model, and as shown in Table (3), and then the difference between Those balances (estimated surplus cash balances) are at the rate of return on temporary financial investments, which was represented by the interest rate on savings deposits with commercial banks, which amounted to (10%) for each year of the analysis.

Table (3) shows the results of the analysis of lost cash returns after using Baumol's cash management model, and as the table shows, these returns were high in most companies.

Table (3): Results of calculating lost annual returns* (opportunity costs) in the framework of Baumol's model (thousand dinars)

Year / companies	2016	2014	2015	2016	2020	The general average of companies
Baghdad Soft Drinks	1,878,011,390	2,298,486,051	4,275,678,898	3,624,734,432	1,638,157,849	2,743,013,724
AI-Mansour Pharmaceuticals Industries	58,420,198	76,218,121	118,591,467	141,232,575	37,883,291	86,469,130
Modern Sewing	16,575,633	13,462,565	10,398,322	10,410,976	12,370,350	12,643,569
Baghdadfor Packing Materials	10,418,501	15,689,769	7,331,358	4,050,219	981,501	7,694,269
average						712,455,173

The results of the analysis and comparison between the actual and optimal cash balances resulted in the fact that none of the sample companies, and for all the studied years, maintained an optimal cash balance in the scientific reality, according to the results of the analysis.

Table (4): Summary of the differences in cash balances and lost returns before and after using the Baumol models in cash management (thousand dinars)

Companies	Actual cash balance	Optimum cash balance according to Baum's model	The difference between the two balances actual and optimal excess cash	lost returns
Baghdad Soft Drinks	34,550,499,600	7,120,362,361	27,430,137,239	2,743,013,724
AI-Mansour Pharmaceuticals Industries	1,611,574,968	746,883,663	864,691,305	86,469,131
Modern Sewing	234,120,331	107,684,638	126,435,693	12,643,569
Baghdadfor Packing Materials	168,596,026	91,653,331	76,942,695	7,694,270

Analyze the actual rate of return on investment

The return on investment reflects the company's ability to achieve profits from its total investments in assets, so the high return indicates the company's high ability to generate high net profits as a result of investing in assets, and indicates the correctness and efficiency of the company's investment and operational decisions, while the low return indicates the opposite and is calculated This indicator is divided by Net Income by Total Asset.

Table (5) The results of the analysis of the actual rate of return on investment (realized%)

companies / year	2016	2014	2015	2016	2020	The general average of companies
Baghdad Soft Drinks	11.4%	10.0%	11.8%	12.7%	11.6%	11.5%
AI-Mansour Pharmaceuticals Industries	3.4%	4.6%	5.6%	-0.3%	2.1%	3.1%
Modern Sewing	10.6%	10.1%	17.0%	7.6%	19.4%	12.9%
Baghdadfor Packing Materials	3.5%	-3.3%	-8.4%	0.4%	0.2%	3.5%
Average						7.75%

Analysis of the rate of return on investment under Baumol's model

Table (6) shows the results of analyzing the rate of return on investment adjusted for lost returns (opportunity costs of holding idle cash) after using Baumol's cash management model, and from it we note that the rates of return on investment adjusted for cash management have increased in all companies

Table (6) Results of the analysis of the rate of return on investment adjusted for lost cash returns After using Baumol's model for cash management%

companies / year	2016	2014	2015	2016	2020	The general average of companies
Baghdad Soft Drinks	12.4%	11.2%	13.7%	14.1%	12.1%	12.7%
AI-Mansour Pharmaceuticals Industries	4.1%	5.5%	7.1%	1.5%	2.6%	4.2%
Modern Sewing	12.2%	11.3%	17.7%	8.2%	20.0%	13.9%
Baghdadfor Packing Materials	4.5%	-1.9%	-7.6%	0.8%	0.3%	-0.8%
Average						7.50%

Actual (realized) rate of return on equity analysis

The rate of return on equity is used to measure the overall performance of companies, and it is a criterion for the company's value in the financial market, as the high rate of return on equity reflects the increase in shareholders' wealth, which in turn leads to maximizing the value of the company in the financial market, and this indicator is calculated by dividing the net income On the right of ownership (ownership financing).

Table (7) Results of the analysis of the effective rate of return on equity%

Companies / year	2016	2014	2015	2016	2020	The general average of companies
Baghdad Soft Drinks	12.3%	10.4%	12.3%	14.1%	12.2%	12.3%
AI-Mansour Pharmaceuticals Industries	3.6%	5.2%	6.0%	-0.3%	2.3%	3.3%
Modern Sewing	12.1%	11.4%	21.2%	10.4%	23.4%	15.7%
Baghdadfor Packing Materials	7.3%	-3.2%	-8.4%	0.4%	0.3%	-0.7%
Average						7.65%

Analysis of the rate of return on equity under Baumol's model

The rate of return on equity is also affected as the rate of return on investment by the cash returns lost after using Baumol's cash management model as a result of the change in net income, the numerator of the ratio, which results from adding those returns that are likely to be obtained, and thus the company's value in the financial market is affected by the company's ordinary share price in that market.

Table (7) Results of the analysis of the rate of return on equity adjusted for lost cash returns after The use of Baumol's model in cash management %

Companies / year	2016	2014	2015	2016	2020	The general average of companies
Baghdad Soft Drinks	13.3%	11.6%	14.3%	15.7%	12.7%	13.5%
AI-Mansour Pharmaceuticals Industries	4.4%	6.2%	7.5%	1.6%	2.8%	4.5%
Modern Sewing	13.9%	12.7%	22.0%	11.3%	24.2%	16.8%
Baghdadfor Packing Materials	9.2%	-1.8%	-7.7%	0.8%	0.4%	0.2%
Average						14.00%

Actual liquidity risk analysis

Liquidity risk is affected by the level of the cash balance held by the company, and the absolute liquidity ratio is one of the measures of this risk, as the high ratio compared to the comparison standard indicates the company's high ability to meet its outstanding financial obligations, and therefore it indicates low liquidity risk. While the low percentage indicates the opposite. This percentage is calculated by dividing the cash balance by current liabilities.

Table (8) indicates the results of the analysis of the actual absolute liquidity ratio of the companies in the study sample,

Table (8) Actual absolute liquidity ratio analysis results (times)

Companies / year	2016	2014	2015	2016	2020	The general average of companies
Baghdad Soft Drinks	25.3%	29.3%	42.3%	54.3%	25.1%	34.8%
AI-Mansour Pharmaceuticals Industries	20.9%	20.6%	28.9%	32.0%	19.5%	24.6%
Modern Sewing	49.1%	18.0%	12.2%	15.2%	12.7%	19.6%
Baghdadfor Packing Materials	42.6%	65.3%	43.9%	16.4%	4.0%	40.1%
Average						29.78%

Analysis of liquidity risk under Baumol's model

The calculated absolute liquidity ratio after using Baumol's cash management model from dividing the optimal cash balance by current liabilities is the norm (ideal) ratio, and a criterion for judging whether the liquidity risk is high or low, as the ratio that exceeds it indicates a low risk, because it carries With its folds, the high cash balance kept at the optimum, while the lower percentage of it reflects the high risk, as it indicates in its content a decrease in the cash balance kept below the optimal. Therefore, in this paragraph, the actual ratio will be compared with the ideal to indicate the level of risk according to the optimal level of the cash balance.

It appears from Table (9), which reviews the results of calculating this ratio after using Baumol's cash management model, that this ratio was uneven and low in most of the sample companies, and this is due to the discrepancy in the level of the optimal cash balance supposed to be maintained by those companies and the amount Current liabilities.

Table (9) Results of the analysis of the absolute liquidity ratio in the framework of Baumol's model (once)

companies / year	2016	2014	2015	2016	2020	The general average of companies
Baghdad Soft Drinks	6.9%	6.6%	6.0%	9.1%	7.9%	7.2%
AI-Mansour Pharmaceuticals Industries	12.1%	9.7%	11.4%	11.1%	12.8%	11.4%
Modern Sewing	31.2%	4.0%	4.1%	7.0%	4.6%	9.0%
Baghdadfor Packing Materials	26.8%	35.9%	23.4%	1.9%	0.5%	21.8%
average						12.35%

Actual (realised) earnings per share analysis

Earnings per share reflects the share of the realized profits and available to holders of ordinary shares, and is a measure of the overall performance in companies, and it is an indicator of the value of the company in the financial market measured by the price of the ordinary share in that market. as a result of investing his money in the shares of that company, which in turn leads to maximizing the value of the company in the financial market. This percentage is calculated by dividing the net income available to ordinary shareholders over the number of issued ordinary shares (subscribed capital (nominal).

Table (10) shows the results of analyzing the realized ordinary earnings per share for the sample companies

Table (10) Actual earnings per share analysis results (JD)

companies / year	2016	2014	2015	2016	2020	The general average of companies
Baghdad Soft Drinks	1.06	2.34	2.19	1.98	3.16	2.15
AI-Mansour Pharmaceuticals Industries	0.15	0.23	0.24	0.01	0.15	0.15
Modern Sewing	1.37	0.76	3.00	0.89	0.62	1.33
Baghdadfor Packing Materials	0.17	- 0.41	- 0.65	0.01	0.02	- 0.17
Average						0.865

Analysis of earnings per ordinary share adjusted for cash management returns after using Baumol's model.

Table (11) indicates the results of the analysis of ordinary earnings per share adjusted for lost returns after using Baumol's cash management model.

Table (11) Results of the analysis of earnings per ordinary share adjusted for returns on temporary financial investments after using Baumol's cash management model (JD)

companies / year	2016	2014	2015	2016	2020	The general average of companies
Baghdad Soft Drinks	1.15	2.62	2.54	2.19	3.30	2.36
AI-Mansour Pharmaceuticals Industries	0.18	0.28	0.30	0.04	0.13	0.19
Modern Sewing	1.58	0.51	3.11	0.96	0.64	1.36
Baghdadfor Packing Materials	0.22	- 0.23	- 0.60	0.02	0.03	- 0.11
average						0.95

Analyzing the required rate of return on the stock within the framework of the capital asset pricing model

The capital asset pricing model is used to calculate the required rate of return on the stock, which represents the lowest rate of return required by investors in return for investing in the shares of a particular company in compensation for the postponement of the current consumption of funds and the risk associated with that investment, which is used by investors as a discount rate to evaluate the market, and then find the true value for normal stock. The importance of calculating this rate according to this model is evident as it is one of the most important models that explain the relationship of the returns of ordinary shares to their systemic risks that cannot be avoided by diversification, as measured by the beta coefficient.

In order to estimate the required rate of return on investment in the common stock according to this model, the expected rate of return on the market portfolio, the risk-free rate of return (RF), and the systemic risk factor represented by the beta B coefficient should be determined.

Table (12) indicates the results of analyzing the required rate of return (market discount rate) on the stock in the framework of the capital asset pricing model (CAPM), and calculating the expected rate of return on the market portfolio required calculating the realized rates of return (Rj) for the common shares that The portfolio represented (the alternative market portfolio), and then the arithmetic mean of those rates was taken during the period, so the mentioned table included the results of analyzing the achieved rate of return per share as an average in the companies under study.

Table (12) Results of the analysis of the required rate of return on the stock in the framework of the capital asset pricing model %

Companies / year	average rate of return per share $\overline{Rj}$	Expected rate of return on market portfolio RM	Risk-free rate of return *RF*	Beta coefficient (systemic risk factor) *B*	Required rate of return per share *Ke*
Baghdad Soft Drinks	19.5%	15%	10%	16.5%	10.8%
AI-Mansour Pharmaceuticals Industries	4.9%	15%	10%	96.0%	14.8%
Modern Sewing	20.4%	15%	10%	11.5%	10.6%
Baghdadfor Packing Materials	-1.4%	15%	10%	44.0%	12.2%
average	10.85%	15%	10%	42.0%	12.1%

Analyzing the actual (realized) value of the share

Table (13) reviews the results of analyzing the real value of the shares of the study sample companies, calculated * according to the method of deducting the earnings per share, and then comparing that value with the prevailing market value for each share of the studied companies, in order to determine the difference between them represented by the net The present value of the investment in the stock is NPV, and thus indicates whether the shares of those companies have been priced inflated (the net present value of the investment in the stock is negative (-NPV), or reduced (the difference between the real and market value of the stock is positive (+NPV), in light of what The results of the comparison result, and the mentioned table included the real value variables represented by each of the earnings per share and the required rate of return on the share to reflect a clear picture of the reasons for the change in the real value of the share.

* The real value of the stock was calculated according to the following equation:

Table (13) The results of analyzing the actual real value (realized) of the share according to the method Earning per share deduction (JD)

Companies	Actual earnings per share (verified) Eps	Required rate of return per share Ke %	The real value (current) share Po	share market value (market price per share)P	The net present value of the investment (the difference between the two values) NPV	$P_0 = \frac{Eps}{Ke}$ Pricing
Baghdad Soft Drinks	2.15	10.8%	19.90741	2.408	17.50	Reduced
AI-Mansour Pharmaceuticals Industries	0.15	14.8%	1.013514	0.798	0.22	Reduced
Modern Sewing	1.33	10.6%	12.54717	3.464	9.08	Reduced
Baghdadfor Packing Materials	- 0.17	12.2%	-1.39344	1.892	-3.29	Amplifier
Average	0.865	12.1%	8.018662	2.1405	5.88	Reduced

Analyzing the real value of the stock adjusted for cash management returns after using Baumol's model

Table (14) indicates the results of analyzing the real value of the stock adjusted for lost cash returns after using Baumol's cash management model. The results of the analysis revealed an increase in that value in all companies .

Table (14) The results of the analysis of the real value of the stock adjusted for lost cash returns After using Baumol's cash management model (JD)

companies	Actual earnings per share (verified) Eps	Required rate of return per share Ke %	The real value (current) share Po	share market value (market price per share)P	The net present value of the investment (the difference between the two values) NPV	Pricing
Baghdad Soft Drinks	1.15	10.8%	10.64814815	2.408	8.240148	Reduced
AI-Mansour Pharmaceuticals Industries	0.18	14.8%	.316216216	0.798	-0.418216	Amplifier
Modern Sewing	1.58	10.6%	14.90566038	3.464	11.44166	Reduced
Baghdadfor Packing Materials	0.22	12.2%	1.803278689	1.892	-0.08872	amplifier

DISCUSSION

The study aims to measure the impact of cash management in maximizing the value of the origin according to Baumel's model to confront the Corona pandemic, and the study showed that none of the sample companies maintained an optimal cash balance in practice, according to the results of the cash balance analysis according to Baumol's model. Increasing the cash balance retained from the optimal balance, which as a result led to those companies bearing implicit costs that are not apparent, and thus losing potential cash returns if they had invested that increase in other profitable areas available instead of keeping it in the form of cash such as investing in short-term money market instruments or Bank deposits (savings and term), which are considered temporary financial investments to face the Corona pandemic. Studies in the field of financial management indicate the loss of large potential cash returns due to poor cash management (Maldonado & Ritter, 1971). (Morris, 1983) indicated that the optimal initial cash balance should be expanded to the point (point) at which the marginal value of cash management costs is equal to the marginal value of the money invested in capital assets to avoid financial failure during crises. The results of the study showed that the study sample of industrial companies seeks to store debt capacity and keep cash and aims to achieve high levels of financial flexibility to face negative shocks and emergency conditions in the future. The results of the study showed that the reason for some companies enjoying financial flexibility is the result of companies relying on retaining profits and issuing shares and not resorting to increasing financial leverage, and this showed that companies have a large debt capacity.

CONCLUSIONS AND DISCUSSION

The results of the analysis and comparison of the actual and optimal cash balances resulted in none of the sample companies maintaining an optimal cash balance in practice, according to the results of the cash balance analysis under the Baumol. There is an increase in the cash balance retained over the optimal balance, which as a result, these companies bear implicit costs, and thus lose potential cash returns if they had invested that increase in other profitable areas available instead of keeping it in the form of cash, such as investing in short-term money market instruments or bank deposits (savings and term), which come under the category of temporary financial investment. The results of analyzing the actual investment rate revealed a decrease in this rate compared to the general average in only two sample companies, and the reason for this decrease is due despite the high net income that represents the numerator of the ratio to the increase in total assets, which represents the denominator of the ratio, specifically the current assets, especially the balance ratio. Cash from it, which led to a higher denominator of the ratio, but when this rate was modified by lost cash returns (returns of cash management) after using Baumol's models, this rate increased and this is consistent with the hypothesis of the first study. The dependence of all sample companies on owned financing to finance their financial needs and not using borrowed financing in its short and long parts, so the required rate of return on equity investment was calculated on the basis that it represented the cost of owned financing. The results of analyzing this rate according to the capital asset pricing

model indicated its disparity among the sample companies, according to the disparity in the systemic risk of business represented by the beta coefficient of the shares of those companies, as it relied primarily on financing using ordinary shares only (proprietary financing). The results of the analysis of the study revealed the impact of earnings per ordinary share on the returns (costs) of cash management, as is the case for the rate of return on equity. This profitability has increased substantially and for all companies compared to what was indicated by the results of the actual analysis of the regular financial statements, while this percentage increased after using Baumol's models in cash management. This confirms the possibility of maximizing the firm's market value, measured by the value of its ordinary shares in the financial market, by treating those returns in the financial statements (income statements), and it is inferred from this result that the hypothesis of the first study has been achieved. The results of analyzing the real value of the share, which expresses the real value of the company, calculated on the basis of deducting the earnings per share, indicated that the earnings per share is the most influential and important variable in explaining the discrepancy in the real value of the share than the rate of return required on the share by investors. These results are the rise in the real value of the share despite the high required rate of return in some sample companies, and the decrease in that value despite the decrease in the required rate of return in some other sample companies, and the reason for this is due to the high and low earnings per share in those companies, respectively.

The study recommended Benefiting from the financial mathematical models of cash management in practice, as they showed a difference in the return from what was shown by the usual financial statements, and as indicated by the analysis by them in the practical aspect, The companies listed in the Iraq Stock Exchange and the market management should include their issued bulletins related to the financial evaluation ratios on the information and data related to the cash management returns (returns realized from investing surplus cash), so that investors can use this information in the differentiation between the available shares in the market, and then take the appropriate decision to choose the investment portfolio. Investors should adopt the information and data related to cash management returns within the other evaluation indicators of companies' performance in evaluating the available shares, when entering the financial markets and investing in their ordinary shares. The necessity for the study sample companies to rely on borrowed financing in its short and long-term parts of the financial structure, especially short-term bank financing (financing through short-term bank loans), as it has a low cost compared to other types of financing, which will therefore lead to a reduction in the average cost of financing, Hence, it contributes to maximizing the value of the facility.

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