A study of the life cycle of dynamic cash holdings and cash management policies

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(*Communicated by Asadollah Aghajani*)

Abstract

Economic institutions and companies in the industry generally keep part of their assets in the form of cash balances, and determining the amount of cash is one of the crucial decisions taken by the management of the business unit. Therefore, this study evaluated the life cycle of dynamic cash holding and cash management policies of companies admitted to the Tehran Stock Exchange. The population of this research is the companies accepted in the Tehran Stock Exchange, which were tested in the time series between 2015 and 2021 using library and field methods. A multivariate regression line equation was used to test the hypotheses and estimate the statistical relationships between the life cycle of dynamic cash holdings and the cash management policies of companies. The results showed that the life cycle of dynamic cash holding significantly affected the cash management policies of companies listed on the Tehran Stock Exchange.

1 Introduction

The balance between available cash and cash needs is one of the essential factors for the economic health of business units and the continuity of their activities. At the macro level, companies tend to keep their cash holding levels consistent and optimal to respond to changes in purchasing power caused by inflation. The operating cycle shows the speed and circulation of cash in the company, which is effective in the level of cash retention of companies [14]. Much attention has been paid to the dynamics and evaluation of cash holdings of joint-stock companies in the corporate finance literature. Incentives such as precautionary saving, competitive pressure, or refinancing risk have been suggested to consider a significant amount of cash in the company. Agency fees and tax issues are essential costs associated with holding cash. However, little consensus has been reached regarding these concepts' relative importance and conflict [7].

Jensen and Meckling [12] also identified two types of conflict of interest in an economic unit: a) conflict of interest between managers and stockholders and b) between stockholders and bondholders. Such contradictions lead to identifying agency costs that can be used to justify management's performance in maintaining cash. The bigger the company, the more authority the management will have, and the possibility of keeping excess cash increases. In

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addition, it is expected to keep more cash in companies with low debt. Low debt causes companies to be under the supervision of capital markets, and management authority increases [20]. When the interests of shareholders differ from the interests of creditors (bondholders, debt) and the interests of other creditors, debt agency costs are created [12]. More cash assets are expected to be kept in companies with valuable investment opportunities, and the cost of securing foreign financial resources is high. The cost of cash shortage is higher, and in case of cash shortage, the company has to abandon more valuable projects [20]. Drobetz et al. [7] also argued that the life cycle of joint-stock companies includes a critical dimension that has received less attention. Therefore, they tried to reduce this gap in their research. The concept of the company's life cycle is very complex and multidimensional. Among other scientific cases, economic literature connects production and investment behaviors [13], experience and learning [25], and competition as well as market share [27] to the life of companies. Cycle refers to the company's life cycle in terms of companies that pursue different strategies at different stages to deal with various constraints and challenges. Therefore, this is also related to the literature that connects companies' strategic decisions to financing options (such as reviews by Parsons and Titman, [21]). Drobetz et al. [7] focused on the liquidity management of companies and whether the company's life cycle is essential. According to Kim, Mauer and Sherman [16], cash flow provides the amount of available liquidity, it can be considered a suitable substitute for cash. Therefore, according to this theory, there is expected to be a negative relationship between cash flow and cash balance. Thus, this research evaluated the effect of the dynamics of the operational life cycle and the inflation index on the cash retention of companies admitted to the Tehran Stock Exchange.

2   Theoretical foundations

According to the theory of Jensen and Meckling [12], internal cash allows managers to avoid market control. In this situation, managers do not need the shareholders' approval and are free to decide on investments according to their choice. Managers are unwilling to pay cash, for example, dividends, and are motivated to invest, even when no investment with a positive net present value is available [11]. According to the mentioned theory, managers are motivated to accumulate cash to increase the resources under their control and to be able to benefit from the power of judgment and diagnosis in the field of a company's investment decisions. For this reason, the company operates with cash, so they are not forced to provide detailed information to the capital market. However, managers may make investments that hurt shareholders' wealth [9]. Another theory used to explain corporate characteristics and factors affecting cash balance is the theory of free cash flow. Free cash flow is the cash flow that remains more than what is needed to finance the positive net present value. According to this theory, the conflict of interests between managers and shareholders causes managers to have a high tendency to accumulate cash to pursue their projects and goals. This conflict of interest between managers and shareholders is significantly greater when companies have significant free cash flows. Therefore, managers are motivated to increase the resources under their control by accumulating cash and benefit from the power of judgment and recognition regarding the company's investment decisions. Having cash available means that managers do not need external financing and provide information about the details of investment projects. However, managers may make investments that hurt shareholders' wealth [9]. In general, three theories have had a significant impact on the discussion of cash holding: exchange theory, hierarchy theory, and free cash flow theory. According to the trade-off theory, the company maintains an optimal level of cash holding as a balance between the benefits and costs of holding cash [6]. This theory states that companies determine the optimal level of their cash holding by using the balance between the costs and the final benefits of holding cash. This theory believes in an optimal level of cash for companies, which is determined by cost-benefit analysis [19]. The hierarchical theory view of cash holding is derived from the hierarchical theory of capital structure developed by Myers and Majlov. Based on the hierarchy theory, companies prefer internal sources of financing to external sources. This theory assumes that people inside the company have better information than shareholders. According to this view, financing policies follow a hierarchical procedure due to information asymmetry and signalling problems caused by foreign financing. The management prefers internal financing over external sources and tries to accumulate cash to finance its liquidity needs from within the company and not turn to outside the company. This theory states that companies do not have target cash levels but use cash as a shield and deterrent against external financing [6]. The determining factors of cash from the point of view of free cash flow theory are:

- Financial leverage: Managers should pay future cash flows by creating debt that reduces the available cash flow that can be spent at the management's discretion and the agency cost of free cash flows with a control effect. Hence, companies with weak financial leverage are less subject to supervision and control. This situation gives the management more authority, and the financial leverage is expected to have an inverse relationship with the cash balance [11].

- Investment opportunities: Managers of companies with few investment opportunities are expected to keep more cash to ensure the availability of cash to invest in projects. Even if the net present value of this investment is negative, it will reduce the value of the company and the wealth of the shareholders, and finally, the ratio of market value to book value will be small. Therefore, the relationship between investment opportunities and the cash balance is expected to be negative using the market-to-book value ratio as a factor for investment opportunities [8].

- Size: Managers tend to grow the company beyond its optimal size because it increases management power by increasing the resources under their control [11]. Larger companies tend to spread shareholders' ownership more, giving the management more authority. In addition, large companies are less likely to face unwanted acquisitions due to the number of financial resources needed. Therefore, it is expected that the managers of large companies have more power and authority regarding investment and financial policies, which leads to a more significant amount of cash balance [9].

According to the stated contents, the research hypothesis is that the life cycle of dynamic cash holding significantly impacts the cash management policies of companies listed on the Tehran Stock Exchange.

3 Research literature

Despite searching in various ways, such as visiting in person, calling, and viewing the library resources of the Management Research and Training Institute, the Management and Program Organization, universities, and internet sites, including the sites of Iran Telecommunication Research Center, Informatics Companies Association, the Sharif University of Technology Research, Faculty of International Relations, System Associates site, a few related internal types of research were found. These researchers' results and working methods in and outside Iran regarding the present research subject are mentioned below. The free cash flow hypothesis [10, 11, 12] states that excess free cash flows allow managers to pursue their personal goals regardless of shareholder value. Serrasqueiro and Nunes [24] investigated 23 developing and 26 developed countries during 1995-2011 in research entitled Cash Holding and financial crisis evidence from developing and developed markets. The amount of cash held during the periods under review has had positive growth in both developed and developing countries. After the financial crisis of 2007 to 2009, on average, cash holdings increased in developing countries but slightly decreased in developed countries. Both exchange and hierarchy theories play an important role in explaining the determinants of cash in the pre-crisis period. However, the role of trade-off theory on cash holdings has been greatly diminished since the financial crisis. Al-Najjar [24] studies the factors affecting cash holding (capital structure and dividend policy) in developing countries (Brazil, India, Russia, and China). The results showed that capital structure and dividend policy affect cash retention. There are similarities between developed and developing countries regarding the influencing factors (capital structure and dividend policy) on cash retention. Poornima and Manokaran [22] investigated the relationship between company structure and the amount of cash held in the Tehran Stock Exchange. The results showed that companies with decentralized ownership significantly keep less cash than those with centralized ownership. Lee and Xiao [17] examined the effect of cash held and working capital management on company value in the French stock exchange. Based on this study, the issue of company value is a category raised among companies' long-term plans, although companies make decisions for short-term planning every day. The evidence proved that the shareholders had underestimated the kept cash and working capital. Khodamipour and Deldar [15] studied the effect of the consumer price index and operating cycle on the cash holding level in companies admitted to the Tehran Stock Exchange. The balance between available cash and cash needs is one of the most critical factors for the economic health of business units and the continuity of their activities. The regression analysis has been used as panel data to test the research hypotheses. The results show a U-shaped nonlinear relationship between the level of cash retention and the consumer price index, which initially shows a negative relationship between the consumer price index and the level of cash retention. After the increase of the consumer price index exceeds a specific limit, the relationship between the consumer price index and the level of cash retention becomes positive. In addition, the results showed that the U-shaped relationship between the operating cycle and cash holding level is insignificant. Malekian and Abdipour [18] discussed the relationship between capital structure and dividend policy with cash retention (in companies listed on the Tehran Stock Exchange). The results indicated a significant relationship between the capital structure and the dividend policy with cash retention in the Tehran Stock Exchange. Saraf and Salehi [23] addressed the cash flow management issue and financial performance of companies listed on the Tehran Stock Exchange. A significant relationship was found between the inventory holding period (DIO), accounts payable payment period (DPO), cash conversion cycle (CCC), cash operating cycle (OCC), and financial performance. However, there is no significant relationship between the debt collection period (DSO) and

the company's financial performance. Abd Karim et al. [1] explored the specific characteristics of a company related to the speed of partial adjustment of cash in reaching the optimal level of cash balance maintenance. The hypothesis test showed that companies with high positive or negative free cash flow, small, cash surplus, and weak corporate governance, on average, have a higher cash adjustment speed than companies with medium, significant free cash flow, cash deficit, and strong corporate governance. Therefore, the non-uniformity and asymmetry of adjustment speed are confirmed in different companies.

4 Method

Considering the inductive nature of the research, cross-sectional correlation is used to test the research hypotheses. For this purpose, the data should be collected in the form of data mining, and based on the regression, the effect of the independent variable on the dependent variable should be measured. This study is longitudinal and retrospective, quantitative, and practical. When the collected data is related to events that happened in the past, the research project can be considered retrospective. The results can be used by various investors, company managers, shareholders, lenders, researchers, and standards developers.

5 Population and sample

This study was conducted on all the companies listed on the Tehran Stock Exchange, and a systematic elimination method (screening) was used to select the sample. Companies that meet the following conditions are chosen as samples.

1. The financial period information of the companies should end on March 20 of every year. There should be no change in the financial period during the research period due to the similarity of the reporting date, removal of seasonal works, and increasing comparability.
2. The selected company should not be among investment, banks, leasing, and financial and credit institutions.
3. The selected company should have been accepted in the Tehran Stock Exchange since the beginning of 2015.
4. The information required for the research variables about the selected company should be available during the research period.

This study was conducted from 2015 to 2021, considering the information close to the time of the research and their availability. A total of 102 companies have been selected through the systematic elimination method by applying the mentioned conditions to estimate the model and test the research hypotheses.

Excel spreadsheet and Eviews (10) were used to perform calculations, prepare data, and analyze them.

6 Research model

This study was implemented following the Drobetz et al. [7]:

$$\Delta\text{CASH}_{it} = \frac{\text{CASH}_{it} - \text{CASH}_{it-1}}{\text{Total Assets}_{it}}$$

in which,

ΔCASH_{it} = Changes in the cash holding level of company i at time t

CASH_{it} = Cash balance of the company i at time t

CASH_{it-1} = Cash balance of company i at time t-1

Total Assets$_{it}$ = Total assets of company i at time t

Independent variable

In this research, there are two independent variables in the following order:

The operational life cycle of the company

Following Dickinson [5], the following order is used:

$$\text{Cycle}_{it} = \frac{\text{Inventory turnover period}_{it} + \text{Receivable Period}_{it}}{1000}$$

in which,

Cycle$_{it}$ = The operating life cycle of the company i at time t

Receivable Period$_{it}$ = Account receivables collection period

Inventory turnover period$_{it}$ = Inventory turnover period of company i at time t

6.1 Inflation

The inflation index is used to collect the data of this variable from the information data of the Central Bank related to the price index of consumer goods and services.

Control variables

Tobin's Q index

The following ratio is used to measure this variable:

$$Q_{it} = \frac{(\text{Equity equity market value}_{it} + \text{Book value of total assets}_{it}) - \text{Book value of equity}_{it}}{\text{Book value of total assets}_{it}}$$

in which,

Q_{it} = Tobin's Q index of the company i at time t

Equity equity market value$_{it}$ = Equity market value of company i at time t

Book value of total assets$_{it}$ = Book value of total assets in company i at time t

Book value of equity$_{it}$ = Book value of equity in company i at time t

6.2 Company size

The natural logarithm of total company assets is used to measure company size.

6.3 Changes in short-term debt

The following ratio is used to measure this variable.

$$\Delta\text{Debt}_{it} = \frac{\text{Short-term debt}_{it} - \text{Short-term debt}_{it-1}}{\text{Total Assets}_{it}}$$

in which,

ΔDebt_{it} = Changes in short-term debt in company i at time t

Short-term debt$_{it}$ = Short-term debt in company i at time t

Short-term debt$_{it-1}$ = Short-term debt in company i at time t-1

Total Assets$_{it}$ = Total assets of company i at time t

6.4 Risk

The following ratio is used to measure risk:

$$\text{Risk}_{it} = \frac{\beta}{1 + (\text{Debt ratio}_{it}/\text{Equity equity}_{it})}$$

in which,

Risk$_{it}$ = Risk of company i at time t

β = Beta risk

Debt ratio$_{it}$ = Debt ratio of company i at time t

Equity equity$_{it}$ = Equity in company i at time t

6.5 Net changes in working capital

The following ratio is used to measure this variable:

$$\Delta NWC_{it} = \frac{WC_{it} - WC_{it-1}}{\text{Total Assets}_{it}}$$

in which,

ΔNWC_{it} = Net working capital in company i at time t

WC_{it} = Working capital in company i at time t

WC_{it-1} = Working capital in company i at time t-1

Total Assets$_{it}$ = Total asset of the company i at time t-1

This research seeks to investigate the dynamics of the operating cycle and inflation index on cash holding, and a quadratic model should be used to understand the U-shaped changes in cash holding. In other words, it is expected that the changes in the level of cash retention due to the changes in inflation and the operating cycle will be U-shaped, relying on the theoretical foundations of the past. This research uses the curvature or U-shaped relationship based on the square of two variables, the consumer price index, and the business cycle. Since the variable and its square are present in the regression equation, and there may be a problem of autocorrelation between the research variables, the mean centering method has been used [2]. In this method, $((CPI_{mean} - CPI)^2)$ and $((Cycle_{mean} - Cycle)^2)$ enter the regression model of the hypothesis test, which represents the average values of the consumer price index and the commercial operation cycle. Therefore, the research model is presented in the following order:

$$\Delta\text{Cash}_{it} = \beta_0 + \beta_1 CPI_{it} + \beta_2 CPI_{it}^2 + \beta_3 CYCLE_{it} + \beta_4 CYCLE_{it}^2 + \beta_5 qTobin_{it}$$
$$+ \beta_6 \text{Size}_{it} + \beta_7 \Delta\text{Debt}_{it} + \beta_8 \Delta NWC_{it} + \beta_9 \text{Risk}_{it} + \varepsilon_{it}$$

in which,

ΔCash_{it} = Changes in the cash holding level

CPI_{it} = Price index of inflation

CPI_{it}^2 = The second power of the consumer price index

$CYCLE_{it}$ = Operating cycle of the company

$CYCLE_{it}^2$ = The square power of the company's operating cycle

$qTobin_{it}$ = Tobin Q index

Size_{it} = Company size

ΔDebt_{it} = Changes in current liabilities

ΔNWC_{it} = Net working capital

Risk_{it} = Company risk

7 Results

Table 1 presents the descriptive statistics of the research variables.

Table 1: Descriptive statistics

Variable	Variable name	Median	Mean	Standard Deviation	Min	Max
Dependent	Changes in the cash holding level	0.0047	0.0029	0.318	−0.873	0.618
Independent	Consumer Price Index	0.26	0.22	0.11	0.15	0.31
	The operating cycle of the business unit	0.214	0.251	0.126	0.021	0.864
	Risk	0.682	0.593	0.437	0.00	1.00
	Size	5.55	4.97	0.89	4.03	7.77
Control	Q-Tobin ratio	0.588	0.576	0.218	0.087	1.176

Net changes in working capital	2.271	2.249	5.237		−11.408	25.812
Changes in short-term liabilities	0.064	0.058	0.215		−0.153	1.043

The average descriptive statistics of changes in the level of cash holdings showed that 0.04% of the company's total assets were formed from the changes in the cash balance of the current year and the previous year. In addition, the consumer price index was equal to 0.26 on average, which indicates the inflation level or the consumer price level. The average business cycle of the companies was equal to 0.214, which means that the average is close to the standard deviation, indicating that the investigated companies are the same in terms of the business cycle. The changes in the short-term liabilities of the companies were equal to 0.064, which means that the companies' total assets are, on average, 6.4 times the current liabilities of the previous year and the current year.

Table 2: Unit root test of research variables

Variable	Variable name	
	t statistic	Significant level
Changes in the cash holding level	−11.112	0.000
Consumer Price Index	−5.271	0.002
The operating cycle of the business unit	−6.183	0.000
Risk	−8.017	0.001
Size	−13.281	0.000
Net changes in working capital	−9.787	0.000
Changes in short-term liabilities	−6.271	0.000
Changes in the cash holding level	−13.277	0.000

The static test showed that the null hypothesis of the existence of a unit root is rejected because the significance level of the absolute value of the statistic calculated for the research variables, except for financial leverage, is smaller than the absolute value of its value at the significance level of 5%. Therefore, the variables are stable at the static level I(0). According to the results, there is no false regression problem. Limer's F test in Table 3 shows the rejection of the null hypothesis and the heterogeneity of the sections at the 5% level. According to the results, the panel data method is suitable for testing the research hypothesis model. On the other hand, the examination of the results of the Hausman test also showed that the significance level of the test is less than 5% and significant (rejection of the H_0 hypothesis). Therefore, the fixed effects model is used to estimate the model.

Table 3: Test of effects of panel data

Model	Test	statistics F/χ^2	Degrees of freedom	Significant level	Result	Selected model
The first research hypothesis	Fixed effects (F Limer)	15.288	(132.017)	0.004	rejected H_0	Panel
	Random effects (Hausman)	36.192	6	0.002	rejected H_0	Fixed

Relying on the theoretical foundations of the past, changes in the level of cash holding due to inflation and operating cycle changes should be U-shaped. Curvilinear or U-shaped relationship is used based on the square of two variables, the consumer price index, and the business cycle. In the regression equation, the variable itself and its square are present, and there may be a problem of autocorrelation between the research variables. Therefore, the axial mean method h has been used [2]. In this method, $((CPI_{mean} - CPI)^2)$ and $((Cycle_{mean} - Cycle)^2)$ enter the regression model of the hypothesis test, which represents the average values of the consumer price index and the commercial operation cycle. The F statistic was confirmed, and the model fits well at the 1% error level. The consumer price index (CPI), having a regression coefficient (-0.079), had a negative and significant relationship with the change percentage of cash retention based on the t-statistic and at the 5% error level. Based on the t statistic and at the error level of 1%, the square of the consumer price index (CPI^2), or the same as the power of 2 with a regression coefficient (0.108) had a positive and significant relationship with the level of cash retention. The operating cycle of the business unit (CYCLE) had a negative and significant relationship with the percentage of changes in the level of cash retention according to the t-statistic (-3.727) and the regression coefficient (-0.094) at the 5% error level. However, the square of the operating cycle of the business unit ($CYCLE^2$) had a positive and significant relationship with the percentage of changes in the cash holding level at the 1% error level and according to the t-statistic (4.001) and the regression coefficient (0.099). The relationship (U) form occurs when the lower levels of the independent variable (Business cycle

Table 4: Research hypothesis test

Dependent variable: Cash retention Research period: 2009-2016 Observations: 475 company-years Number of companies: 102 companies					

$$\Delta Cash_{it} = \beta_0 + \beta_1 CPI_{it} + \beta_2 CPI^2_{it} + \beta_3 CYCLE_{it} + \beta_4 CYCLE^2_{it} + \beta_5 qTobin_{it} + \beta_6 Size_{it} + \beta_7 \Delta Debt_{it} + \beta_8 \Delta NWC_{it} + \beta_9 Risk_{it} + \varepsilon_{it}$$

Criteria	Relationship	Regression coefficient	t-statistics	Significance level
Constant	؟	0.083	2.891	0.013
Consumer price index	-	-0.079**	-2.176	0.021
Consumer price index in power 2	+	0.108*	4.302	0.001
The operating cycle of the business unit	-	-0.094**	-3.727	0.014
The operating cycle of the business unit in power 2	+	0.099*	4.001	0.031
Tobin Q index	-	-0.074**	-2.511	0.012
Size	+	0.112*	4.031	0.002
Changes in short-term debt	؟	0.011	1.061	0.056
Risk	+	0.96**	3.369	0.001
Net changes in working capital	-	0.078**	2.443	0.026
Coefficient of determination (R)	0.618	Fstatistics		22.37*
The adjusted coefficient of determination (R^2)	0.608	Durbin-Watson Test		1.74

Note: * indicates statistical significance at the 5% error level. ** indicates statistical significance at the 1% error level.

Symbol: Cash Holding; Consumer Price Index (CPI); business unit operating cycle (Cycle); Tobin's q index (Tobin's q); Net changes in working capital (ΔNWC); changes in current liabilities (ΔDebt); risk (β)

(CYCLE) and Consumer Price Index (CPI), at lower levels, their negative effects on the dependent variable (Δ Cash)) are more than their positive effects. Nevertheless, it was determined that after reaching a certain level, the positive impact of independent variables on the dependent variable increased. The regression coefficient of both variables of the business cycle (CYCLE) and the consumer price index (CPI) was negative, and the regression coefficient of both the variables of the square of the consumer price index (CPI^2) and the square of the operating cycle of the business unit ($CYCLE^2$) was positive. Therefore, the U-shaped relationship between the characteristics of the operating life cycle and the inflation index (consumer price index and the operating cycle of the business unit) is established with changes in the level of cash retention. At the 99% level, the study of the dynamics of the operating life cycle and the inflation index had a significant impact on the maintenance of cash of companies admitted to the Tehran Stock Exchange.

8 Conclusion

This study aimed to evaluate the dynamics of the operational life cycle and the inflation index on the cash holding of companies listed on the Tehran Stock Exchange. Based on the t-statistic and at the 5% error level, the consumer price index (CPI), having a regression coefficient (-0.079), had a negative and significant relationship with the change percentage of cash retention. However, the square of the consumer price index (CPI^2) or the power of 2 with a regression coefficient (0.108) had a positive and significant relationship with the level of cash retention based on the t-statistic and at the 1% error level. The operating cycle of the business unit (CYCLE) had a negative and significant relationship with the percentage of changes in the level of cash holding based on the t-statistic (-3.727) and the regression coefficient (-0.094) at the 5% error level. But the square of the operating cycle of the business unit ($CYCLE^2$) had a positive and significant relationship with the percentage of changes in the cash holding level at the 1% error level and according to the t-statistic (4.001) and the regression coefficient (0.099). The relationship (U) form occurs when the lower levels of the independent variable (Business cycle (CYCLE) and Consumer Price Index (CPI), at lower levels, their negative effects on the dependent variable (Δ Cash))) are more than their positive effects. Nevertheless, it was determined that after reaching a certain level, the positive impact of independent variables on the dependent variable increased. The regression coefficient of both variables of the business cycle (CYCLE) and the consumer price index (CPI) was negative, and the regression coefficient of both the variables of the square of the consumer price index (CPI^2) and the square of the operating cycle of the business unit ($CYCLE^2$) were positive.

Therefore, the U-shaped relationship between the characteristics of the operating life cycle and the inflation index (consumer price index and the operating cycle of the business unit) is established with changes in the level of cash retention. At the 99% level, the study of the dynamics of the operating life cycle and the inflation index had a significant impact on the maintenance of cash of companies admitted to the Tehran Stock Exchange.

The consumer price index was the inflation at the community level, which can significantly affect the performance of companies in the capital market. The continuous increase and unbridled inflation in the market and the lack of necessary control over it can lead to decreased purchasing power and economic disorder. The government reduces purchasing power at the level of society to control inflation, which causes a reduction in liquidity at all levels of society and even the capital market. Thus, the income from the investment will lose its value, and people will not want to invest in the capital market due to the government's control policies on the market to control inflation by reducing liquidity. The government tries to collect the stagnant money in society by creating attractions in the bank deposits to minimize the liquidity power. Based on this, banks operate according to more conservative directive policies than giving facilities to companies. Companies lose two critical sources of financing because both shareholders and investors do not want to attend and invest in the capital market, and creditors are faced with the mandated policies of the government. Firms are more willing to hold cash due to increased uncertainties in the future and keep some money to avoid bankruptcy. When inflation is controlled reasonably, the companies invest in projects with net present value due to the market boom. This issue encourages investors to invest in the capital market due to the attractiveness of the capital market, and banks are more inclined to provide facilities. On the other hand, the operating cycle refers to the time interval between production and sales. The shorter the time interval between the production and the sale of products in a competitive market, the more the companies' working capital increases their decision-making power. A stagnant market is less prosperous due to high inflation, which causes companies to behave more conservatively towards the market. In other words, companies do not want to produce more due to the lack of market attractiveness and demand because their product sales are in trouble due to a lack of confidence in the market. With the market boom, this period decreases, and companies seek more profitability by investing their cash in production. This point confirms the relationship of curvature and U (U) shape in the capital market, which shows the impact of inflation and the operating cycle of companies on the changes in the level of cash retention. The result of this hypothesis is consistent with the research of Dechow [4], Wang et al. [26], and Ferreira and Vilela [9], who confirmed the result of this hypothesis.

Based on the hypothesis result, the financial and monetary policies of the companies should be taught to the financial managers of the companies according to the economic conditions and government policies for a better theoretical understanding of the issue of economic changes in the capital market. Therefore, financial performance mechanisms can be adapted to the changing market. In addition, the supervisory structures of companies should make more targeted decisions through dynamic control over the selection of investment projects, considering the state of the macroeconomic environment, because the foresight and forecasting of future conditions are reduced in an environment with high inflation.

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