

## The Effect of Inflation and Operating Cycle on Cash Holdings

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**Abstract:** The main purpose of this study was to investigate the relationship between inflation and operating cycle effect on cash holdings of listed companies on the Stock Exchange in Tehran. In this rate of inflation and operating cycle are considered as independent variables and their impact on corporate cash holdings are examined. Present study, applied research and research plan is the kind of post-event (using past information) to collect information from the library. Statistical society of present study is listed firms in the Tehran Stock Exchange during 2008-2013 and the sample size due to screening and after dropping observations are 154 companies. In this study, data Panel are used with fixed and random effects, the results of the analysis shows of corporate data using multivariate regression at 95% the rate of inflation and the operational cycle has a direct impact on corporate cash holdings.

**Key words:** Inflation rate, operating cycle, level of cash holdings, variables, regression

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### INTRODUCTION

How to apply the internal aspects are important decisions in the conflict between shareholders and managers. In the era of economic growth as deposits increased cash, cash managers decide whether to be distributed among shareholders, domestic spending will be applied to foreign-educated or still be maintained? This profit-driven managers how to choose between eating and keeping their cash reserves is unclear. Managers should compare the flexibility of self-interest current expenditures with cash reserves is obtained. Furthermore, profit-driven managers the possibility of an increase in interest on cash holdings increased expenses resulting from the measure. Abdelsalam *et al.* (2008) showed a significant relationship between different measures of success and implementation of cash preservation policies. Management of cash flow and cash conversion cycle is a key component of the financial management of all companies, especially companies that have limited capital and rely more on short-term financial resources. (Abdelsalam *et al.*, 2008).

Bamber and Cheon (1998) conducted a study to examine the motives of the management of cash holdings. In their study, they concluded that managers maintain their cash due to caution motivated (preventive) work.

Michelson and Pitcher concluded that continuing to maintain high cash flow, leading to poor performance and shows conflict of interest between managers and shareholders. Their evidence is consistent with the assumption that reserves of cash increase the value of the

company. Against Harford explained reasons that shareholders are concerned about the stewardship of the directors of large reserves of internal funds. He suggests that the cash-rich companies are more likely to attend other companies pay for their education and were more likely to reduce the value.

Firth and Smith (1992) concluded the negative relationship between cash holdings by companies with assets in cash equivalents and current assets. The results show that companies can use current assets as a proxy for cash balances. Also, due to the lack of liquidity in order to avoid paying dividends, firms hold more cash available (Firth and Smith, 1992).

Ferreira and Vilela (2004) studied factors affecting cash Union countries in Europe sample of companies, from 1987-2000. The results of the present study showed that the existing cash to positively impact investment opportunities and cash flows and negatively affected by liquidity assets, financial leverage and its size. Bank debt and existing cash negative correlation with each other and show that there is close relationship banking, enables companies to maintain existing precautionary motive less cash (Ferreira and Vilela, 2004).

Dittmar *et al.* (2003) showed that firms with financial constraints, its cash holdings in response to the increased volatility of cash flows increase because financial constraints of competition and conflict between current and future investments created, despite the risk of future cash flows, motivation for action to be precautionary savings (Dittmar *et al.*, 2003).

Cheng and Firth (2000) examined the determinants of cash in French companies. The results of his study shows that these companies when their work is high risk and high levels of cash flow, increase cash flow and financial leverage have a lot of the time it applied. Growing companies in comparison with mature firms hold more cash.

Brown *et al.* (1987) examined how the rights of shareholders to affect cash holdings. They found that at the international level, countries with weak law hold more cash to shareholders. In addition they concluded that the value of financial assets with negative correlation (Brown *et al.*, 1987).

Gruninger examined the behavior cash holdings in French, German, Japanese, British and US companies during the years 1996-2000 using data from the 4069 companies. This study focused on the relationship between leverage and cash holdings. Evidence of this study indicates a significant linear relationship between cash holdings and leverage. Results of this study also show that the effect of leverage on cash holdings partly depends on the characteristics of countries such as ownership concentration.

**Society and research sample:** Society of present study studies, including all of the companies listed in Tehran Stock Exchange that it must meet all the following conditions:

- Before 2008 have been accepted in Tehran Stock Exchange (According to Time territory)
- During the financial period 2008-2013 are active on the stock exchange (According to Time territory)
- Financial information required in the notes accompanying the financial statements in order to extract specific data is available
- Are among the banks and financial institutions (Investment companies, financial intermediaries, holding companies, banks and leasing)

#### Research hypotheses:

- First hypothesis: the operating cycle has an impact on corporate level of cash holdings
- Second hypothesis: inflation has an impact on level of cash holdings in companies

#### MODEL AND RESEARCH VARIABLES AND METHOD OF CALCULATION

According to the literature and the results of previous research, factors such as inflation, operating cycle, operating cash flows, company size, etc. have

effective impact on changes in corporate level of cash holdings, so we can change as a function of the level of cash holdings and explanation is as follows:

$$\Delta \text{Cash}_{it} = f(\text{CPI}, \text{Cycle}, \text{CF}, \text{Tobinq}, \text{Size}, \Delta \text{NWC}, \Delta \text{SDebt}, \text{Risk})$$

According to the mathematical model regression models can be formulated as follows:

$$\begin{aligned} \Delta \text{Cash}_{it} = & \beta_0 + \beta_1 \text{CPI}_{it}^2 + \beta_2 \text{CPI}_{it}^2 + \beta_3 \text{Cycle}_{it}^2 + \\ & \beta_4 \text{Cycle}_{it}^2 + \beta_5 \text{CF}_{it} + \beta_6 \text{Tobinq}_{it} + \\ & \beta_7 \text{Lnasset}_{it} + \beta_8 \Delta \text{NWC}_{it} + \beta_9 \Delta \text{SDebt}_{it} + \\ & \beta_{10} \text{Risk}_{it} + \epsilon_{it} \end{aligned}$$

#### Operational definition of variables

**Dependent variable:**  $\Delta \text{Cash}_{it}$  = change in the ratio of level of cash holdings, divided by the book value of the assets of the company i at the end of period t compared to the previous period

#### Independent variables:

- $\text{CPI}_{it}$  = inflation rate during the period t
- $\text{CYCLE}_{it}$  = operating cycles of firm i in period t

#### Control variables:

- $\text{CF}_{it}$  = ratio of cash from operating activities divided by the book value of the assets of the company i at the end of period t
- $\text{Tobinq}_{it}$  = ratio of market value of assets divided by the book value of the assets of the company i at the end of period t
- $\text{Lnasset}_{it}$  = size of company i at time t by the natural logarithm of the book value of the assets
- $\Delta \text{NWC}_{it}$  = net change in working capital of firm i at the end of period t compared to the previous period
- $\Delta \text{SDebt}_{it}$  = change of short-term debt to the book value of the assets of the company i at the end of period t compared to the previous period
- $\text{Risk}_{it}$  = i at time t systemic risk indicator

**The first hypothesis testing:** "Operation cycle affects corporate level of cash holdings".

**Test results:** According to Table 1, the level of significance (Sig.) of variable operating cycle (0.036) below the level considered significant in this study (5%); as well as absolute value of the t-statistic for this variable (2.788) larger than the t-statistic from the table with the same degree of freedom. Therefore,  $H_0$  hypothesis is

Table 1: The results of the fit of the regression equation

Name of variables	Variable coefficient	Coefficient value	Statistic	Significant level
Constant value	$\beta_0$	1.709	2.9090	0.0020
Inflation rate (CPI)	$\beta_1$	0.567	2.3020	0.0410
Operating cycle (CYCEL)	$\beta_2$	0.936	2.7880	0.0360
Cash of operation activities (CF)	$\beta_3$	0.909	2.6540	0.0340
Ratio of market value to asset book value (Tobinq)	$\beta_4$	-0.452	-2.8230	0.0190
Size of company (Lnasset)	$\beta_5$	0.311	-3.1210	0.0110
Net changes of asset ( $\Delta$ NWC)	$\beta_6$	0.755	1.0270	0.3410
Debt ratio to asset book value ( $\Delta$ SDebt)	$\beta_7$	-0.678	-3.4320	0.0097
Systematic risk index (Risk)	$\beta_8$	0.843	2.1120	0.0470

Coefficient determination = 0.518; F-statistic = 13.6750; Modified coefficient determination = 0.449; Significance (p-value) = 0.0015; Durbin-Watson statistic = 1.7530

rejected at the 95% confidence level and predicted that the operating cycle has an impact on corporate level of cash holdings is confirmed.

**Second hypothesis test:** “Inflation has an impact on corporate level of cash holdings”.

**Test results:** According to Table 1, the level of significance (Sig.) variable dividend policy (0.041) is below the level considered significant in the present study (5%) As well as absolute value of t-statistic (2.302) related to the larger variable of the t-statistic from the table with the same degree of freedom. Therefore  $H_0$  hypothesis is rejected at the 95% confidence level and a second hypothesis that inflation has an impact on corporate level of cash holdings, is confirmed.

In this study, the relationship between the rates of inflation, cash management and the company's operating cycle is investigated. Hence, in this chapter outline research hypotheses, research objectives and operational definition of variables and statistical methods used to test the hypotheses are described.

If Sig. value calculated by the software is less than the intended confidence level (equivalent to 5% in this study) confirmed the significantly variable and its associated hypothesis is confirmed. Also according to the statistic  $t$ , if the value of the equivalent value in Student's  $t$  table with the same confidence level (5%) is higher, the hypothesis is confirmed associated with it.

**First hypothesis testing:** “Operation cycle affects corporate level of cash holdings”.

**Results and commentary:** According to Table 1 the fourth quarter, a significant level (Sig.) of variable operating cycle (0.036) below the level considered significant in the present study (5%) as well as absolute value of the t-statistic for this variable (2.788) larger than the t-statistic from the table with the same degree of freedom. Therefore,  $H_0$  hypothesis is rejected at the 95% confidence level and predicted that the operating cycle has an impact on corporate level of cash holdings is confirmed. On the other hand, according to the positive values of the

coefficient of the operating cycle (0.936) can be concluded that the operating cycle has a direct impact on corporate level of cash holdings. So that, each unit increases in the operating cycle of increased level of cash holdings 0.936. These results of the research are consistent to Lee and Lee (2009).

**Second hypothesis test:** “Inflation has an impact on corporate level of cash holdings”.

**Results and commentary:** According to Table 1 the fourth quarter, a significant level (Sig.) inflation rate (0.041) below the level considered significant in the present study (5%) as well as absolute value of t-statistic (2.302) related to these larger variables of the t-statistic from the table with the same degree of freedom. Therefore,  $H_0$  hypothesis is rejected at the 95% confidence level and a second hypothesis that inflation has an impact on corporate level of cash holdings, is confirmed. On the other hand due to the positive value index inflation rate (0.567), we can conclude that. So that, each unit increase in inflation rate will increase level of cash holdings 0.567. These results of the research are consistent to Lee and Lee (2009).

## CONCLUSION

According to the results of the study hypothesis is based on the direct impact of inflation rate on level of cash holdings and operating cycle to managers and directors of companies it is proposed to maintain the optimum level of cash in the analysis and decisions of the companies to consider in their decisions. These factors are important because transparency of decision-making and results will also be doubled.

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