

## The Effects of Earning Management on Corporate Cash Holdings: Empirical Evidence From Iran

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**Abstract.** Holding cash is a matter of managerial discretion. The aim of this paper is to contrast the effect of Accruals Quality on cash holding for a sample of 120 firms listed in the Tehran Stock Exchange during 2001-2011.

The results show that firms with good accruals quality hold lower cash levels than firms with poor accruals quality. This result conform the findings of Teruel & Solano (2009), which state that the quality of accounting information may reduce the negative effects of information asymmetries and adverse selection costs, allowing firms to reduce their level of corporate cash holdings. The results also show that cash holdings decrease when firms increase their use of bank debt and in case of investment in other liquid assets. In contrast with this, larger firms and those in financial distress hold higher levels of cash. On the other hand there is not any relationship between growth options, long term leverage, opportunity costs, leverage, dividends and the capacity of firms to generate cash flow and levels of cash holding.

**Keywords:** Earnings quality, information asymmetry, agency conflict

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Received: November 2012; Final Revision: May 2013

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## 1. Introduction

In financial environment without asymmetric information, taxes and agency and/or transaction costs, firms would not have need to hold cash since there are no benefits or costs of allocating cash. If internal cash of company is not enough they can obtain external financing at fair prices, without to compromise growth and investment. Hence, in a frictionless world, decisions about cash would not impact the firm value (Stiglitz 1974) or shareholder wealth (Opler, Pinkowitz, Stulz and Williamson 2001). Nevertheless, the markets are far from perfect; thus, raising external capital is more costly for firms relative to internal resources, due to market imperfections (Greenwald, Stiglitz and Weiss 1984; Myers and Majluf 1984).

This reasoning considers that cash decisions may be affected by the existence of market imperfections such as information asymmetry, agency conflicts or financial distress. On the one hand, information asymmetry and agency conflicts between shareholders and creditors make it difficult and expensive for firms to obtain funds. In these circumstances, firms may build up their liquid monetary assets in order to reduce the costs associated with dependence on external financing. On the other hand, the existence of large free cash flow may induce discretionary behaviors in the management that are detrimental to the shareholders (Jensen, 1986). Finally, accumulating cash may reduce the firms' likelihood of entering financial distress.

Besides, empirical research findings indicate the role of accounting quality as a measure of information asymmetry in different contexts. They show that higher accounting quality reduces information asymmetry and this leads to a lower cost of capital and cost of debt (Bhattacharya et al., 2003; Francis et al., 2004, 2005), higher investment efficiency (Biddle and Hilary, 2006; Verdi, 2006), and a lower adverse selection component of trading costs around earnings announcements (Bhattacharya et al., 2007).

In this paper, based on Teruel and Solano (2009) research method, the aim of the present paper is to examine the effect of accounting quality on the level of cash holdings, in the Tehran Stock Exchange during

2001-2011 over a sample of 120 firms. The present paper contributes to the literature examining the economic implications of accounting quality and shows the important role that accruals quality plays as a determinant of the level of cash holdings.

The rest sections of this paper have been organized as follows: Section 2 presents a literature review on capital structure and develops a testable hypothesis. Section 3 describes how the variables are measured and what methodology was chosen. Section 4 presents the empirical results, including whether the proposed hypothesis are accepted or rejected and Section 5 summarizes the main conclusions of the research.

## **2. Literature Review and Hypothesis**

### **2.1 Cash Holding**

According to Opler et al. (1999), there are three theories on why companies hold high levels of cash. Trade-off theory, pecking order or financing hierarchy theory, and free cash flow theory are three theories which are considered as follow:

Trade-off theory: The trade-off theory of cash holdings states that the optimal liquidity level is a trade-off between the costs and the benefits of holding cash. The most obvious benefits of cash are that cash reduces the exposure to financial distress; cash does not disrupt investment policy when financial constraints are met, and cash lowers the costs of raising external funds or liquidating assets. The major cost incurred by holding cash on the other hand is the opportunity cost of the capital invested in liquid assets (Ferreira and Vilela, 2004).

Financing hierarchy or Pecking Order Theory: Myers and Majluf's (1984) pecking order theory assumes that a firm's capital structure is a direct consequence of its profitability, investment needs and payout policy, which depend on how expensive it is to access capital markets. According to the pecking order theory, cash becomes available to a firm when its profits exceed its investment needs. When cash is available abundantly and the firm is confident about the profitability of its investments, then excess cash is paid out in the form of dividends. In addition, Myers and

Majluf (1984) consider that there is no optimal level of cash but cash has rather the role of a buffer between retained earnings and investment needs. The pecking order theory describes a financing hierarchy that minimizes the costs associated with external financing resulting from information asymmetries and signaling problems. In this hierarchy, internal financing has the highest priority, followed by low risk debt, leaving equity as a last resort (Myers and Majluf, 1984).

Free cash flow theory: Jensen (1986) suggests that managers have an incentive to cash reserve to increase the amount of assets under their control and to gain discretionary power over the firm investment decision. Having cash available to invest, the manager does not need to raise external funds and to provide capital markets detailed information about the firm's investment projects. Hence, managers could under take investments that have a negative impact on shareholders wealth (Ferreira and Vilela, 2004).

## 2.2 Accrual Quality

Previous researches indicate that, accounting quality, or more generally, financial reporting quality, can improve investment efficiency by reducing information asymmetry in two ways (Verdi, 2006):

(i) financial reporting quality reduces the information asymmetry between the firm and investors and, therefore, reduces adverse selection costs and lowers the cost of financing for the firm; and

(ii) Financial reporting quality reduces information asymmetry between investors and the managers, and, by mitigating agency conflicts, lowers the cost to shareholders of monitoring managers and improves project selection.

## 2.3 Hypothesis Development

With regards the benefits of keeping cash, in the first place the existence of information asymmetry makes it more expensive for firms to obtain external funding due to problems associated with adverse selection. From this perspective, Myers and Majluf (1984) argue that in the presence of information asymmetry firms establish a hierarchy in their

use of financing sources. They will prefer to finance themselves with resources generated internally before resorting to the market. Agency conflicts between shareholders and creditors also make it more difficult and more expensive to obtain funds. All this can lead to distortions in the firms' investments that generate underinvestment problems (Myers, 1977). In this situation, keeping liquid assets can reduce the costs of being dependent on external financing. Moreover, possessing certain cash levels reduces the likelihood of financial distress, especially for those firms with more volatile cash flows. However, investing in cash holdings also has costs. On the one hand, it has an opportunity cost for the firm, since it will generally provide a lower return than productive investments.

On the other hand, keeping a higher level of liquid financial resources in the firm can also generate agency conflicts between managers and shareholders. Thus, the existence of large free cash flow can generate discretionary behaviors in the managers that are detrimental to shareholder interests (Jensen, 1986).

Previous research has found that accounting quality can reduce discretionary behaviors and information asymmetry between

(i) the firm and investors, which results in lower adverse selection costs and lower financing costs for the firm, and

(ii) managers and shareholders, which leads to improved project selection (Verdi, 2006).

Nevertheless, if firms increase the quantity and quality of public information available to investors, firms can reduce information asymmetries with investors and lower their cost of financing. On the other hand, because of the information asymmetry conflict between managers and shareholders, accounting information, especially earnings, has been used by shareholders to monitor managers and reduce agency costs (principal-agent conflict) in setting executive compensation. Based on this, accounting quality might help the monitoring of managers by shareholders, reducing the agency conflict and improving investment efficiency (Verdi, 2006).

The focus on accruals quality in this study is based on the evidence (Dechow, 1994; Subramanyan, 1996) that accruals increase the ability

to predict future cash flows. Therefore, from the point of view of creditors, poor accruals quality will make it more difficult to estimate future cash flows (from which the debt repayments will be serviced) using accounting information.

So we hypothesize that as accounting quality/accruals quality reduces information asymmetry, firms with higher accounting quality will need lower levels of cash holdings.

We also based on Teruel and Solano (2004) research, controll the main explanatory factors that are relevant when determining firm cash levels. Which are as follows:

## 2.4 Growth Opportunities

The existence of growth opportunities in firms is an important factor that positively affects cash levels, as has been shown in various empirical studies (Kim et al., 1998; Opler et al., 1999; Ferreira and Vilela, 2004; Ozkan and Ozkan, 2004). As Myers and Majluf (1984) point out, firms whose value is largely determined by their growth opportunities have larger information asymmetry. Consequently, firms with greater growth opportunities incur higher external financing costs. They also suffer more serious agency conflicts associated with the debt, which can lead to underinvestment (Myers, 1977), insofar as it discourages shareholders from embarking on profitable projects.

On the other hand, firms with more growth opportunities may also incur greater costs of financial distress (Harris and Raviv, 1990; Shleifer and Vishny, 1992). This is because their value depends on their growth opportunities rather than on tangible assets or specific cash flows. Thus, this type of firm will keep higher cash levels to avoid costs of financial distress. In this respect, John (1993) finds that firms with good growth opportunities but few tangible assets tend to keep higher cash holdings. Hence we might expect firms with more investment opportunities to keep higher liquidity levels, in order not to limit or cancel their profitable investment projects. Their value depends on carrying out these projects, so that the cost of not having sufficient cash to make the investments is higher.

## 2.5 Size

Size is another significant variable that affects cash holdings. The traditional models to determine the optimal cash levels (Baumol, 1952; Miller and Orr, 1966), or more recent models such as that of Mulligan (1997), demonstrate that there are economies of scale associated with the cash levels required to confront the normal transactions of the firm, so that larger firms can keep lower cash holdings.

Moreover, we should also bear in mind that firm size is related to another set of factors that may influence liquidity levels. More specifically, smaller firms suffer more severe information asymmetries (Berger, Klapper and Udell, 2001), more financial constraints (Whited, 1992; Fazzari and Petersen, 1993) and they are more likely to suffer financial distress (Rajan and Zingales, 1995; Titman and Wessel, 1988). Also, financial distress are associated with high fixed costs and these costs are proportionately greater for smaller firms (Warner, 1977). Thus, we would expect a negative relation between firm size and cash holdings.

## 2.6 Debt Maturity Structure

The distribution in the debt maturities between short and long term can also affect decisions concerning liquid financial assets, as Guney et al. (2003) and Ferreira and Vilela (2004) sustain. On the one hand, the use of short-term debt obliges firms to periodically negotiate the renewal of their credits, with the consequent risk of refinancing. Thus, firms with a larger proportion of short-term debt will keep higher cash levels in order to avoid the financial distress that they would incur if their loans failed to be renewed.

Furthermore, on the basis of debt maturity structure models (for example Flannery, 1986, and Kale and Noe, 1990), firms with greater information asymmetry will keep more short-term debt. This relation is confirmed in various empirical studies, so that debt maturity can also be regarded as a proxy for information asymmetry. From this perspective therefore we would expect firms with a higher proportion of short-term debt to keep higher cash holdings.

## 2.7 Relationships with Financial Institutions

Establishing bank relationships between borrower and lender reduces information asymmetry and agency problems, since valuable information about client quality can be disclosed. Thus, according to various theoretical contributions (Leland and Pyle, 1977; Diamond, 1984; Boyd and Prescott, 1986), establishing stable links with financial institutions can improve both the availability and the conditions of financing. Various works have empirically demonstrated that keeping banking relationships can be beneficial to firms, insofar as contact between the firm and financial intermediary can improve the availability of funds and lower their costs (Petersen and Rajan, 1994).

On the basis of these arguments, Ozkan and Ozkan (2004) maintain that building relationships with financial institutions will improve firms' ability to access external financing. This suggests that firms with a higher proportion of bank debt will be able to access external financing more easily. The firms could then keep lower cash levels, as indeed Ozkan and Ozkan (2004) find in the case of British firms. Thus, we would expect a negative relation between bank debt and cash holdings.

## 2.8 Opportunity Cost

One of the major costs incurred by holding cash is the opportunity cost of the capital invested in liquid assets (Ferreira and Vilela, 2004). This variable should be negatively related to cash holdings, since it measures how attractive investment in the firm's activities is compared to investing in liquid assets.

## 2.9 Leverage

The leverage ratio will also affect firms' cash holdings. The empirical evidence (Kim et al., 1998; Opler et al., 1999; Ferreira and Vilela, 2004; Ozkan and Ozkan 2004) demonstrates a reduction in cash levels when firms increase their financial leverage. This may be because the higher the financial leverage, the higher the costs of the funds used to invest in liquid assets (Baskin, 1987). In addition, as John (1993) maintains, firms that can access the debt market can resort to lending as a substitute for liquid assets.



## **2.10 Liquidity**

The presence of liquid assets besides cash and marketable securities can also affect firms' optimal cash holdings, since they can be considered substitutes of cash. We would therefore expect firms with more liquid assets other than cash holdings to reduce their cash levels

## **2.11 Cash Flows Generated by the Firm**

Myers and Majluf (1984) argue that in the presence of information asymmetry firms will establish a hierarchy in their use of funding sources. According to hierarchy theory, firms prefer to fund themselves with resources generated internally before resorting to the market. In these circumstances, firms with large cash flows will keep higher cash levels, as is confirmed by Opler et al. (1999) and Ozkan and Ozkan (2004), for the US and British markets respectively, or Ferreira and Vilela (2004) for European Monetary Union (EMU) countries. However, Kim et al. (1998) claim that the relation is in fact negative, as they consider that cash flows represent an additional source of liquidity for the firm and can therefore substitute cash.

## **2.12 Probability of Financial Distress**

Costs of financial distress arise when the firm cannot meet its payment obligations contracted with third parties, either in the short or the long term. This factor could affect firms' cash holding decisions, although there is certain controversy about the direction. Guney et al. (2003), Ferreira and Vilela (2004) and Ozkan and Ozkan (2004) argue that firms in financial distress could raise their cash levels in order to reduce their default risk. However, Kim et al. (1998) expect firms with a greater likelihood of financial distress to have lower levels of liquidity.

## **2.13 Dividend**

Dividend policy might also affect levels of cash holdings, but there is some controversy about the direction. According to Opler et al. (1999), firms paying dividends will have lower cash levels, because they can obtain funds at lower cost by reducing dividend payments to their share-

holders. However, Ozkan and Ozkan (2004) point out that firms that usually pay dividends can also hold more cash in order to have enough cash to support their pay out policy. The expected relationship with the level of cash holdings is not clear.

## 2.14 Previous Researches

In the recent years there has been a growing interest in corporate cash holdings in the finance literature. This interest has been especially motivated by the fact that corporations hold significant amounts of cash in their balance sheets.

Garca-Teruel et al. (2009) showed that firms with good accruals quality hold lower cash levels than firms with poor accruals quality. This finding suggests that the quality of accounting information may reduce the negative effects of information asymmetries and adverse selection costs, allowing firms to reduce their level of corporate cash holdings. More recently, Garca-Teruel et al. (2010) studied the relationship between accruals quality and debt maturity structure. Their results suggest that firms with higher accruals quality can obtain a longer maturity of their debt than those firms with lower accruals quality.

Sun et al. (2011) showed that poor earnings quality has a negative impact on the value of corporate cash holdings and a positive impact on the level of cash reserves. They found that the negative effect of poor earnings quality either neutralizes or more than offsets the positive effect of excess cash on firm value. McInnis and Collins (2011) argue that accruals quality improves after analysts begin issuing cash flow forecasts. Liu and Maue (2011) studied the relationship between corporate cash holdings and CEO compensation incentives and found a positive relation between CEO risk-taking incentives and cash holdings, and a negative relation between risk-taking and the value of cash to shareholders. They report that negative effect of risk-taking on the value of cash is robust after controlling for corporate governance, is stronger in firms with high leverage, is reversed for unlevered firms, and is not present in financially constrained firms. They also find that the likelihood of liquidity covenants in new bank loans is increasing in CEO risk-taking incentives. Tong (2010) investigated the relationship between CEO risk incentives

and corporate cash holdings with higher CEO risk incentives have less cash holdings. The results show that the value of cash holdings is higher in firms with higher CEO risk incentives, which are consistent with risk-related agency theory.

In Iran, Moradi (2008) showed that there is a negative significant relationship between financial leverage and income smoothing. Also, in companies that have a higher free cash flow, there is more negative significant relationship between financial leverage and income smoothing. Fakhari and Taghavi (2010) examined the effect of the quality of financial reporting according to the quality of discretionary accruals on the amount of cash in Iranian companies. The evidence of analysis based on the combined cross-sectional data and time series data indicates that the quality of financial reporting has a negative and significant relationship with the cash and cash equivalents. The results also indicate that the growth opportunities variables, cash flow and cash assets have a positive effect on cash holding, and the variables of size, debt maturity and the opportunity cost have a negative relationship with cash holding.

Kuan et al. (2010) investigated the relationship between cash holdings and corporate governance in family-controlled firms. Their results show that the impact of corporate governance, with its separation of control rights and cash flow rights, director-ownership-in-pledge ratio and proportion of independent directors on cash policy, differs between family-controlled and nonfamily-controlled firms. Subramaniam et al. (2011) find that diversified firms hold significantly less cash than their focused counterparts do. They find that the theories that rely on the potentially effective use of asset sales of non-core segments of diversified firms to generate cash, and the increased agency/influence costs in diversified firms do not offer an economically significant explanation for the lower cash holdings among diversified firms.

### 3. Methodology and Measurement of Variables

#### 3.1 Data Collection

The statistical population in this study includes the listed firms in Tehran Stock Exchange in the period of 2001 - 2011. Existence of some heterogeneousness among the listed firms in Tehran Stock Exchange led to consider some special conditions for selection of studied companies as follows:

- a- Firms should have been accepted in TSE since 1999.
- b- Fiscal periods of these firms should be leading to the end of the year.
- c- Firms should not have changed their year-ends.
- d- Firms should not be in a financial or investing industry.
- e- There is a need for availability of data.

Upon above conditions, we select 120 firms. We collect data from database of Tehran Stock Exchange and Rahavarde Novin software. Then we analyze these data by SPSS software version 18.

#### 3.2 Dependent Variable

The dependent variable used in this study has been measured in two ways. First, we used the variable CASH1, calculated as the ratio of cash and short term investments to total assets. Second, we used the variable CASH2, which is identical to CASH1 except that in the denominator cash and short term investments are subtracted from the total assets (Opler et al., 1999). The higher the values of both these measures, the higher the firms' cash level.

#### 3.3 Accruals Quality Metric

In this study accruals quality used as a proxy for accounting quality and apply Dechow and Dichev (2002) model. In this model, accruals quality is measured by the extent to which current working capital accruals map onto operating cash flows of the prior, current and future periods. Therefore, Dechow and Dichev (2002) regressed current working capital accruals ( $WCA_{i,t}$ ) on cash flow from operations of the previous fiscal

year ( $CFO_{i,t-1}$ ), of the current year ( $CFO_{i,t}$ ), and the subsequent fiscal year ( $CFO_{i,t+1}$ ), all deflated by average total assets.

$$\frac{WCA_{i,t}}{TA_{i,t-1}} = \beta_0 + \beta_1 \frac{CFO_{i,t-1}}{TA_{i,t-1}} + \beta_2 \frac{CFO_{i,t}}{TA_{i,t-1}} + \beta_3 \frac{CFO_{i,t+1}}{TA_{i,t-1}} + \frac{\Delta S_{i,t}}{TA_{i,t-1}} + \varepsilon_{i,t}$$

where  $WCA_{i,t}$  is working capital accruals of firm (i) in year(t), calculated as the change in current assets ( $\Delta CA$ ), minus the change in cash ( $\Delta CASH$ ), minus the change in current liabilities ( $\Delta CLiab$ ) plus the change in current portion of long-term debt ( $\Delta STDebt$ ).  $CFO_{i,t-1}$ ,  $CFO_{i,t}$  and  $CFO_{i,t+1}$  signify cash flow from operations of firm (i) in years (t), (t-1) and (t+1), respectively. McNichols (2002) increase the correlation coefficients by inserting the control variable change in sale in the model. So following McNichols (2002), we will use this variable.

All variables are deflated by total assets at the end of the previous year in order to avoid problems of heteroscedacity. The residual vector reflects the variation in working capital accruals unexplained by cash flows of the previous, current and subsequent periods. Therefore, the absolute value of the residual for each firm-year observation is an inverse measure of accruals quality  $AQ_{i,t} = |\hat{\varepsilon}_{i,t}|$  (the higher the residual, the lower the accruals quality).

### 3.4 Other Control Variables

Control variables based on Teruel and Solano (2009) research measured as follows.

#### 3.4.1. Growth Opportunities

This variable is measured by means of Tobin's q, calculated as the ratio between the firm's market value and book value of its assets. We expect a positive relationship with the dependent variable.

#### 3.4.2. Size

To measure size we used the natural logarithm of sales. A negative relation is expected between size and the amount of liquid financial assets held, in the firms.

### **3.4.3. Debt Maturity Structure**

The debt maturity structure is measured by the variable *LTDEBT*, defined as long-term debt divided by total asset. A negative relation between this variable and the dependent variable expected. Indeed, firms that use more long-term debt have less risk of refinancing and less information asymmetry.

### **3.4.4. Relationships with Financial Institutions**

The relationship with financial institutions (*BANKD*) has been approximated by considering the debt levels that the firms maintain with their banks. Specifically, *BANKD* is calculated as the ratio of short and long-term bank debt to total debt. The expected relation between this variable and firms' cash holdings is negative.

### **3.4.5. Opportunity Cost**

Finally, the opportunity cost of the capital invested in liquid assets (opportunity) has been measured, following Kim et al. (1998), as the difference between the return on the firm's assets (gross operating profits/assets) and the return on Treasury bills which is 20%. According to these authors this variable should be negatively related to cash holdings, since it measures how attractive investment in the firm's activities is compared to investing in liquid assets

### **3.4.6. Leverage**

The leverage (*LEV*) has been measured by the ratio of debt to shareholder equity. The previous empirical evidence has found a negative relation between this variable and cash holdings.

### **3.4.7. Liquidity**

On the other hand, and similarly to Opler et al. (1999), Ferreira and Vilela (2004) Ozkan and Ozkan (2004) and Teruel and Solano (2009) we calculated the ratio of working capital less cash and short term investments to total assets (*Liquid*) to measure the existence of other liquid assets that may substitute cash. In this case we would expect a negative relation.

### 3.4.8. Cash Flows Generated by the Firm

The cash flow has been approximated by dividing pre-tax profits over sales (CFLOW). We would expect firms with larger cash flows to hold more cash.

### 3.4.9. Probability of Financial Distress

The likelihood of financial distress is calculated according to the re-estimation of Altman's (1968) model carried out by Begley, Mings and Watts (1996), given by the following expression:

$$ZSCORE = 0.104 * X_1 + 1.010 * X_2 + 0.106 * X_3 + 0.003 * X_4 + 0.169 * X_5$$

where  $X_1$  = Working capital/Total assets;  $X_2$  = Reserves/Total Assets;  $X_3$  = Net operating profits/Total assets;  $X_4$  = Book value of capital/Book value of debt;  $X_5$  = Sales/Total assets.

A higher ZSCORE implies a lower default risk and its effect on cash holdings is not at all clear

### 3.4.10. Dividend

Finally, we include the dummy DIV in our regressions to control for the potential impact of the firm's dividend policy on its cash holdings. This variable takes the value 1 if firms distribute dividends and 0 otherwise.

## 3.5 Method of Analysis

According to Ozkan and Ozkan (2004), cash decisions are explained following a partial adjustment model to a target cash ratio. This fact has also been confirmed by Garcia-Teruel and Martinez-Solano (2008) for Spanish firms. Considering the impact that accruals quality could have on cash levels, and including other determinants previously considered in the literature, based on Teruel and Solano (2009) we estimated the following model:

$$\begin{aligned} CASH_{i,t} = & \beta_0 CASH_{i,t-1} + \beta_1 AQ_{i,t} + \beta_2 GROTH_{i,t} + \beta_3 SIZE_{i,t} \\ & + \beta_4 LTDEBT_{i,t} + \beta_5 BANK_{i,t} + \beta_6 OPPORTUNITY_{i,t} \\ & + \beta_7 LEV_{i,t} + \beta_8 LIQUID_{i,t} + \beta_9 CFLOW_{i,t} + \beta_{10} ZSCORE_{i,t} \\ & + \beta_{11} DIV_{i,t} + \eta_i + \lambda_t + \gamma_{i,t} \end{aligned}$$

where  $CASH_{i,t}$  measures cash holdings;  $AQ_{i,t}$  is an inverse proxy of accruals quality;  $GROTH_{i,t}$  measures growth options;  $SIZE_{i,t}$  is firm

size;  $LTDEBT_{i,t}$  is long term leverage;  $BANK_{i,t}$  is bank debt;  $OPPORTUNITY_{i,t}$  is opportunity cost of keeping cash;  $LEV_{i,t}$  is leverage;  $LIQUID_{i,t}$  is investment in other liquid assets;  $CFLOW_{i,t}$  is cash flow;  $ZSCORE_{i,t}$  is the probability of financial distress;  $DIV_{i,t}$  is a dummy variable that takes the value 1 if the firm has paid dividends;  $\eta_i$  represents firms specific effects (unobservable heterogeneity);  $\lambda_t$  is temporary effects; and  $\gamma_{i,t}$  is random disturbances.

## 4. Empirical Results

The basic descriptive statistics for the variables that used in this study are shown in Table 1. According to this table, mean cash holdings for CASH(1) and CASH(2) are respectively 5.8 and 6.8 percent, which means that firms of TSE hold 5.8 up to 6.8 of their assets on cash on average, That indicates that the investment in cash is a significant component of total assets. Firm's size variable spreads from 4.2 to 7.9 showing that sample firms are in the vast range of small and large firms. Moreover, the average leverage ratio of the firms is 68.23 per cent and the 8.4 per cent of the assets are financed with long-term debt. The bank debt represents, on average, 36.32 per cent of total debt.

Table 1: Description Statistics of variables

	Mean	Median	Var	Std. Dev	Minimum	Maximum	N
WCA	.03786	.03770	.017	.12901	-.70951	.61512	1120
CFot	.11838	.10594	.017	.12949	-.31663	.65215	
Change Sale	.10068	.09788	.067	.25845	-3.1005	1.8673	
CASHt(1)	.05775	.03774	.004	.06589	.00017	.51582	
CASHt(2)	.06817	.03922	.010	.10086	.00017	1.0653	
AQ	.0804328	.0562535	.006	.08031	.00003	.55379	
Q tobin	3.8672	2.4239	29.41	5.4227	-14.915	77.608	
Size	5.4327	5.3585	.335	.57901	4.2262	7.9222	
LTDEBT	.08433	.05767	.007	.08625	.00000	.77554	
BANK	.36325	.36264	.043	.20772	.00000	.94604	
OPPORTUNITY	-.04608	-.06802	.014	.11946	-.44909	.46929	
LEV	.68237	.68382	.032	.17977	.15687	2.3567	
LIQUID	.00868	.01777	.037	.19261	-1.4206	.81047	
CFLOW	.21960	.15625	.991	.99524	-2.4519	32.923	
ZSCORE	.24063	.22371	.041	.20235	-1.9535	1.2672	



At the first step we run Dechow and Dichev (2002) model to measure accrual quality. As we said in section 3, The residuals from the regression reflect the magnitude of accruals unrelated to cash flow realizations so they are measures of accruals quality where higher residuals denotes lower quality. The results are reported in table 2.

**Table 2: Regression Results of Dechow and Dichev model (2002)**

Variables	Unstandardized Coefficients		t	Sig.	ANOVA		R Square	Durbin-Watson
	B	Std. Error			F	Sig.		
(Constant)	.047	.005	9.146	.000				
CFOt-1	.222	.034	6.613	.000				
CFOt	-.490	.030	-16.161	.000	85.184	.000	.223	1.839
CFOt+1	.103	.023	4.444	.000				
Change Sale	.128	.013	9.993	.000				

The result of the running research regression reported in tables (3) and (4). The model has been estimated using two proxies for the dependent variable. In table (3), the dependent variable is CASH(1) which is calculated as the ratio of cash and short term investments to total assets and in table (4) the dependent variable is CASH(2) which is identical to CASH1 except that in the denominator cash and short term investments are subtracted from the total assets. The results for both dependent variables are, in general, consistent.

**Table 3: Regression Results of corporate cash holdings on accruals quality (1)**

Variables	Unstandardized Coefficients		t	Sig.	ANOVA		R Square	Durbin-Watson
	B	Std. Error			F	Sig.		
CASHt-1(1)	.465	.023	20.287	.000				
AQ	.044	.019	2.344	.019				
Qtobin	.000	.000	1.471	.142				
Size	.005	.002	2.945	.003				
LTDEBT	.000	.017	-.022	.983				
BANK	-.030	.008	-3.899	.000	199.554	.000	.670	1.960
OPPORTUNITY	.019	.017	1.089	.276				
LEV	-.013	.010	-1.203	.229				
LIQUID	-.100	.010	-9.823	.000				
CFLOW	.000	.002	-.148	.882				
ZSCORE	.072	.012	5.780	.000				
DIV	.001	.005	.155	.877				

As can be seen in table (3) and (4), the regression coefficients of the AQ variable are statistically positive and significant at 5 per cent level of significance on CASH(1) and at 1 per cent level of significance on CASH(1). As we know coefficient of AQ is an inverse proxy of accruals quality, so there is a significant and negative relationship between cash holdings and accruals quality, That is, firms with higher values of AQ (poorer accruals quality) need to maintain higher levels of cash holdings than those with higher accruals quality. This result is consistent with our hypothesis that accounting quality reduces information asymmetry and thus allows a more efficient structure of assets with lower levels of cash holdings.

**Table 4: Regression Results of corporate cash holdings on accruals quality (2)**

Variables	Unstandardized		t	Sig.	ANOVA		R Square	Durbin-Watson
	Coefficients				F	Sig.		
	B	Std. Error						
CASH-1(2)	.448	.023	19.760	.000	142.245	.000	.588	1.991
AQ	.058	.029	2.015	.044				
Qtobin	.001	.000	1.181	.238				
Size	.007	.003	2.705	.007				
LTDEBT	.004	.027	.147	.883				
BANK	-.049	.012	-4.098	.000				
OPPORTUNITY	.032	.027	1.195	.232				
LEV	-.023	.016	-1.407	.160				
LIQUID	-.154	.016	-9.836	.000				
CFLOW	.000	.002	-.211	.833				
ZSCORE	.106	.019	5.549	.000				
DIV	3.748E-5	.008	.004	.996				

Considering the control variables, contrary to the expected negative relationship, the size regression coefficient is positive, indicating that contrast to trade of theory, the relationship between cash holdings and firm's size is positive, that is, increasing firm's size leads to increase in cash holdings, which is according to free cash flow hypothesis. My result about size is consistent with the findings of Mokhtari et.al (2012), and

inconsistent with Teruel & Solano (2009) and Ozkan and Ozkan (2004). Moreover, the relation with the variable BANKD is negative and significant at the 1 per cent level. As expected, firms that can easily get funds from banks keep lower levels of cash. The presence of other liquid assets is another explanatory factor of the level of cash holdings which is significant at 1 per cent level. This supports the hypothesis that firms with more liquid assets will tend to reduce their cash levels, as these assets can be used as cash substitutes. In addition we find a significant relationship at the 1 per cent level with the likelihood of financial distress. As we expected firms in financial distress could raise their cash levels in order to reduce their default risk. This finding is in accordance with Guney et al. (2003), Ferreira and Vilela (2004) and Ozkan and Ozkan (2004).

On the other hand, we did not find a significant relationship between cash holdings and growth opportunities (GROWP), which is consistent with the results of Guney et al. (2003) and Teruel & Solano (2009). Nor did we find a significant relationship with the LTDEBT. In this way, we also found no significant relationship with the opportunity cost of the capital invested in liquid assets that is similar to Teruel & Solano (2009). Furthermore, from the regression coefficients for the LEV and CFLOW variables, we can observe the existence of no significant effect on cash holding, indicating that LEV and CFLOW is not seriously considered in cash holding of Tehran Stock Exchange firms. My result about LEV and CFLOW is not consistent with the findings of Teruel & Solano (2009). Also we didn't find a significant relationship with the dummy variable DIV. This might be explained in terms of the opposite effects this variable is expected to have on cash holdings.

## 5. Conclusion

In this paper, the relationship between accruals quality and the level of cash holdings for Tehran Stock Exchange were investigated. Overall, our findings, consistent with the results of Teruel and Solano (2009) confirm an inverse relation between accruals quality and the level of cash holdings. So firms with poor accruals quality hold higher cash levels than

firms with good accruals quality. Consequently, reporting high-quality information in terms of accruals allows firms to hold lower levels of cash, reducing unproductive liquid resources on their balance sheets. These findings contribute to the debate regarding the role of accounting quality in reducing information asymmetries that impede efficient corporate investment policies, and provide valuable insights for managers, investors, creditors and researchers. With respect to managers, our results suggest that enhancing accounting quality firms might improve the management of cash holdings, reducing their cash levels in balance sheet and, consequently, improving investment efficiency. As far as investors and creditors are concerned, our results suggest that because firms with good accruals quality might improve the management of their investments, investors and creditors may incorporate, respectively, the quality of accounting information as a valuable factor into their discount rates and debt contract terms. For researchers, providing empirical evidence that accounting quality has economic implications for firms (management of cash) our findings extend prior research on the relevance of accruals quality, and suggest that future studies on cash holdings should control for accounting quality.

The results also show that cash holdings decrease when firms increase their use of bank debt and in case of investment in other liquid assets. In contrast with this, larger firms and those in financial distress hold higher levels of cash. On the other hand there is not any relationship between growth options, long term leverage, opportunity costs, leverage, dividends and the capacity of firms to generate cash flow and levels of cash holding.

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