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The Effect of Financial Constraint Indexes on Risks Associated With Excess Cash Holdings

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ABSTRACT

The Purpose of this Paper to examine the effect of firm financial constraint indexes on the risks associated with the excess cash holdings, considering the Stock Trading Continuity Index. In this study, two criteria for liquidity risk are used to measure risk, which include twelve-month liquidity risk and beta liquidity risk. Also in this research, multivariate regression and ordinary least squares method are used in order to test the hypotheses. The research sample includes 130 companies of listed companies in Tehran Stock Exchange that is seven-year period from the beginning of 2011 until the end of 2017. The research results show that financial constraints due to the size of the company, payout ratio, and the WW index of Whited Wu affects the relationship between liquidity risk and excess cash holdings and improvement of the stock trading continuity associated with excess cash holding is greater for financially constraint firms. But the amount of the cash coefficient for the KZ Index of Kaplan Zingales is almost the same for the constrained and unconstrained firms. Overall, the results show that the liquidity risk reduction associated with the excess cash holdings is greater for financially constraints firms.

Keywords:

Excess Cash Holdings, Trading Continuity, Liquidity Risk, Financial Constraints.

1. Introduction

Financial Constraints Discuss is one of the most important and essential topics for all companies. Stock Failure in the Iran's capital market has made unavoidable companies face with financial constraint. The important issue in these situations is how companies decision making. Due to the main task of investment companies and their important role in the economy of the country, more attention is paid to this issue. Also decisions related to investment and financing has been one of the main drivers of competition and survival in today's world, and should be made aimed at maximizing the value and growth of the company (Akhgar&Karani,2019).Therefore, this study examines the effect of firms' financial constraint indexes on risks associated with excess cash holdings, for this reason this study has three scientific achievements: First this study contributes to the literature on how cash holding can benefit firms facing financing constraint. Several Studies argue and show that excess cash can benefit firms by minimizing the need to fund future investment opportunities with costly external financing (Kim et al., 1998). This study identifies a new channel through which excess cash can reduce the cost of financing. Excess cash increases trading activity and reduces the liquidity premium required by investors in financial constraint firms. Second this study improves our understanding of the mechanisms that underlie the relation between excess cash holdings and expected stock returns in financial constraint firms (Yuliarto Nugroho, 2020). Since cash helps firms finance their profitable investment opportunities and survive economic downturns excess cash may serve as useful mechanism for firms, particularly financially constrained ones to attract investors (Goplan et al, 2012).Simutin (2010) documents a positive association between excess cash and future returns. He also shows that high excess cash firms have higher market betas and investment expenditures. His findings indicate that high excess cash firms earn higher returns because they are riskier than their low excess cash counterparts. This contribute to this strand of research by providing a rationale and evidence on how liquidity risk acts as a channel through which excess cash holdings can affect expected stock returns in financial constraint firms. Third, the effect of financial constraint indexes with the highest impact dimension on the risks associated with excess cash holdings id discussed in this study (Simutin, 2010). The term financial constraint was first introduced by Fazari group Hubbard and Petersen (Fazzari et al , 2000). In the prior to Fazari, there had also been some research in this field, but most researchers see the beginning of the study in the field of evaluation financial constraints by Fazari research, and then Kaplan Zingales (Kaplan & Zingales, 1997). According to Fazari's theory, firms face financing constraints when there is gap between internal and external resources. The Iran market has struggled with financing due to low resources for investors and managers and lack of economic prosperity for companies. Therefore, identification the effective variables in the Tehran Stock Exchange in order to discover the type of constraint and also identification the variables to eliminate the effects of the financial constraint is felt more than ever. In such an environment, economic growth is low; compared to other developed economies and there is usually a lack of resources for project development (Karimpour et al, 2017).Economical institutions generally hold part of their assets in cash; to determine what amount of assets should be held in cash is one of the most important decisions that a business unit management makes. Researches done by (Kim et al., 1998), and (Ozkan and Ozkan,2004) respectively showed that corporate executives hold between 8.1 to 9.9 % of their total assets in cash. Survey of corporate executives shows, Cash holdings are used as a means of protecting against cash fluctuations in the context of corporate external financing constraints. Due to the different ability of business units to provide cash, while business units face financial constraints, the importance of holding a certain level of cash has a greater affect from the cash flow of business units.Faray et al. argue that financial constraints firms, when investment decisions making, have greater emphasis on cash flows, in fact, investment sensitivity to internal cash will increase by increasing the gap between internal and external financing costs (Badavar Nahandi & Darkhor,2013).Unlike prior studies , this study use Liu(2006) theory of liquidity to capture multiple dimensions of liquidity which argues that ,due to the multifaceted nature of liquidity, conventional liquidity measures, such as trading volume and bid ask spread, may not fully reflect liquidity. In this research, the definition of liquidity risk is based on the premise that none trading-reflects illiquidity. As a result, liquidity risk is measured by two approaches.

Management approach based on Liu's Theoretical Foundation, Investment approach based on Liu's Theoretical Foundation, Management approach based on Liu's Theoretical Foundation, represents that firms liquidity risk is measured as the natural logarithm LM12 ,Which is the natural logarithm of stock liquidity which is obtained the twelve-month liquidity risk (LNLM12)(Liu,2006).Incontrasts,Investment approach based on Liu's Theoretical Foundation states that liquidity risk is estimated based on beta liquidity risk in order to measure the link between excess cash holdings and Sensitivity of stock returns to market liquidity shocks (Liu,2006).This study impact of cash holdings on trading continuity will depend on the ability of firms with excess cash to attract uninformed investors to participate in stock trading in financially constrained firms. And finally firms with high levels of financially opacity tend to face excessive costs of external finance and are therefore expected to hoard more cash. Also in this study, we investigate the impact of cash in excess of that of the level required to fund normal operations and investments on both trading continuity and liquidity risk in financial constraints firms. This research focuses on the following two questions:

- Does excess cash improve trading continuity in financial constraints firms?
- Does excess cash increase or decrease liquidity risk in financial constraints firms?

2. Literature Review

Cash holdings have always been devoted to themselves a significant percentage of corporate assets. It is important in this respect that allows the company to look for opportunities to increase stock value. Corporate liquidity situation is greatly affected by the nature of corporate activity. Managers try to plan and reach a time period to determine the amount of liquidity (Badavar Nahandi & Darkhor, 2013).The allocation of major financial resources to investment projects require to adoption of financing strategies from the companies that will affect the optimal capital structure. It is not always easy to use financing strategies, and this is an important point, because firms have limited financial resources and financial constraints in this regard. Investment dependence on domestic resources is not desirable because foreign financing is expensive and far from perfect market theories. Also companies may, due to volatility in internal cash flows, reject or postpone some investment opportunities that in this case they have some kind of financial constraints (Akhgar&Karani,2019). In fact, those companies are considered to be financially constrained that have low access and costly to external financing. The major reasons of the difference between internal and external financing costs have been mentioned to information asymmetry and agency conflicts. Information asymmetry implies that market participants do not have equal access to information. Internal financial constraints are those related to the resources (cash) within an entity that are referred to as agency costs. As a result, there should be an optimal level of cash resources in the company in such a way that it is neither excessively needed and the company lose from a cessation of capital and nor less than the minimum required and company faces liquidity shortfalls (Hajiha& chamkhani, 2017).

3. Background Research

Lozano and Yaman (2020) have done a research entitled: "The European Financial Crisis and Firms' Cash Holding Policy: An Analysis of the Precautionary Motive."This paper analyzes the relation between the 2008 European Financial Crisis and firm' cash holding policies from a precautionary motive perspective. After considering how the European financial crisis affected the cash holding policy across different period times, we focus on whether these variations come from changes in precautionary motives. We find a positive effect for the short crisis period and a negative effect for long crisis period for the full sample. We also find evidence that for financially constrained firms, the relation between cash volatility and cash holding is positive for short crisis period but turns negative for the long crisis period.

Yuliarto Nugroho (2020) reviewed study under the title: "Analysis of cash holding on investment cash flow sensitivity in Indonesia" which this study aims to examine the effect of cash holding and external financing on investment- cash flow sensitivity. The sample in this research is the firm of non- finance which was listed on the Indonesia Stock Exchange over the period 2008- 2017. The sample in this study was divided into categories of Financial Constraint to determine the influence of both variables more clearly

on firms with different Financial Conditions. The research method used panel data regression by using fixed effect model to estimate investment – cash flow sensitivity. This study found that cash holding had a positive and significant effect on investment – cash flow sensitivity. Furthermore, external financing also had a positive and significant effect on investment – cash flow sensitivity. The result of research refers that external financing is a substitute of internal funding to finance their investment; therefore, the companies have to manage finances well to their investment to enhance the value of the company and maximize shareholder wealth.

Trung Tran (2019) has done a research entitled: "Corporate cash holdings and Financial Crisis: new evidence from an emerging market". These research findings imply that firms save more cash and consume more cash due to higher uncertainty and external financial constraint caused by a financial crisis. When firms consume cash more than they save their cash holdings are lower. Firms with low firm- specific financial constraint tend to consume more cash due to higher flexibility in their corporate liquidity management. This study helps managers understand how firms react to exogenous shock to corporate liquidity management.

Ly and Shimizu (2018) investigated a research under the title: Funding liquidity Risk and internal markets in multi-bank holding companies: Diversification or internalization?. This study examines how a multi-bank holding company (MBHC) manages funding liquidity risk through its internal liquidity market, how is internal liquidity market works, and the benefits that is member banks enjoy. The results provide evidence that the diversification effect mostly dominates the internalization effect. Anew entrant into an MBHC structure benefits from holding lower liquidity and raising deposits at lower costs than a non-MBHC structure, suggesting that MBHCs have enjoyed scant liquidity at the cost of mismatch risk. We find that other member banks also enjoy the benefits of diversified risk when a new entrant joins, suggesting that MBHCs manage liquidity in response to changes in funding liquidity risk. However internalization is more important for MBHCs that have large numbers of subsidiaries. Which types of mergers/ acquisitions are chosen by an MBHC, the diversification effect appears.Basel III liquidity regulations would mitigate the mismatch risk at the cost of distorted in ternal liquidity markets. Dennis and Sibelkov (2009) found that excess cash holding are of much higher value for companies with financial constraints than firms without financial constraints. The result are consistent with the hypothesis that high cash holding by companies with limited financial in return to external financing will increase value. Carpenter and Petersen (2002) examined the impact of internal financing on small business growth. They tested more than 1600 small companies and found that internal financial issues constrained the growth of most companies. In Iran, Dabagh et al. (2020). has done a research entitled: "study the effect of financial constraints on the relationship between competition in the product market and investment in companies listed in the Tehran stock exchange". The results showed that there is a positive and significant relationship between competition in the product market and company investment and this relationship is weaker in companies with higher financial constraints.Javadzadeh and Hosseinzadeh(2020), reviewed a study entitled: The role of managerial ownership between financial constraints and investment efficiency. The research results showed there is a significant and negative relationship between financial constraints and investment efficiency. The results also show that managerial ownership has a positive and significant effect on the relationship between financial constraints and investment efficiency. Faraji et al. (2019) investigated a research entitled "Financial constraints and competition in the product market: The Role of Product Pricing Mediator in Business Cycles in Tehran Stock Exchange" The results show Companies with financial constraints are choosing a higher price for their product, This issue lead to reduction the company competitiveness power in the market. The results also show that the Mediator effect of product pricing is not different on the relationship between financial constraint and product market competition in business cycles.Fakhari and Nagdi Mashhadi kalaei (2018) have done a study entitled "Investigation of the effect of financial constraint on the relationship between the company's geographical location and cash holding in companies of Tehran stock exchange". This study examines whether this relationship in financial constraints firms differs from other firms. In this research has was used of the criteria of cosine of the distance for geographical location and for cash holding level was

used of criteria of holded cash and standardized with assets. Also this study uses cash dividend, the KZ index of Kaplan and Zingales (1997), and the WW index of The Whited and Wu (2006) as proxies for financial constraints. The findings show that there is a positive and significant relationship between the company's geographical location and the cash holdings level, and this relationship is stronger in financial constraints firms. These findings again confirm the presence of agency costs in companies of Tehran Stock Exchange.Larry Dasht Bayaz et al (2018) have done a research entitled "Investigate of the Relationship of Financial constraint, Asset Structure and Financing in Companies Listed in Tehran Stock Exchange". This study examines the adjustment effect of financial constraint with KZ index of Kaplan and Zingales on the relationship between the collateral assets structure and financial structure of listed companies in Tehran Stock Exchange. For this purpose, 155 companies were investigated for a period of 11 years (2004-2014). The findings show that financial constraint firms has a positive and significant effect on the relationship of total collateralizable assets with financial leverage and components of collateralizable assets (property, machinery and equipment, inventory and receivable accounts) with firm's financial leverage; In other words, this relationship will be strengthened in spite of financial constraint in companies. In the third hypothesis analysis, the adjustment variable of financial constraint has no effect on the relationship between long-term collateralizable assets and long-term financial leverage. The adjustment variable of financial constraint has appositive and significant effect on the relationship between short-term collateralizable assets and short-term financial leverage. Furthermore the adjustment effect of financial constraint on the components of short-term collateralizable assets (inventory and receivable accounts) and short-term financial leverage, respectively, indicates a positive and significant relationship and a lack of relationship.

4. Research Methodology

The present research for this aim is applicable and is descriptive in nature, the research data have been extracted from Tehran Stock Exchange website and Rahavard Novin Software.The research data are in the form of panel data and are based on the firm- year. To exam the hypotheses the regression analysis method, Ordinary least squares was used. Financial calculations were done in Excel environment and data is processed in Eviews9 software. The research time zone has been determined from the beginning of 2011 to the end of 2017 (a 7-year period). The research statistical population includes companies listed in Tehran Stock Exchange.

130 companies were chosen as research sample using systematic elimination sampling method, according to the following conditions:

1) The target companies should be membership of Tehran Stock Exchange from the beginning of 2011 till the end of March of 2017 and the necessary information should be available in order to calculate the research variables.
2) Because of the being different economic nature, companies that include investments, banks, insurance, leasing and holding, should be eliminated.
3) The end of the financial year of the companies will be the end of March of each year. And companies that haven't changed their fiscal year over the years 2011-2017.

Table (1) shows the selection of the research sample based on systematic elimination of sampling method.

Table (1): The selection of the research sample based on systematic elimination of sampling method.

Row	Condition	Number
1	Number of companies in 1396	400
2	The target companies should be membership of Tehran Stock Exchange from the beginning of 2011 till the end of March of 2017 and the necessary information should be available in order to calculate the research variables.	248
3	Because of the being different economic nature, companies that include investments, banks, insurance, leasing and holding, should be eliminated.	9
4	The end of the financial year of the companies will be the end of March of each year. And companies that haven't changed their fiscal year over the years 2011-2017.	8
5	Companies with incomplete information were removed.	5
Finally, 130 companies were selected among the stock companies.		**130**

5. Research model and measurement of variable

5.1. Independent variable

In the present study, the independent variable is the excess cash holdings. The excess cash is estimated each year for companies as residual of the following cross-sectional regression.

$$\text{CASH HOLDIN} = \alpha_0 + \alpha_1 \text{CF}_i + \alpha_2 \text{LEVERAGE}_i + \alpha_3 \text{MTB}_i + \alpha_4 \text{SIZE}_i + \alpha_5 \text{NWC}_i + \alpha_6 \text{CAPEX}_i + \alpha_7 \text{DIV}_i + \varepsilon_i \quad (1)$$

Where CASH HOLDING is natural log of cash and short – term investment(Asem &Alam ,2014 and Opler Ei al,1999)

CF: is earnings after interest, dividend, and taxes, but before depreciation

LEVERAGE: is the ratio of Total debt to Total assets,

MTB::is the market value of assets dividend by book value,

SIZE: is the natural log of Total assets,

NWC: is net working capital (net of cash)

CAPEX: is capital expenditures,

DIV: is dummy variable with a value of one if the firm pays dividends, and zero otherwise,

ε_i: is used as a proxy for firm I's excess cash (ECASH) in a given year. A positive (negative) residual indicates that the firm hoards more(less) cash than it needs for its normal operational and investments during that year.

5.2. Control variable

In Equation (2) the control variable of this research are presented which includes indexes of trading continuity stock:

$$Z_{i,t-1} = \alpha_1 \text{MTB}_{i,t-1} + \alpha_2 \text{SIZE}_{i,t-1} + \alpha_3 \text{LEVERAGE}_{i,t-1} + \alpha_4 \text{DIV}_{i,t-1} + \alpha_5 \text{CAPEX}_{i,t-1} + \alpha_6 \text{RET}_{i,t-1} + \alpha_7 \text{NSHAR}_{i,t-1} + \alpha_8 \text{PRICE}_{i,t-1} + \alpha_9 \text{IO}_{i,t-1} + e_{i,t} \quad (2)$$

These control variables, are lagged one year. Also Table (2) provides a detailed definition of each nine control variables used in this regression by mention to the source.

$Z_{i,t-1}$: trading continuity stock

MTB::is the market value of assets dividend by book value of assets,

SIZE: is the natural logarithm of Total assets,

LEVERAGE: is the ratio of debt to net assets,

DIV: is dummy variable with a value of one if the firm pays dividends, and zero otherwise,

CAPEX: is capital expenditures,

RET: is stock return

NSHAR: is the number of shares

PRICE: is stock price

IO: is institutional ownership

$e_{i,t}$: is the residual error of the equation.

5.3. Dependent variable

In this research, the dependent variable is measured in the following two different ways:

(a) As the natural logarithm of Liu's LM12(lnLM12) or twelve-month liquidity risk That is index of management approach based on Liu's theoretical basis (Liu, 2006).

(b) As beta liquidity risk that is index of investment approach based on Liu's theoretical basis.

In the first method, after calculating the LM12 as following it's taken from that logarithm.In Equation (5) twelve- month liquidity risk is visible (lnLM12).

$$\text{LM12} = \left[\text{ZEROS} + \frac{1/\text{TURNOVER}}{DEFLATOR}\right]^{*} \frac{252}{\text{TRAD}} \quad (3)$$

LM12: Following Liu (2006), we measure stock liquidity as the standardized turnover-adjusted number of days with zero trading volume over the prior 12 months,

ZERO: is the total number of zero daily trading volume over the prior 12 months, which is calculated as following:

ZERO: Number of tradable and standard days per year- Number of trading days per year

TURNOVER: is the sum of daily turnover over the prior 12 months,

DEFLATOR: is set to 11,000 as in Liu [24] in order to ensure that $0 < \frac{1/TURNOVER}{DEFLATOR} < 1$ for all stocks,

TRAD: is the total number of trading days over the prior 12 months.

This measure is based on the intuition that incidents of no trading reflect higher latent costs of

trading ,with higher values of LM12 indicating low levels of trading continuity and high degrees of illiquidity (Lin et al.2009). It also captures the multifaceted aspects of liquidity, placing particular emphasis on trading speed, which has been largely ignored in the previous studies (Liu, 2006). In the second method based on the investment approach, measure beta liquidity risk (β_{iL}) as the sensitivity of stock returns to market liquidity ($LIQ_{t,i}$),it's coefficient is called beta liquidity risk. Therefore we use Liu's two- factor model and estimate liquidity risk by running the following time – series regression for each firm and every year over our sample period (Liu, 2006):

(4)

$r_{it}-r_{ft}=\alpha_i+\beta_{im}(r_{mt}-r_{ft})+\beta_{il}LIQ_{t,i}+\varepsilon_{it}$ r_{it}: Rate return

of securities in period of t

r_{ft}: RISK -free rate of return in period of t

r_{mt}: Stock Index of Stock Exchange in the period of t

$LIQ_{t,i}$: is the liquidity mimicking factor, defined as the return difference between a low- liquidity portfolio and a high liquidity portfolio,

β_{iL}: is Beta Liquidity Risk

β_{im}: is Market Risk

ε_{it}: is residual

In Equations (6).We also add LN LM12 to the list of control variables when β_{iL} is used as the dependent variable. All continuous variables are winsorized at the 1% and 99% percentiles to mitigate outlier effects. We further include year and industry dummies to control for potential year and industry fixed effects. Finally, we use robust standard errors that are adjusted for double clustering by firm and year. In Equations (5) and (6) each of the financial constraint indexes which include Size, Payout ratio, Kaplan Zingales index, and Whited and Wu index are estimated separately.

(5)

$$\begin{aligned}\mathrm{LnLM12} = {} & \alpha+\beta_0\mathrm{ECASH}_{i,t-1}+\alpha_1\mathrm{DUM}^{\mathrm{FC}}\\ & +\beta_1\mathrm{ECASH}^{*}_{I,t-1}\mathrm{DUM}^{\mathrm{FC}}+\gamma\mathrm{Z}_{i,t-1}\\ & +\mathrm{YEAR}+\mathrm{INDUSTRY}+\mathrm{e}_{i,t}\end{aligned}$$

(5.1)

$$\begin{aligned}\mathrm{LNLM12}_{i,t} = {} & \alpha+\beta_0\mathrm{ECASH}_{i,t-1}+\alpha_1\mathrm{DUM}^{\mathrm{SIZE}}\\ & +\beta_1\mathrm{ECASH}^{*}_{I,t-1}\mathrm{DUM}^{\mathrm{SIZE}}\\ & +\gamma Z_{i,t-1}+YEAR+INDUSTRY\\ & +e_{i,t}\end{aligned}$$

(5.2)

$$\begin{aligned}\mathrm{LNLM12}_{i,t} = {} & \alpha+\beta_0\mathrm{ECASH}_{i,t-1}+\alpha_1\mathrm{DUM}^{\mathrm{PAYOUT}}+\\ & \beta_1\mathrm{ECASH}^{*}_{I,t-1}\mathrm{DUM}^{\mathrm{PAYOUT}}+\gamma Z_{i,t-1}+YEAR+\\ & INDUSTRY+e_{i,t}\end{aligned}$$

(5.3)

$$\begin{aligned}\mathrm{LNLM12}_{i,t} = {} & \alpha+\beta_0\mathrm{ECASH}_{i,t-1}+\alpha_1\mathrm{DUM}^{\mathrm{KZ}}\\ & +\beta_1\mathrm{ECASH}^{*}_{I,t-1}\mathrm{DUM}^{\mathrm{KZ}}+\gamma\mathrm{Z}_{i,t-1}\\ & +\mathrm{YEAR}+\mathrm{INDUSTRY}+\mathrm{e}_{i,t}\end{aligned}$$

(5.4)

$$\begin{aligned}\mathrm{LNLM12}_{i,t} = {} & \alpha+\beta_0\mathrm{ECASH}_{i,t-1}+\alpha_1\mathrm{DUM}^{\mathrm{WW}}+\\ & \beta_1\mathrm{ECASH}^{*}_{I,t-1}\mathrm{DUM}^{\mathrm{WW}}+\gamma Z_{i,t-1}+YEAR+\\ & INDUSTRY+e_{i,t}\end{aligned}$$

(6)

$$\begin{aligned}\beta_{iL} = {} & \alpha+\beta_0\mathrm{ECASH}_{i,t-1}+\alpha_1\mathrm{DUM}^{\mathrm{FC}}\\ & +\beta_1\mathrm{ECASH}^{*}_{I,t-1}\mathrm{DUM}^{\mathrm{FC}}+\gamma\mathrm{Z}_{i,t-1}\\ & +\mathrm{YEAR}+\mathrm{INDUSTRY}+\mathrm{e}_{i,t}\end{aligned}$$

(6.1)

$$\begin{aligned}\beta_{iL} = {} & \alpha+\beta_0\mathrm{ECASH}_{i,t-1}+\alpha_1\mathrm{DUM}^{\mathrm{SIZE}}\\ & +\beta_1\mathrm{ECASH}^{*}_{I,t-1}\mathrm{DUM}^{\mathrm{SIZE}}\\ & +\gamma Z_{i,t-1}+YEAR+INDUSTRY\\ & +e_{i,t}\end{aligned}$$

(6.2)

$$\begin{aligned}\beta_{iL} = {} & \alpha+\beta_0\mathrm{ECASH}_{i,t-1}+\alpha_1\mathrm{DUM}^{\mathrm{PAYOUT}}\\ & +\beta_1\mathrm{ECASH}^{*}_{I,t-1}\mathrm{DUM}^{\mathrm{PAYOUT}}+\gamma Z_{i,t-1}\\ & +YEAR+INDUSTRY+e_{i,t}\end{aligned}$$

(6.3)

$$\begin{aligned}\beta_{iL} = {} & \alpha+\beta_0\mathrm{ECASH}_{i,t-1}+\alpha_1\mathrm{DUM}^{\mathrm{KZ}}\\ & +\beta_1\mathrm{ECASH}^{*}_{I,t-1}\mathrm{DUM}^{\mathrm{KZ}}+\gamma Z_{i,t-1}\\ & +YEAR+INDUSTRY+e_{i,t}\end{aligned}$$

(6.4)

$$\begin{aligned}\beta_{iL} = {} & \alpha+\beta_0\mathrm{ECASH}_{i,t-1}+\alpha_1\mathrm{DUM}^{\mathrm{WW}}\\ & +\beta_1\mathrm{ECASH}^{*}_{I,t-1}\mathrm{DUM}^{\mathrm{WW}}\\ & +\gamma Z_{i,t-1}+YEAR+INDUSTRY\\ & +e_{i,t}\end{aligned}$$

$LNLM12_{i,t}$: in Equation (3) twelve – month liquidity risk is estimated as the natural logarithm of LM12 (LNLM12) (Liu, 2006).

β_{iL}: in Equation (4) Beta Liquidity Risk is estimated as the sensitivity of stock returns to market liquidity,
$ECASH_{i,t-1}$: in Equation (1) is the cash in excess of normal operations and investments, estimated as the exponential form of the residual term,
DUM^{FC}: is a dummy variable that is defined either as FC, which takes a value of one if the firm is financial constrained, and zero otherwise,
$ECASH_{i,t-1}{}^{*}DUM^{FC}$: is variable of interest is the interaction term,
Zi, t-1: is a set of the indexes of trading continuity stock, which are lagged one year,
YEAR and INDUSTRY: are year and industry dummies respectively,
$e_{i,t}$: is the residual error,
SIZE: Firm size, PAYOUT: payout ratio, KZ: Kaplan zingales index, WW: whited wu index.

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YEAR and INDUSTRY: are year and industry dummies respectively,
$e_{i,t}$: is the residual error,
SIZE: Firm size, PAYOUT: payout ratio, KZ: Kaplan zingales index, WW: whited wu index.

We use variance inflation factor (VIF) analysis to diagnose multicollinearity. The mean VIF of the variables is 1.5, indicating that multicollinearity is not a serious problem in our study. Calculation procedures the research variables have been described in Table (2)

Table (2): Measurement of the Research Variables

Type of Variable	Signs	Description	Calculation procedures	Source
Independent variable	ECASH	Excess cash holdings	In Equation (1) is the cash in excess of normal operations and investments, estimated as the exponential form of the residual term.	(Huang &Mazouz,2018)
dependent variables	LNLM12	Twelve – month liquidity risk	in Equation (3) twelve – month liquidity risk is estimated as the natural logarithm of LM12 (LNLM12).	(Huang &Mazouz,2018) (Lin,2009) (Bolo et al , 2011)
	β_{iL}	Beta Liquidity Risk	in Equation (4) It is estimated	(Huang &Mazouz,2018)
Control Variable Based on Indexes of Trading Continuity Stock	MTB	These Variables are Market To book	$\frac{\text{the market value of assets}}{\text{book valueof assets}}$	(Huang &Mazouz,2018) (Rahimian et al., 2014)
	SIZE	FIRM SIZE	The natural Logarithm of Total Assets	(Lin,2009)
	LEV	LEVERAGE	$\frac{\text{Total Debts}}{\text{Total Assets}}$	(Ng,2011) (Harford etal, 2008) (Bolo et al , 2011)
	DIV	Cash Dividend	is dummy variable with a value of one if the firm pays dividends, and zero otherwise	(Brockman, 2009)
	CAPEX	Capital Expenditure	$\frac{\text{Capital Expenditure}}{\text{Total Assets}}$	(Bolo et al , 2011)
	PRICE	Stock Price	The Close price on Stock in a fiscal year	(Lin,2009)
	RET	Stock Return	$\frac{\text{share published in year of T}}{\text{Turnover in year of T}}$	(Bolo et al , 2011)
	NSHARE	Stock Number	Normal Registration of number of ordinary shares	(Ng,2011)
	IO	Institutional Ownership	$\frac{\text{Percentage of shares held by companies}}{\text{Total Capital Stock}}$	(Huang &Mazouz,2018) (Bolo et al , 2011)

5.4. Indexes of Financial Constraints

To study the role of financial constraints, first of all these constraints, need to be measured by the procedure. In this study, these indexes are: Firm Size, Payout Ratio, KZ index of Kaplan Zingales (Kaplan & Zingales ,1997) and WW index Whited Wu (Whited &Wu,2006) each of them is explained.

FIRM SIZE: operational definition of firm size is the natural logarithm of total assets. To virtualization this variable, we divide it into three quarters so that those are in the first quartile, are small firms and are assigned the code 0 and those are in the second and third quartile, are those of medium and large firms and are assigned the code1.

PAYOUT RATIO: payout ratio is equal to the dividend per share (DPS) divided by earning per share (EPS) in financial constrained firms (Nikoomaram et al., 2006). This variable is dummies variable. Firms are in the bottom three deciles sorted by payout ratio. If the firm pays cash dividend at the bottom three deciles, it get the code 1 and 0 otherwise.

KZ index of Kaplan Zingales: KZ index is a proxy to financial constrained firms that was presented by Kaplan Zingales in 1997 and is classified as the top three deciles. KZ index is calculated as following:

(7)

$$KZ = -1.002 * \left(\frac{\text{Cash Flow}_{i,t}}{\text{Total Assets}_{i,t}}\right) + 0.283 * \frac{M_{i,t}}{B_{i,t}} + 3.139 * \left(\frac{\text{Debt}_{i,t}}{\text{Total Capital}_{i,t}}\right) - 39.368 * \left(\frac{\text{Div}_{i,t}}{\text{Total Assets}_{i,t}}\right) - 1.315\left(\frac{\text{Cash Holding}_{i,t}}{\text{Total Assets}_{i,t}}\right)$$

Tehrani and Hesarzadeh (2009) presented the Kaplan and Zingales model according to the Iran coordinates, which is as the Table (4).The method of use this index is as following: the first enters the actual values in the equation and KZIR index is calculated. In the next step by sorting values from smallest (first quintile) to largest (last quintile) According to the table (3) can be determined, financial constrained firms. In this research, as the table below shows, the method of dummies variables is used to clean the financial constrained firms from others, so that firms are in the first, second and third quintiles are considered as financial constrained firm and are assigned the code1and 0 otherwise.

Table (3): Clean Method of Financial Constrained using of the KZIR index, Source: (Tehrani and Hesarzadeh ,2009)

Probability Constrained in financing	The First quintile	The Second quintile	The Third quintile	The Fourth quintile	The FIfth quintile
	0 to 20%	20% to 40%	40% to 60%	60% to 80%	80% to 100%
	Code 1	Code 1	Code 1	Code 0	Code 0

WW index of Whited Wu: This index was presented by Withed and Wu (Withed & Wu, 2006).WW equal 1 if the total of common dividends and preferred dividends is greater than zero and 0 otherwise. This index is classified as the top three deciles. WW index is calculated as following:

(8)

$$WW = -0.091CF_{i,t} - 0.062\text{DivDummy} + 0.02TLTD_{i,t} - 0.044LNTA_{i,t} + 0.102ISG_{i,t} - 0.035SG_{i,t}$$

Ebrahimi Kord Lor et al (2016). Localized the Whited Wu index due to of the difference between our country's economic and business conditions and western countries, using the financial constrained proxies (Table 4). The operational definition of each is described in Table (5).

Table (4): Calculation procedures of each of the financial constraint index, Source: (Ebrahimi Kord Lor et al, 2016)

Financial constraint index	Calculation procedures
FIRM SIZE	SIZE= Log(Total Assets)
PAYOUT RATIO	$\text{Payout} = \text{DPS/EPS}$
KZ Index	$KZ_{IR} = 17.33 - 37.486\left(\frac{\text{Cash Holding}_{i,t}}{\text{Total Assets}_{i,t}}\right) - 15.21\left(\frac{\text{Div}_{i,t}}{\text{Total Assets}_{i,t}}\right) + 3.39\left(\frac{\text{Debt}_{i,t}}{\text{Total Assets}_{i,t}}\right) - 1.402\frac{M_{i,t}}{B_{i,t}}$
WW Index	$WW_{IR} = 80.04 - 5.182CFO - 0.106DIV + 5.112LEV - 0.662LOGTA$

Table (5): Calculation procedures of variables related to KZ_{IR} & WW_{IR} Indexes,

Variable related to KZ_{IR} index	
Sign	**Calculation procedures**
$Total\ Assets_{i,t}$	The Firm's Total assets
$Debts_{i,t}$	The Firm's Total debt
$Total\ Capital_{i,t}$	Is the net total of book value of firm which indicate the net assets of firm
$DIV_{i,t}$	Dividend per share(DPS)of firm
$Cash\ Holdings_{i,t}$	The natural logarithm of cash and short-term investments.
MTB	The market value of assets divided by The book value of assets.
Variable related to WW_{IR} Index	
Sign	**Calculation procedures**
CFO	$\frac{Cash\ Flow_{i,t}}{Total\ Assets_{i,t}}$
DivDummy	A dummy variable with a value of one if firm pays dividend and zero, otherwise.
$LogTA_{i,t}$	$Ln(Total\ Assets_{i,t})$
Levarage(Lev)	$\frac{Total\ Debts}{TotalAssets}$

6. Support Theory and Research Hypotheses

6.1. Support Theory of Research Hypotheses

In this research, Liu's (2006) Theory has been used to examine the research hypotheses. Liu (2006) argues that liquidity risk includes two indexes: Twelve – month liquidity risk and beta liquidity risk respectively. Twelve – month liquidity risk is an index of management approach based on Liu's theoretical basics and beta liquidity risk is an index of investment approach based on Liu's theoretical basics. Therefore research hypotheses are arranged based on two approaches of management and investment. These approaches will be explained in the research hypotheses section.

According to management approach based on Liu's theoretical basics, which is measured by Twelve – month liquidity risk Through the natural logarithm (Lm12) which is present in Equation(3) and then entered into Equation(5).

$$LM12 = \left[ZEROS + \frac{1/TURNOVER}{DEFLATOR}\right]^{*} \frac{252}{TRAD} \qquad (3)$$

This measure is based on the intuition that incidents of no trading reflect higher latent costs of trading, with higher values of LM12 indicating low levels of trading continuity and high degrees of illiquidity (Lin, 2009) Liquidity risk simultaneously captures the multifaceted aspects of liquidity including trading cost, trading speed and trading volume, which has been largely ignored in the previous studies (Liu, 2006).

According to investment approach based on Liu's theoretical basics, measure beta liquidity risk (β_{iL}) as the sensitivity of stock returns to market liquidity ($LIQ_{t,i}$),it's coefficient is called beta liquidity risk. Therefore we use Liu's two- factor model and estimate liquidity risk by running the following time – series regression for each firm and every year over our sample period (Liu, 2006):

$$r_{it}-r_{ft}=\alpha_i+\beta_{im}(r_{mt}-r_{ft})+\beta_{il}LIQ_{t,i}+\varepsilon_{it} \qquad (5)$$

Their details are described in Section5.3.

6.2. Research Hypotheses

The management approaches based on Liu's theoretical basis on determinants of cash holdings document a significantly positive association between cash holdings and information asymmetry. Specifically, these studies show that firms with high levels of financially opacity tend to face excessive costs of external finance and are therefore expected to hoard more cash. The high level of information asymmetry can aggravate the agency costs of cash and make firms with excess cash reverses less attractive to uninformed traders. The reduced participation of uninformed traders would increase market makers' losses from trading with informed traders and the costs they charge for providing liquidity services (Opler et al., 1999). The increased trading costs would reduce investors' propensity to trade and increase the chance of firms with excess cash facing trading discontinuity. As the liquidity environment deteriorates, stock prices should become less resilient and more exposed to shocks to market liquidity. Consequently, investors face greater liquidity risk and require a higher liquidity premium which, in turn the increases the cost of equity capital (Lin, 2009). The above argument suggests that the impact of excess cash on liquidity risk is theoretically ambiguous. To date separation types of liquidity risk due to different approaches has not done. As a result according management approach based on

Liu's theoretical basis are presented the first class hypotheses which examine as following:

Main hypothesis 1: There is a significant relationship between Excess cash holdings due to Financial Constraints and Twelve-month Liquidity Risk.

In this hypothesis, instead of the financial Constrained, we enter each of its indexes. Therefore this hypothesis comes in the following four hypotheses.

Hypothesis 1: There is a significant relationship between Excess cash holdings due to Firm Size and Twelve-month Liquidity Risk.

Hypothesis 2: There is a significant relationship between Excess cash holdings due to Payout Ratio and Twelve-month Liquidity Risk.

Hypothesis 3: There is a significant relationship between Excess cash holdings due to KZ index and Twelve-month Liquidity Risk.

Hypothesis 4: There is a significant relationship between Excess cash holdings due to WW index and Twelve-month Liquidity Risk.

The investment approach based on Liu's theoretical basis suggests that if cash holdings lower the volatility in the value of assets – in – place, firms with excess cash would attract more investors, particularly uninformed investors. The increased participation of uninformed traders would reduce the market makers' inventory costs and adverse selection costs, allowing the latter to provide services at a lower cost (Ditmar & Smith, 2007).the reduction in trading costs would, in turn, increase investors' propensity to trade and improve trading continuity. As high excess cash improves trading continuity, stock prices of firms with excess cash should become more resilient and less sensitive to innovations in aggregate market liquidity. The reduced liquidity risk would lower the liquidity premium and the cost of equity capital (Goplan et al, 2012).The second class hypotheses are expressed due to the investment approach based on Liu's theoretical basis and examine as following:

Main Hypothesis 2: There is a significant relationship between Excess cash holdings due to Financial Constraints and Beta Liquidity Risk.

Also this hypothesis is divided into the following four hypotheses:

Hypothesis 5: There is a significant relationship between Excess cash holdings due to Firm Size and Beta Liquidity Risk.

Hypothesis 6: There is a significant relationship between Excess cash holdings due to Payout Ratio and Beta Liquidity Risk.

Hypothesis 7: There is a significant relationship between Excess cash holdings due to KZ index and Beta Liquidity Risk.

Hypothesis 8: There is a significant relationship between Excess cash holdings due to WW index and Beta Liquidity Risk.

7. Research Findings

7.1. Preliminary Diagnostic Tests

Preliminary Diagnostic Tests include Correlation Test, Stationary Test and Classical Regression Hypotheses Test. In the correlation test the trading continuity variable and Twelve month Liquidity Risk have the highest Correlation (0.419) which shows that if firm's trading continuity increases by one unit, its twelve-month liquidity risk increases by 41%. Trading continuity is not correlation with beta liquidity risk, which actually supports the management approach based on Liu's theoretically basis. This leads to a stronger the relationship between the excess cash holdings and stock return sensitivity. The WW index and the beta liquidity risk have the least correlation (-0.235). As a result, this suggests that excess cash increases Twelve-month liquidity risk increases and reduces beta liquidity risk in financial constraints firms. The results of the stationary tests of the variables show that there is no unit root in any of the variables. Therefore all variables have stationary. There are five hypotheses in the classical regression hypotheses test, the second, third, and fifth hypotheses are of great importance, and the first (zero error values $E(u_t) = 0$) and the fourth (random values of the explanatory variables $Cov(u_t, x_t) = 0$)) are less important; and the fourth hypothesis is always confirmed and usually not tested. The second hypothesis, which relates to the variance Heteroscedastic test, is approved by using the White technique. The third hypothesis, which relates to Autocorrelation, using of dynamic models model. Also the fifth hypothesis which related to the normality of the error value is approved by the Jarque-Bera test.

7.2. Descriptive Statistics

Table (6) shows the descriptive statistics for the research variables, the number of observations for all variables except trading continuity is 910, and the trading continuity variable has 780 observations due to a one-year lag. According to the Table (6), the difference between the minimum and maximum data indicates the appropriate range to use variables, the average value excess cash holding is equal to 0.081 which shows the logarithm of cash and short –term investment is 0.08. The median for this variable is 0.048%, indicating the excess cash holdings in 50% of the examined samples is more than 4% and in the rest of the observations is less than this value. The highest value of excess cash holdings is 46% and its lowest value is 0.3%. The standard deviation for this variable is 0.115%.

Table (6): Descriptive Statistics of Research Variables

The number of observations for Twelve-month Liquidity Risk and Beta Liquidity Risk are 910 and is 780 for trading continuity caused by a one-year lag.							
Type of Variable	**Variable**	**Sign**	**Minimum**	**Maximum**	**Mean**	**Median**	**Standard Deviation**
dependent Variable	Twelve-month Liquidity Risk	LNLM12	0.003	0.017	0.042	0.044	0.264
	Beta Liquidity Risk	βiL	0.001	0.047	0.034	0.038	0.936
Independent Variable	Excess Cash	ECASH	0.003	0.460	0.081	0.088	0.115
Control Variable	Trading Continuity	Zi,t-1	0.145	1.500	0.756	0.718	1.560
Indexes of financial Constraint	Firm Size	SIZE	10.66	18.437	13.734	13.865	1.392
	Payout Ratio	Payout	-2.550	1.668	0.036	0.078	1.729
	KZ Index	KZ	-2.298	1.956	0.045	0.052	1.193
	WW Index	WW	-1.098	1.097	0.019	0.057	1.491

7.3. Testing the Hypothesis 1

There is a significant relationship between Excess cash holdings due to Financial Constraints and Twelve-month Liquidity Risk. The results of observations are presented in Table (7).

$$\begin{aligned} \text{LnLM12} = {} & \alpha + \beta_0 \text{ECASH}_{i,t-1} + \alpha_1 \text{DUM}^{\text{FC}} \\ & + \beta_1 \text{ECASH}^{*}_{I,t-1} \text{DUM}^{\text{FC}} + \gamma Z_{i,t-1} \\ & + \text{YEAR} + \text{INDUSTRY} + e_{i,t} \end{aligned} \quad (5)$$

This indicates that the average fluctuation of the mean data for this variable is 0.115%. In Kim's research(Kim et al , 1998), the mean and median variable of excess cash holdings were reported 8.1% and 4.7 %, respectively, while in the studies of Ditmar and Smith the mean and median variable of excess cash holdings were reported 22% and 6 %, respectively(Ditmar &Smith, 2009). Of course, these indexes are different in various industries. The results of the average excess cash holdings survey indicate that market volatility has increased in recent years. As a result, firms are more likely to hold their cash in the form of inventory or investments in capital assets. Also, excess cash holding increases Twelve- month liquidity risk and Beta liquidity risk which supports the management approach based on Liu's theoretical basis.

Table (7): The results of the first hypothesis test

Hypothesis 1: There is a significant relationship between Excess cash holdings due to Firm Size and Twelve-month Liquidity Risk.					
$\mathbf{LNLM12_{i,t} = \alpha + \beta_0 ECASH_{i,t-1} + \alpha_1 DUM^{SIZE} + \beta_1 ECASH^{*}_{i,t-1} DUM^{SIZE} + \gamma Z_{i,t-1} + YEAR + INDUSTRY + e_{i,t}}$					
Dependent Variable: Twelve-Month Liquidity Risk (LNLM12)					
Type of Variable	**description**	**Sign**	**Coefficient**	**T-statics**	**P-Value**
Independent Variable	Excess Cash	ECASH	-0.361	-3.442	0.000*
Index of Financial Constraint	Firm Size	DUMSIZE	0.038	3.848	0.000*
Explanatory Independent Variable	Excess Cash× Firm Size	$ECASH^{*}_{I,t-1} DUM^{SIZE}$	-0.136	-6.583	0.000*
Control Variable	Trading Continuity	Zi,t-1	-0.184	-1.712	0.034*
Dummy Variable	Year	YEAR	0.142	4.514	0.000*
	Industry	INDUSTRY	0.001	1.212	0.005*
(R2)	0.71	F-statics	Prob(F)	Durbin Watson (DW)	
Adj.R2	0.67	3.766	0.000*	1.93	
Hypothesis 2: There is a significant relationship between Excess cash holdings due to Payout Ratio and Twelve-month Liquidity Risk.					
$\mathbf{LNLM12_{i,t} = \alpha + \beta_0 ECASH_{i,t-1} + \alpha_1 DUM^{PAYOUT} + \beta_1 ECASH^{*}_{i,t-1} DUM^{PAYOUT} + \gamma Z_{i,t-1} + YEAR + INDUSTRY + e_{i,t}}$					
Type of Variable	**description**	**Sign**	**Coefficient**	**T-statics**	**P-Value**
Independent Variable	Excess Cash	ECASH	-0.175	-6.678	0.000*
Index of Financial Constraint	Payout	DUMPAYOUT	0.141	4.266	0.000*
Explanatory Independent Variable	Excess Cash× Payout	$ECASH^{*}_{I,t-1} DUM^{PAYOUT}$	-0.059	-3.598	0.003*
Control Variable	Trading Continuity	Zi,t-1	-1.105	-1.741	0.008*
Dummy Variable	Year	YEAR	0.007	4.509	0.000*
	Industry	INDUSTRY	0.044	1.356	0.009*
(R2)	0.64	F-statics	Prob(F)	Durbin Watson (DW)	
Adj.R2	0.58	3.497	0.000*	1.88	
Hypothesis 3: There is a significant relationship between Excess cash holdings due to KZ index and Twelve-month Liquidity Risk.					
$\mathbf{LNLM12_{i,t} = \alpha + \beta_0 ECASH_{i,t-1} + \alpha_1 DUM^{KZ} + \beta_1 ECASH^{*}_{i,t-1} DUM^{KZ} + \gamma Z_{i,t-1} + YEAR + INDUSTRY + e_{i,t}}$					
Type of Variable	**description**	**Sign**	**Coefficient**	**T-statics**	**P-Value**
Independent Variable	Excess Cash	ECASH	-0.385	-2.880	0.004*
Index of Financial Constraint	KZ Index	DUMKZ	0.115	2.776	0.004*
Explanatory Independent Variable	Excess Cash× KZ	$ECASH^{*}_{I,t-1} DUM^{KZ}$	0.037	2.582	0.010
Control Variable	Trading Continuity	Zi,t-1	-0.049	-1.733	0.034*
Dummy Variable	Year	YEAR	0.007	5.492	0.000*
	Industry	INDUSTRY	0.005	2.442	0.006*
(R2)	0.54	F-statics	Prob(F)	Durbin Watson (DW)	
Adj.R2	0.43	3.447	0.000*	1.88	
Hypothesis 4: There is a significant relationship between Excess cash holdings due to WW index and Twelve-month Liquidity Risk.					
$\mathbf{LNLM12_{i,t} = \alpha + \beta_0 ECASH_{i,t-1} + \alpha_1 DUM^{WW} + \beta_1 ECASH^{*}_{i,t-1} DUM^{WW} + \gamma Z_{i,t-1} + YEAR + INDUSTRY + e_{i,t}}$					
Type of Variable	**description**	**Sign**	**Coefficient**	**T-statics**	**P-Value**
Independent Variable	Excess Cash	ECASH	-0.102	-3.179	0.000*
Index of Financial Constraint	WWIndex	DUMWW	0.192	3.516	0.000*
Explanatory Independent Variable	Excess Cash× WW	$ECASH^{*}_{I,t-1} DUM^{WW}$	-0.131	-5.980	0.000*
Control Variable	Trading Continuity	Zi,t-1	-0.405	-0.758	0.003*
Dummy Variable	Year	YEAR	0.001	6.623	0.000*
	Industry	INDUSTRY	0.004	2.371	0.002*
(R2)	0.59	F-statics	Prob(F)	Durbin Watson (DW)	
Adj.R2	0.51	3.809	0.000*	1.93	
Significance at the 5% level					

Table (8): The results of the second hypothesis test

Hypothesis 5: There is a significant relationship between Excess cash holdings due to Firm Size and Beta Liquidity Risk.					
$\beta_{iL} = \alpha + \beta_0 ECASH_{i,t-1} + \alpha_1 DUM^{SIZE} + \beta_1 ECASH^{*}_{I,t-1} DUM^{SIZE} + \gamma Z_{i,t-1} + YEAR + INDUSTRY + e_{i,t}$					
Dependent Variable: Beta Liquidity Risk(βiL)					
Type of Variable	description	Sign	Coefficient	T-statics	P-Value
Independent Variable	Excess Cash	ECASH	-0.078	-3.106	0.000*
Index of Financial Constraint	Firm Size	DUMSIZE	0.059	1.371	0.000*
Explanatory Independent Variable	Excess Cash× Firm Size	$ECASH^{*}_{I,t-1} DUM^{SIZE}$	-0.049	-3.361	0.000*
Control Variable	Trading Continuity	Zi,t-1	-0.099	-1.038	0.003*
Dummy Variable	Year	YEAR	0.043	3.148	0.000*
	Industry	INDUSTRY	0.107	1.325	0.051
(R2)	0.55	F-statics	Prob(F)	Durbin Watson (DW)	
Adj.R2	0.48	3.766	0.000*	2.02	
Hypothesis 6: There is a significant relationship between Excess cash holdings due to Payout Ratio and Beta Liquidity Risk.					
$\beta_{iL} = \alpha + \beta_0 ECASH_{i,t-1} + \alpha_1 DUM^{PAYOUT} + \beta_1 ECASH^{*}_{I,t-1} DUM^{PAYOUT} + \gamma Z_{i,t-1} + YEAR + INDUSTRY + e_{i,t}$					
Type of Variable	**description**	**Sign**	**Coefficient**	**T-statics**	**P-Value**
Independent Variable	Excess Cash	ECASH	-0.081	-5.623	0.000*
Index of Financial Constraint	Payout	DUMPAYOUT	-0.028	-5.051	0.000*
Explanatory Independent Variable	Excess Cash× Payout	$ECASH^{*}_{I,t-1} DUM^{PAYOUT}$	-0.023	-4.221	0.000*
Control Variable	Trading Continuity	Zi,t-1	-0.126	-1.039	0.032*
Dummy Variable	Year	YEAR	0.032	1.194	0.008*
	Industry	INDUSTRY	0.107	1.339	0.062
(R2)	0.64	F-statics	Prob(F)	Durbin Watson (DW)	
Adj.R2	0.52	4.829	0.000*	2.02	
Hypothesis 7: There is a significant relationship between Excess cash holdings due to KZ index and Beta Liquidity Risk.					
$\beta_{iL} = \alpha + \beta_0 ECASH_{i,t-1} + \alpha_1 DUM^{KZ} + \beta_1 ECASH^{*}_{I,t-1} DUM^{KZ} + \gamma Z_{i,t-1} + YEAR + INDUSTRY + e_{i,t}$					
Type of Variable	**description**	**Sign**	**Coefficient**	**T-statics**	**P-Value**
Independent Variable	Excess Cash	ECASH	0.061	4.039	0.000*
Index of Financial Constraint	KZ Index	DUMKZ	-0.043	-4.292	0.000*
Explanatory Independent Variable	Excess Cash× KZ	$ECASH^{*}_{I,t-1} DUM^{KZ}$	-0.054	-3.003	0.002*
Control Variable	Trading Continuity	Zi,t-1	-0.128	-1.056	0.048*
Dummy Variable	Year	YEAR	0.114	3.129	0.000*
	Industry	INDUSTRY	0.086	2.358	0.004*
(R2)	0.42	F-statics	Prob(F)	Durbin Watson (DW)	
Adj.R2	0.35	3.742	0.000*	2.02	
Hypothesis 8: There is a significant relationship between Excess cash holdings due to WW index and Beta Liquidity Risk.					
$\beta_{iL} = \alpha + \beta_0 ECASH_{i,t-1} + \alpha_1 DUM^{WW} + \beta_1 ECASH^{*}_{I,t-1} DUM^{WW} + \gamma Z_{i,t-1} + YEAR + INDUSTRY + e_{i,t}$					
Type of Variable	**description**	**Sign**	**Coefficient**	**T-statics**	**P-Value**
Independent Variable	Excess Cash	ECASH	-0.074	-5.687	0.000*
Index of Financial Constraint	WW Index	DUMWW	0.023	2.115	0.001*
Explanatory Independent Variable	Excess Cash× WW	$ECASH^{*}_{I,t-1} DUM^{WW}$	-0.056	-3.237	0.000*
Control Variable	Trading Continuity	Zi,t-1	-0.147	-2.081	0.027*
Dummy Variable	Year	YEAR	0.132	4.299	0.000*
	Industry	INDUSTRY	0.157	1.898	0.031*
(R2)	0.60	F-statics	Prob(F)	Durbin Watson (DW)	
Adj.R2	0.53	3.759	0.000*	2.00	
Significance at the 5% level					

Existing studies show that cash holdings are more valuable for financially constrained firms. Therefore both of hypotheses are approved. This research indicate whether the extra benefits of holding excess cash that accrue to these types of firms can be at least partly attributed to the reduction in their liquidity risk. Equations (5), (6)are run to test whether the liquidity benefits of cash holding excess cash accrues more to financial constrained firms. Instead of the financial Constrained, we enter each of its indexes. Where DUM is a dummy variable that is defined either as FC, which takes a value of one if the firm is financially constrained, and zero otherwise. Our variable of interest is the interaction term ($ECASH_{i,t-1}$*DUM).When DUM is set to equal FC, a significantly negative (positive) β_1 would suggest that the liquidity benefits of excess cash is significantly higher (lower) for financially constrained firms than unconstrained firms. Tables (7) & (8) present the results the various specifications. When LNLM12 is used as the dependent variable, the coefficient $ECASH_{i,t-1}$*FC is negative and significant across all of the constraints measures, except KZ index, suggesting that the improvement in trading continuity associated with holding excess cash is greater for financial constraint firms. The coefficient $ECASH_{i,t-1}$*FC is negative and significant for all of the constraints measures when β_{iL} is used as the dependent variable. For the KZ index, the magnitude of the ECASH coefficient is almost the same for the constrained and unconstrained firms.

8. Discussion and conclusion

The aim of this study is the effect of indexes of financial constraint firm on the risks associated with excess cash holdings due to the trading continuity index. This Study also has three scientific achievements. The First achievement is how cash holding can benefit firms facing financing constraint. In interpreting this achievement, it can be expressed: If cash holdings lower the volatility in the value of assets – in – place, firms with excess cash would attract more investors, particularly uninformed investors. The increased participation of uninformed traders would reduce the market makers' inventory costs and adverse selection costs, allowing the latter to provide services at a lower cost (Ditmar & Smith, 2007).the reduction in trading costs would, in turn, increase investors' propensity to trade and improve trading continuity. As high excess cash improves trading continuity, stock prices of firms with excess cash should become more resilient and less sensitive to innovations in aggregate market liquidity. The reduced liquidity risk would lower the liquidity premium and the cost of equity capital(Badavar Nahandi & Darkhor, 2013).

The Second achievement states this study improves our understanding of mechanisms that underlie the relation between excess cash holdings and expected stock returns in financial constraint firms .in the interpretation of the second achievement can be expressed: this study contributes to literature on the link between cash holdings and stock liquidity by showing that excess cash improves trading continuity and liquidity risk. It also adds to the stream of studies on the link between corporate liquidity management and the expected equity returns by identifying liquidity risk as a channel through which excess cash can affect the cost of equity capital. Reduce the cast of equity capital possible by reduction of liquidity premium due and Liquidity risk to increased trading participation. Finally, excess cash is an important determinant of the liquidity beta (Simutin, 2010). The third achievement which is related to the results of the effect of financial constraint indexes with the highest dimension of the affect on the risks associated with excess cash holding show that three indexes of firm size, payout ratio and ww index have the greatest effect in improving the trading continuity related to excess cash in financial constraint firms. For the KZ index, when twelve – month liquidity risk is used as the dependent variable, the magnitude of the ECASH coefficient is almost the same for the constrained and unconstrained firms. But When Beta liquidity risk is used as the dependent variable, For the KZ index, the magnitude of the ECASH coefficient is almost the same for the constrained and unconstrained firms. Nevertheless, Hadlock and Pierce (2010) and Farre-Mensa and Ljungqvist (2016) show that the dividend payout is unlikely to measure financial constraints. We base our conclusions on more recently developed proxies for financial constraints, namely the WW index which suggests that excess cash reduces trading discontinuity and liquidity risk and the effect is greater for financial constraint firms. Overall, our results suggest that the reduction in twelve – month liquidity risk and beta liquidity risk associated with holding excess cash is greater for financially constrained firms that consistent

with investment approach based on Liu's theoretical basis.

Therefore; the results of the first hypothesis show that the excess cash holdings in financial constraints firms reduces the twelve-month liquidity risk which indicates it is of particular importance to determine the amount of cash reserves for many companies. Whatever the amount of the liquidity risk is higher, its return is lower. Therefore, a company that has good access to the capital market should not hold cash reserves. Also the financially constraint firm are less likely to investment in new project and supply the necessary fund in non- profitable project compared to unconstrained firms. The results of the second hypothesis show that the excess cash holdings reduce the Beta liquidity risk in financial constraints firms. Because cash holdings are more valuable for financially constrained firms and the extra benefits of holding excess cash that accrue to these types of firms can be at least partly attributed to the reduction in their liquidity risk. The liquidity benefit of excess cash is significantly higher and its liquidity risk is lower for financially constrained firms. The results of this research consistent with Denis & Sibelkov (2009) and Pinkowitz & Williamson (2007).

9. Suggestion for further Researches

According to the results of hypotheses can be argued that existence of a financial constraint lead to reduction in the risks associated with excess cash holdings. As a result it can be recommended to investors and other users of financial information to pay more attention to financial constraint factor when liquidity risk assessment and financial analysis and due to the proxies presented in this study to measure financial constraint of firms. Also it can be suggest to the financial managers of financial constraints firms in order to reduce the negative effect of financial constraints on the value of company stocks, to hold excess cash from internal resources and to try to manage the internal liquidity of the company.

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