

DETERMINANTS OF CORPORATE CASH HOLDINGS: THE CASE OF AN EMERGING MARKET

Nizamettin Bayyurt¹, Mirgöl Nizaeva²

¹Istanbul Technical University, Faculty of Management, Istanbul, Turkey

²Fatih University, Institute of Social Sciences, Turkey

Abstract

This study attempts to investigate both firm-specific and country specific determinants of corporate cash holding behaviors in case of Turkish listed 164 manufacturing firms over the period of 2003 to 2013. According to our examination, on average, manufacturing firms hold 7.3 % cash to total assets. The findings of the panel data analysis indicate that large firms, based on their total assets, hold more cash than their smaller counterparts. A positive effect of interest rate and risk on corporate cash holding was observed. Furthermore, negative associations between net working capital, leverage, asset tangibility degree, capital expenditures and cash holding level were captured.

Key words: determinants, corporate cash holdings, emerging market

1. INTRODUCTION

Although academic literature regarding liquidity preferences of firms is traced back to Keynes (1936) where he indicated three: transaction cost, precautionary, and speculative motives of cash holding, empirical studies concerning its determinants have been growing only in last decades. Cash is needed asset in exchange of values between economic parties; therefore, any firm can't survive without generating positive cash inflow in long-run. Cash holding is cash in hand or readily available for investment in physical assets and to distribute to investors (Gill & Shah, 2012). Accordingly, excessive cash holding increases its opportunity cost, if firms trade off their profitable projects to hold it (Al-Najjar, 2012); whereas, less cash holding may let investment opportunities to pass and make firm prone to financial distress. In case of unexpected economic hardships firms with less cash amounts need to bear additional costs as transaction costs of asset liquidation and security issuance, interest expenses of borrowing. Moreover, hoarding cash leads to agency problems, since conflicts of interests between shareholders and managers over payout policies are especially severe when the organization generates substantial free cash flow (Jensen, 1986), since shareholders are on the side of investing free cash and receiving more dividends; where managers as agents have incentives to increase the resources under their control (Jensen, 1986).

Recent studies have documented that cash and cash equivalents, along with constituting significant percentage of total assets, change across countries and across industries. Cash holding level represents in average 10 % in the US, 8 % in the UK, 5 % in Russia, 3.5 % in China, 3 % in India, 2 % in Brazil (Al- Najjar, 2012), 9.1 % of total assets in Turkish firms (Uyar & Kuzey, 2014), 10 % of total assets in Italian private firms (Bigelli & Sanchez-Vidal, 2011). Those mentioned consequences of certain cash holding levels and its differences across countries are what deserve investigations to find its determinants.

Since firms, engaged in business operations within the borders of certain country, are considered as unit entities of whole national economy, their strategies, objectives are responsive to macroeconomic changes and subject to government regulations. Persistent increase in inflation rate erodes the nominal values of assets, as well as cash held; whereas, adverse economic conditions make firms' future profits, cash flows uncertain. Additionally, macroeconomic fluctuations can be considered as systematic and not diversifiable in most cases. Based on these reasons, influence of macroeconomic variables on cash management of firms must be investigated. The motive behind including mentioned additional variables are supported by strong theoretical framework and empirical evidences. So that increases in inflationary pressure undoubtedly influence the amount and cost of money supply, it

affects the trade-off between the costs and benefits of corporate cash holding (Wang et al., 2014). Companies hold less cash in countries where the inflation rate is high and it may be resulted from concerns of companies about decreasing value of cash holding by them (Boni, 2014). In last years annual inflation rate in Turkey was around 7-8 %, where it ranged within in average 2.3-0.4 % in other OECD countries (OECD, 2015). Additionally, interest rate of Turkish Central Bank was between 4,5 % - 10% in last five years. These fluctuations across years and specific differences of variables from other both developed and developing countries are what make cash holdings of manufacturing firms reasonable to study.

The important contributions of this study are as follows. First, it will enrich existing literature in case of sample from emerging market. Second, by adding up new determinant variables and taking control variables from previous study it will ascertain and accurate our understanding of corporate cash holding behaviors in Turkey.

The succession of the study goes on the following way: section 2 will present the review of existing literature; section 3 discusses the theoretical background and hypothesis development; section 4 continues with methodology of the study; section 5 and 6 present findings and conclusion, respectively.

2. LITERATURE REVIEW

Cash holding strategies of both private and public companies in developed and emerging countries was subject to many investigations in recent decades. Even though the cash holding determinants have been at the core of arguments in academic sphere, the existing literature mainly focused on developed country and cross-country cases. There are only a few studies regarding the cash holding behaviors of firms in single developing countries. The following review of studies shed light on our general view about present literature and exposes the gap that have to be fulfilled.

Gao, Harford, and Li (2013) comparing the cash holding policies of public and private firms in the U.S. over the period of 1995-2011 investigated that average public firms hold more cash than average private firms. Their findings also exposed that greater agency problems in public firms lead managers to hold more cash than they otherwise would do.

Al-Najjar (2012) examined corporate cash holdings analyzing developing countries, namely Russia, China, Brazil, and India. The results of his cross-country research displayed that capital structure, dividend policy, and firm size are the most important determinants of cash holding. Besides, managers of firms with weak shareholder protection hold more cash.

Bigelli and Sanchez-Vidal (2011) employing the data from Italian unlisted firms within 1996-2005 interval discovered that smaller, younger, and riskier firms hold significantly more cash than and less cash substitutes than big firms. Furthermore, their result witnessed that industry-specific and macroeconomic factor have less and insignificant effect on cash holding levels of private firms.

Stone and Gup (2013) examined the effect of interest rate on cash holding in case of the U.S firms, where they found negative relationship within most time intervals; in contrast, in 1980-1990 time interval a positive relationship was captured. They pointed out that some positive relations were stemmed from variable definitions. However, it is also indicated that, driving factors of that temporary positive relationship were subject to further analysis; but, any of them was able to empirically provide the significant explanation.

Wang et al. (2014) investigated the relationship among operating cycle, inflation, and corporate cash holdings of listed companies in China's stock market. The result of their research indicates the existence of U-shaped association among cash level and inflation which means there is a significant and negative relationship until certain level of inflation and then the relationship is reversed. The similar relationship was captured between cash level and operating cycle; it is influenced by change in inflation rate.

Uyar and Kuzey (2014) studied the determinants of firms' cash holdings for Turkish non-financial firms over the 1997-2011 period. They found that cash flow and growth opportunities are statistically significant and positively affect cash level; whereas, asset tangibility degree, capital expenditure amounts, and leverage negatively affect. Moreover, there was observed steadily increasing tendency of cash level holding levels during analyzed period.

The summary of the common findings of existing literature is like that; there is a significant impact of firm size, profitability, leverage ratio, growth opportunity, dividend policy, asset tangibility, and risk on corporate cash holding levels. Asset tangibility ratio, capital expenditure, firm size have negative effect on cash holding level. On the other hand, there are positive impacts of risk, leverage, investment growth opportunities on cash holding. Moreover, features of relationship between cash and its determinants may differ across countries, in accordance with legal and institutional factors. Also, cash holding behavior may carry different characteristics among growth and mature firms. Growth companies hold higher cash than mature companies (Saddour, 2006).

The sole research concerning the evidence from Turkish firms, as an example of single emerging market case, investigated by Uyar and Kuzey in 2014 examining several firm specific independent variables concluded that the capital expenditure amount, liquid assets used as cash substitutes, tangibility degree of assets, financial debt ratio and leverage have significant and negative impact on cash levels; whereas, the previous year cash holding and growth opportunities affect negatively.

This study extends that previous research by complementing firm specific determinants of cash holding, in a sense, sales, rate of account receivables and including some macroeconomic factors. Next section discusses these factors.

3. THEORETICAL FRAMEWORK AND HYPOTHESIS DEVELOPMENT

Although there are several applicable theories to employ in examining the cash holding behavior of firms, two main views: trade-off model and pecking order theory are mostly applied in academic literature.

The trade – off model of cash holdings assumes that companies must determine certain optimal level of cash amount by compromising between marginal costs and marginal benefits of holding liquid assets (Miller & Orr, 1966). Since markets are far from perfect and transactions costs are never irrelevant companies trade-off between receiving lower returns holding fund in hand and undertaking investment opportunities in case of market frictions (Bigelli & Sanchez-Vidal, 2012). Moreover, usual presence of asymmetric information on raising funds makes firms reluctant to issue bond, even they have access to capital market (Al-Najjar, 2013). Al-Najjar (2013) argues that bankruptcy related costs are more significant and market imperfections are more severe in developing countries than in developed markets. Hence, trade-off is applicable to examine cash holding behavior of firms in most of emerging markets.

On the other hand, according to pecking order model developed by Myers and Majluf in 1984, based on market imperfections, assuming managers know more about corporate values than potential investors and investors act always rationally, firms firstly rely on internal sources of financing and prefer debts to equity. Hence, there is a hierarchy of financing rather than determining optimal level of cash holding. Firms fund their investments initially with retained earnings, look for debt as internal sources are exhausted (Al-Najjar, 2013).

Findings of previous empirical studies support both trade-off and pecking order theories. Both of theories explain cash holding behavior of Turkish non-financial firms (Uyar & Kuzey, 2014), in determining factors of cash holding in case of Italian private firms (Bigelli & Sanchez-Vidal, 2012), in examining cash holding management of firms in Russia, India, Brazil, and China (Al-Najjar, 2013) and others.

Net Working capital

Companies which possess liquid assets have ability to convert these assets into cash; therefore, they are reluctant to hold more cash and less reliable on capital markets to obtain cash (Al-Najjar, 2013). Based on assumptions of trade-off theory, it may be concluded that holding both cash and liquid assets increase the marginal cost of hoarding cash. Here, it may be hypothesized the negative relationship between net working capital and cash holding level.

Profitability

According to pecking order theory, cash is an outcome of the financing and investment activities of firms (Dittmar et al., 2003). Therefore, companies that yield more profit are able to pay dividends, return their debts, and stockpile cash (Al-Najjar, 2013). Accordingly, we hypothesize the presence of positive relationship between profitability and corporate cash holding.

Leverage

Al-Najjar (2013) argues that, according to trade off theory, firms operating with high leverage likely to stockpile more cash due to their higher probability of financial distress. On the other hand, financial hierarchy theory assumes high leverage displays the more investment of firms than their retained earnings. Since, companies borrow after retained earnings are exhausted, high leveraged firms hold less cash amounts. Therefore, both negative and positive association between leverage and corporate cash holding levels is possible.

Growth rate/opportunity

In order to take advantage of every profitable investment opportunity firms need fund. An absence of external sources and their high costs even accessible are the most possible obstacles that firms may face (Saddour, 2006). Bigelli and Sanchez-Vidal (2012) stated that high growth opportunities in private firms are associated with their higher cash holdings. Therefore, in consistent with trade –off theory, the positive relationship between growth opportunities and cash holding level is expected.

Asset tangibility

Firms with more tangible fixed assets are reluctant to hold excessive cash amount, so that they can sell these assets when the urgent cash is needed. Hence, according to assumption of pecking order theory, the negative relationship between asset tangibility and cash holding is expected.

Capital expenditure

Firms that possess more assets can easily convert into cash by selling them when cash is need; otherwise, it is required to give up profitable investment opportunities (Opler, 1999) or bear costs of raised fund from market. If capital expenditures will be utilized for investment demand, companies with more capital spending will hold higher cash amounts (Dittmar et al., 2003). So that there are higher opportunity cost of giving up high profit yielding investment and cost of fund raising, trade-off theory predicts the positive association between capital expenditure and cash holding levels of firms. On the other hand, pecking order theory contradicts to that prediction advocating firms' preference of using own assets initially for investments.

Financial debts

According to assumptions of pecking order theory, there is no optimal debt ratio likely to non-existence of optimal level of cash holding (Bigelli & Sanchez-Vidal, 2012), since firms exploit retained earnings before borrowing. On the same line of reasoning, we expect negative association between financial debt amount and corporate cash holding levels.

Firm Size

Large firms are found to hold less cash than their small counterparts, because of cost of external financing (Al-Najjar, 2013), since larger companies able to find cheaper funds in an easier way.

Moreover, Opler et al (1999) argue that there is economies of scale in large firms in financing business activities. Accordingly, it may be hypothesized that large firms hold less cash.

Cash Conversion Cycle

Cash conversion cycle consisting of days outstanding for payables, operating and receivable collection periods has an effect on cash holding decisions of firms. Firms with shorter operating cycles have to continuously invest fund to complete the ongoing cycle of inventory purchasing, production, and sales and have to hold more cash (Wang et al., 2014). On the contrary, Opler et al. (1999) argue that firms with several product lines and less inventories to sales have shorter operating cycles, and this kind of companies hold less cash. Companies with longer cash conversion cycle face a higher liquidity needs, and accordingly, increase cash holdings (Kling et al., 2014). The shorter length of cash conversion cycle means high frequency of cash generation (Bigelli and Sanchez-Vidal, 2012) and implies better cash flow timing that lead firms to hold less cash amount (Drobetz & Grüninger, 2007). Cash conversion cycle, in days, is obtained by summing days in inventory turnover and account receivables period, and subtracting accounts payable period (Bigelli & Sanchez-Vidal, 2012; Drobetz & Grüninger, 2007). As widely known, days in inventory turnover equals average inventory divided by cost of goods sold, and multiplied by days in the period (365 days); days in account receivable and days in account payable equal average account receivable divided by sales per day and days within the period (365) is divided by account payables turnover, respectively. A negative cash cycle is one in which it is not paid for inventory or materials until after the product sold. It means working capital is used as efficiently as possible and company has available cash for other things. Therefore, in accordance with assumption of pecking order theory, one may expect positive relationship between cash conversion cycle and cash holding level.

Interest Rate

Decrease in interest rate leads companies to hold more cash; because, opportunity cost of retaining fund in investment falls (Stone & Gup, 2013). On the other hand, increase in interest rate may lead firms to hoard cash, too, since it displays increase in cost of borrowing and companies prefer use own money rather than getting into at higher interest. In line with reasoning of trade off theory, we expect negative relationship between interest rate and cash level. An existence of positive association variable can be explained by pecking order theory assumptions.

Risk

Cash can be considered as a buffer against unexpected adverse shocks and increase probability of survivorship during tough business conditions (Bigelli & Sanchez-Vidal, 2012). Hence, variability in cash flow leads firms to hold more cash.

Inflation

Any change in inflation rate influences on purchasing power of money; therefore, high inflation decrease purchasing power of hold cash increasing the opportunity cost of it. Wang et al. (2013) argue that in case of continues inflation rises firms anticipate further increases by purchasing raw materials in advance or invest in gold or reals estate order to avoid the more loss of purchasing power of cash they hold. For these reasons, we expect negative relationship between inflation rate and cash holding levels of firms.

Real GDP Growth

In academic literature real GDP was used as proxy for measurement of economic growth. As an entity operating as part of whole economic system, firms are responsive to fluctuations in economic growth. Getting down of economic growth makes firms uncertain about future business conditions and hoard cash due to precautionary motive against adverse changes. Therefore, we expect negative association between real GDP growth and corporate cash holdings.

4. METHODOLOGY

This study uses a sample of 164 manufacturing firms listed in Istanbul Stock Exchange to analyze the effects of firm-specific, macroeconomic (particularly, inflation and real GDP growth), and financial market specific factors on corporate cash holdings. The sample selection criteria were based on data availability of firms within 2003-2013 time periods. Furthermore, macroeconomic data applied in the analysis was obtained from World Bank database. Fixed effects panel regression method was applied for data analysis.

5. THE FINDINGS

An operationalization of variables is as following. The dependent variable Cash represents the ratio of cash and cash equivalents to total assets. Net working capital (NWC) is calculated by dividing working capital net of cash to total assets (as used by Opler et al.,1999, Bigelli and Sanchez-Vidal, 2012). Return on equity (ROE) and ratio of total debt to total assets are proxies for profitability and leverage (LEV), respectively (Al-Najjar, 2013). Growth opportunities (GrOpp) are calculated dividing market value to book value of equity. Asset tangibility (AssetTang) is computed as tangible asset amount divided by total assets. Cash conversion cycle (CCC) consists of days outstanding for payables, operating and receivable collection periods. We calculate capital expenditure (CapEx) by dividing the sum of change in fixed assets and depreciation to total assets and financial debt is equal to the ratio of financial debt (FD) to total debt amount. The logarithm of total assets is used as proxy for firm size (FSize) (as calculated by Uyar &Kuzey, 2014, Al-Najjar, 2013, Bigelli & Sanchaz-Vidal, 2013). Risk is calculated as the logarithm of the standard deviation of the last 3 years of cash flow. Interest rate (IntRate) measures rate paid for demand, time, or any saving deposits; inflation (INF), and GDP growth measure annual percentage change in consumer price index and annual percentage growth rate of GDP, respectively, are obtained from World Bank database. The world economic crisis in 2008 and 2009 are coded by year dummy.

The descriptive statistics of the variables are summarized in Table 1.

Table 1. Descriptive Statistics of Variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Cash	1749	0.073	0.084	0.000	0.565
NWC	1749	0.064	0.414	-7.982	0.896
ROE	1749	0.070	1.862	-16.556	60.303
LEV	1749	0.501	0.497	0.020	8.674
LnFSize	1749	19.242	1.656	15.323	24.547
GrOpp	1749	1.564	5.398	-177.544	64.772
AssetTang	1749	0.382	0.178	0.000	0.911
CCC	1749	140.689	1506.259	-38552.630	26585.490
CapEx	1749	-0.778	10.020	-253.631	0.828
FD	1749	0.372	0.245	0.000	0.942
LnRisk	1434	16.626	1.760	11.713	21.776
IntRate	1749	20.674	6.177	14.217	37.678
INF	1749	10.131	4.858	6.251	25.296
GdpGrowth	1749	4.947	4.184	-4.826	9.363
Yeardummy	1749				

As the results of the Table 1 shows, the average value of cash to total asset ratio is 7.30 %, which is in line with that of some other countries: 10 % in Italy (Bigelli & Sanchez-Vidal, 2012); 8 % in UK, 10 % in US, 5 % in Russia, 3.5 % in China, 3 % in India, and 2 % in Brazil (Al-Najjar, 2013).

Table 2. Correlation Matrix of Variables

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Cash	1													
NWC	0.093	1												
ROE	0.018	-0.021	1											
LEV	-0.228	-0.867	0.007	1										
LnFSize	0.179	0.034	0.017	-0.097	1									
GrOpp	0.056	0.033	-0.597	-0.036	-0.03	1								
AssetTang	-0.218	-0.062	-0.004	-0.103	0.01	-0.023	1							
CCC	0.088	0.034	0.02	-0.07	0.028	0.002	0.004	1						
CapEx	-0.033	0.043	-0.016	-0.109	0.159	-0.042	0.134	0.034	1					
FD	-0.267	-0.16	-0.031	0.279	0.217	-0.019	0.109	-0.021	0.089	1				
LnRisk	0.127	-0.107	-0.009	0.058	0.754	-0.009	0.041	0.017	0.102	0.212	1			
IntRate	-0.01	0.047	-0.005	-0.043	-0.105	-0.064	0.112	0.022	0.026	-0.103	-0.023	1		
INF	-0.021	0.022	0.004	-0.025	-0.071	-0.037	0.078	0.023	0.046	-0.065	0.054	0.701	1	
GdpGrowth	-0.007	0.022	0.037	-0.017	-0.008	0.024	-0.018	0.02	-0.003	-0.071	0.056	-0.17	0.246	1

The result of the pair wise Pearson correlations between variables are shown in Table2. The correlations between cash holdings and FD, LEV and AssetTang are negative. Correlations between cash holdings and LnFsize and LnRisk are positive. Other correlations are relatively low.

This study analyzes the effects of firm-specific, macroeconomic (particularly, inflation and real GDP growth), and financial market specific factors on corporate cash holdings. Since we use a sample of individual entities, in order to investigate above stated hypotheses and not to ignore individual specific factors in the regression, it makes sense to employ fixed effect model. Accordingly, following panel data model was estimated.

$$\begin{aligned}
 Cash_{it} = & \beta_0 + \beta_1 NWC_{it} + \beta_2 ROE_{it} \\
 & + \beta_3 LEV_{it} + \beta_4 LnFsize_{it} + \beta_5 GrOpp_{it} + \beta_6 AssetTang_{it} + \beta_7 CCC_{it} + \beta_8 CapEx_{it} \\
 & + \beta_9 FD_{it} + \beta_{10} INF_{it} + \beta_{11} IntRate_{it} + \beta_{12} GdpGrowth_{it} + \beta_{13} LnRisk_{it} \\
 & + \beta_{14} Ydummy_{it}
 \end{aligned}$$

Table 3. Tests for Serial Correlation and Heteroskedasticity in Fixed Effects Regression

	Modified Wald Test for Group Wise Heteroskedasticity
Wooldridge Test for Serial Correlation	
Ho: No First Order Serial Correlation	H0: $\sigma^2(i) = \sigma^2$ for all i
F(1, 161) = 44.708	chi2 (162) = 70993.54
Prob > F = 0.0000	Prob>chi2 = 0.0000

Table 3 gives the results of Wooldridge test for serial correlation and Modified Wald test for group-wise heteroskedasticity. Since the null hypotheses are rejected by these tests, we might accept there is a serial correlation and heteroskedasticity problem in the model. Therefore, we apply the fixed effects regression with Driscoll and Kraay standard errors which gives robust estimations in case of serial correlation and heteroscedasticity problems in the model.

Table 4. Fixed Effects Panel Regression Results

Cash	Drisc/Kraay			
	Coef.	Std. Err.	t	P>t
NWC	-0.138	0.015	-9.320	0.000
ROE	-0.001	0.001	-1.230	0.250
LEV	-0.178	0.015	-12.210	0.000
LnFSize	0.017	0.004	4.390	0.002
GrOpp	0.000	0.000	-1.570	0.150
AssetTang	-0.222	0.023	-9.530	0.000
CCC	0.000	0.000	1.470	0.176
CapEx	-0.046	0.005	-9.340	0.000
FD	-0.023	0.006	-3.570	0.006
INF	-0.002	0.001	-1.750	0.114
IntRate	0.002	0.001	2.600	0.029
GdpGrowth	0.001	0.000	1.890	0.091
LnRisk	0.003	0.001	4.940	0.001
Yeardummy	0.010	0.003	2.920	0.017
Constant	-0.141	0.092	-1.540	0.158

N=1434, Num of Groups=162, F(14, 9) = 2934.30, Prob > F = 0.0000

Table 4 which is the fixed effects panel data analysis with Driscoll and Kraay standard errors results documents that net working capital, leverage, asset tangibility degree, capital expenditure, financial debt have negative and firm size, interest rate and risk have positive statistically significant effects on cash holding levels of manufacturing firms. And firms hold more cash in 2008 and 2009 during the world economic crisis.

6. DISCUSSION

As it was hypothesized, net working capital (NWC) has negative and significant effect (at 1 % level) on cash holding levels of firms. Since, cash and net working capital may be considered as negative debt and valid cash substitute, respectively, companies with more amount of bank debts and net working capital hold significantly less cash amounts (Bigelli & Sanchez_Vidal, 2013). Because, in line with assumptions of trade off model, there will be more opportunity cost of hoarding both cash and other liquid assets; since they do not yield profit unless invested. Therefore, because of easy conversion of net working capital other than cash into cash companies with more liquid assets hold less cash.

Concerning the relationship between leverage and cash holding, according to outcomes of our analysis, pecking order theory finds support. Pecking order theory assumed negative and trade off model supposed positive association between cash and leverage levels. Lower development of capital market, in comparison to, other countries with developed capital market, banks are the only source of

external financing for almost all non-financial firms in Turkey (IFC, 2011). Presence of not more alternatives external financing and higher cost of borrowing make manufacturing firms to exploit own retained earnings rather inclining to raising funds from external sources.

Opposing to our expectations, the positive relationship between firm size and corporate cash holding was found. This result is consistent with findings of Al-Najjar (2013) concerning cash holdings in context of some emerging countries. That positive association shows that large manufacturing firms in Turkey hold more cash in comparison to their small counterparts. Large companies engage in diversified investment opportunities (Al-Najjar, 2013), to take advantage of such different investments, they may hold more cash. Moreover, in Turkey families own almost 80 % of all listed companies and there are substantial agency costs due to the conflicts of interests between controlling families and minority shareholders (Yurtoglu, 2003). Opler et al. (1999) argue that in existence of agency costs management hoard cash for different objectives as simply because its risk-aversion, to stockpile cash in order to avoid control and discipline of capital market, to hold more resources under their control rather than paying dividends. Managers in large firms have authority in financial policies in large firms (Al-Najjar, 2013). So that in Turkey high concentration of ownership such kind of governance determinants may have significant effect on corporate cash holding levels.

Supporting our hypothesis the statistically significant negative association between asset tangibility and cash holding level was resulted. Reliance on usage tangible assets as collaterals for bank borrowings or possibility of their liquidation when cash is needed make companies to hold fewer amounts of cash.

There is a negative and statistically significant effect of capital expenditure on corporate cash holding. The finding is explained by pecking order theory. Firms spend resources in hand for capital expenditures prior to raising external fund; this approach lowers ready cash amounts of companies.

As an outcome of analysis the negative effect of financial debt on corporate cash holding was found at 5 % significant level. In line with assumptions of pecking order theory, the hypothesis set found support. It supposed that increase in borrowings of firms show exhaustion of own internal sources; likely, every unit of increase in financial debt displays the decrease in cash stockpiles.

According to controversial explanation of trade off and pecking order theories, both negative and positive impact of interest rate on firms' cash holding was expected. The result of analysis witnessed the presence of positive association between variables at 5 % significant level. There is reason to justify that positive relationship, since interest rate is cost raising external financing. Stone and Gup (2013) suggest that when the interest rate is low, companies prefer to borrow debt in order to take advantage of low interest rates and of less interest expenditures. Similarly, interest rate is high firms prefer to stockpile cash in hand because of high cost of borrowing.

Even though some of the explanatory variables such as inflation and macroeconomic growth, denoted with GDP growth rate, were found statistically insignificant, their indirect effect on corporate cash holding may be contemplated. Increase in inflation rate represent the decrease in nominal value of cash held by company in current time what makes firms reluctant to stockpile cash. However, it may be believed that that effect may be captured through interest rate, since theoretically interest rate consists of inflation. Moreover, macroeconomic fluctuations make firms' future income streams and cash flows uncertain which also affect their strategies for future.

7. SUMMARY AND CONCLUSIONS

The study examined the factors that are supposed to explain the cash holding levels of firms in Turkey. According to findings of given study, manufacturing firms in Turkey hold cash, 7.3 % of total assets. In analysis in order to take into consideration the effects of individual firm specific factors on corporate cash holding behaviors, fixed effect model of panel regression was applied.

The outcome of the research shows that larger manufacturing firms stockpile more cash than small firms. In general, the negative relationship between net working capital, leverage ratio, capital

expenditure, financial debt, asset tangibility and corporate cash holding was captured. There are positive and significant effects of interest rate and risk on cash holding levels of manufacturing firms, reasoning to conclude in a way that increase in interest rate or risk leads companies to hold more cash amounts to their total assets. The most of explanatory variables' sign were in consistent with results of previous studies and applied theoretical assumptions.

However, application of agency cost theory in Turkish case will be more interesting research question and contributive to existing findings in determining the factors effecting on corporate cash holdings because of ownership concentration (family ownership) and different managerial incentives.

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