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Assessing the Effect of Trade Credit as a Short-term Financing Instrument on Cash Holdings and Considering Financial Deepening as a Yardstick

Vahideh Talezari, Fatemeh Rahimiyan, Hamid Panahi and Zahra Saberi

Department of Accounting, Shahrood Branch, Islamic Azad University, Shahrood, Iran.

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ABSTRACT

One of the most important elements which determine an optimum level of cash holdings is financial markets' accessibility. Countries whose level of financial deepening is low cannot apportion financial resources efficiently, or they have to deal with the inaccessibility of financing instrument. Consequently, adequate resources cannot be traced. The present study investigates the effect of short-term financing instrument, from trade credit, on cash holdings of 127 listed companies on Tehran Stock Exchange, considering financial deepening as a yardstick and applying multiple regression models over a period extending from 2006 to 2012. The obtained findings indicate that there is a significant relationship between grant and receive trade credit and cash holdings, considering financial deepening as a yardstick. No change was found in results even when utilizing single regression model.

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INTRODUCTION

Increasing requirements for financial data stimulated trade units to report and match financial statements with users' needs. Thus, accounting and financial statements should deliver appropriate data concerning the entry and exit of cash flows, dividend earnings, financial instruments, investments, and repayment of the loans. In the period of economic growth, managers decide how to spend cash reserves, whether they should issue them among shareholders, spend them for internal or external costs, or hold the cash. There are many theories related to corporate cash holdings such as asymmetrical information, agency, balance, financing hierarchy, free cash flow, and etc. Lowering the level of information asymmetry through increasing the quality of financial statements can decrease the amount of corporate cash holdings. Agency theory deals with the issue cash holdings' justifications. According to this theory, conflicts which bring about agency costs can justify managerial behaviour when making decision about cash holdings. In accordance with balance theory, optimum amount of corporate cash holdings can be reached through balancing benefits with costs of cash holdings. Financing hierarchy theory deals with this problem that managers intend to hold more cashes in order not to refer to external resources for financing. Free cash flow theory states that managers hold cashes in order to enhance their power and control of making decision and judging. The current study aims to assess the effect of short-term financing instrument from trade credit on cash holdings of listed companies on Tehran Stock Exchange through the application of financial deepening as a yardstick.

2. Theoretical background and review of literature:

2.1. Cash holdings theories:

2.1.1. Balance theory:

According to balance theory, firms can determine an optimum level of cash holdings through balancing benefits with costs of cash holdings. In fact, final costs and benefits of cash holdings can indicate the optimum level of cash holdings. This theory concentrates on the fact that there is an optimum level for cash holdings which can be found based on cost-benefit analysis (Jani *et al.*, 2004). Cash holdings decrease the possibility of financial crisis, since they can be considered as secure storage for the firms. they can also support the firms when encountering financial restrictions, and decrease the costs of gathering financial resources or cashing the assets. On the basis of this theory, management that maximizes shareholder wealth should set the firm's cash

Corresponding Author: Vahideh Talezari, Department of Accounting, Shahrood Branch, Islamic Azad University, Shahrood, Iran.
E-mail: talezari.acc@gmail.com

holdings at a level such that the marginal benefit of cash holdings equals the marginal cost of those holdings (Opler *et al*., 1999).

2.1.2. Financing hierarchy theory:

According to the theory proposed by Myers and Majluf (1984), firms prefer internal to external finance. This theory is based on the assumption that corporate insiders are better informed than shareholders. Managers may be forced to forgo pro_table projects if internal funds are not sufficient to finance the optimal investment program and information asymmetry is prohibitive. In this situation, financial slack (cash) is valuable, and the only opportunity to issue equity without loss of market value occurs if information asymmetry is nonexistent or small (Drobetz *et al*., 2009).

With regard to the issue of financing, firms finance the investment resources by retained earnings, low-risk debts, and then high-risk debts, and at last share issue. This hierarchy must be considered in order to decrease the costs of information asymmetry and financing. When operating cash flows are sufficient for financing new investments, firms can repay their debts and hold their cashes, and utilize their cash holdings when they need to provide funds for the current investments. Final solution is borrowing more money to clear previous debts. Information asymmetry and external financing imposed the aforementioned specific hierarchy on financial policies which prefer internal finance to external finance.

2.1.3. Free cash flow theory (FCF):

According to Jensen (1976), internal cash holdings let managers avoid market controls. They thus do not need shareholders' agreement in order to make decisions about investments and can perform freely. Managers are mostly reluctant to pay stock earnings to the shareholders and prefer to invest, even when there is no investment showing positive net value (Jensen & Meckling, 1976). Free cash flows can be regarded as a criterion for assessing the firm performance and the amount of cash holdings which are accessible to the firm, after deducting all costs of retaining or developing the assets. Free cash flows allow the firms to take the opportunities which enhance shareholders' stock value. The development of novel products, business operations, repayments, and account settlements are not possible without cash holdings (Jensen & Meckling, 1976).

2.2. Financing:

Financing falls into two short-term and long-term financing groups. Each group has specific effects on the return and risks of business units (Rahimian, 2001).

2.2.1. Short-term Financing:

Short-term financing is mostly utilized for supporting temporary investments in current assets. After planning the investments in current assets and predicting the required resources, managers have to make decisions about financial issues. They often take out short-term loans. Three main sources of short-term financing can be prioritized in the following manner: trade credits, borrowing from commercial banks, and issuance of commercial securities

2.2.1.1. Trade credits:

When an economic unit purchases a product from another economic unit, it is not forced to pay the price immediately; it can postpone repaying. Until repaying the price of the product, which is considered as payable accounts, the economic unit is in debt. The product's price is recorded as receivable accounts in the seller's financial statements. Business unit's current funds are indeed accessible trade credits. Trade credits cannot directly provide funds to repay other bills, since purchase cannot solely supply needed goods. The advantages of this approach are easy access, no need to the collateral, and non-strict creditors, while its disadvantages are inflated payable accounts, loss of cash discount and economic unit's credit.

2.2.1.2. Borrowing from commercial banks:

Second source of short-term financing is borrowing from commercial banks. Short-term loans of commercial banks are given to the applicants based on contracts signed between banks and business units. If banks recognize that applicants are not capable of repaying their debts or they are not in a good financial condition, banks request a part of the applicants' current assets as collateral. Sometimes, big corporations submit a part of their current assets as collateral in order to get loans with better conditions and lower interest. Inventories and debtors' accounts are the best collateral for short-term loans.

2.2.1.3. Commercial securities:

Short-term securities which are issued by business units or financial institutions can be considered as another instrument for borrowing. These securities can be delivered to the investors through financial

intermediaries or directly. Financing these securities is dependent upon the business unit's financial status and credit rank. Mention must be made though that financing these securities is less than applying bank facilities.

Nonfinancial firms such as production corporations use these securities as a means of financing. Firms which invest in such commercial securities are as follows: insurance institutions, hedge funds, and pension funds. Advantages of these securities can be financing without collateral, and guaranteed interest less than the loan given by banks. This fact that they can be just given by accredited business units is their disadvantage.

2.2.2. Long-term and medium-term financing:

Short-term period refers to the period which extends less than a year, but short-term financing has not been defined clearly. Some scholars use medium-term financing for periods more than a year and less than ten years, while long-term stands for the periods more than five years, so periods between five and ten years are not accurately assessed. Some people consider an eight-year loan as a long-term loan and some a medium-term loan. Main resources of long-term financing of business institutions are as follows: long-term bank loans, bonds, preference shares, ordinary shares and accumulated dividend (Rahimian, 2001).

2.3. Financial deepening:

Financial deepening is one of the preconditions of financial development. Countries whose level of deepening is low cannot apportion financial resources efficiently, or they have to deal with the inaccessibility of financing instrument. Consequently, adequate resources cannot be traced (Office for Research and Economic Affairs, 2009).

Each country's financial sector plays a significant role in achieving economic goals. Developed financial systems experience higher growth rates and improve more quickly (Office for Research and Economic Affairs, 2009).

Economic financial sector is consisting of three parts of money, insurance and capital market. Due to its volume, insurance sector was separated from capital market, although it is a part of capital market. Nowadays, financial sector falls into two groups of money and capital. The development of financial markets can bring about economic and political stability, trustworthiness, long-term consistency of financial system and its components (Office for Research and Economic Affairs, 2009).

2.4. Review of literature:

Abzari, Dastgir and Gholipour (2007) state that although there is no significant difference between different methods of financing (accumulated dividend, stocks and liabilities), firms' financing methods and size are significantly related to each other. Increasing firm size can enhance the usage of accumulated dividend and stock in order for financing.

Rasaeiyan, Rahimi and Hanjari (2010) conducted a research and found that there is a negative significant relationship between non-executive members of the board and cash holdings in listed companies on Tehran Stock Exchange, while no significant relationship was observed between institutional investors and cash holdings. Opler *et al*. (1999) examine the determinants and implications of holdings of cash and marketable securities by publicly traded U.S. firms in the 1971-1994 period. They concluded that firms with strong growth opportunities and riskier cash flows hold relatively high ratios of cash to total non-cash assets. Firms that have the greatest access to the capital markets, such as large firms and those with high credit ratings, tend to hold lower ratios of cash to total non-cash assets. Bradshaw *et al*. (2006) developed a comprehensive and parsimonious measure of corporate financing activities and document a negative relation between this measure and both future stock returns and future profitability. Wu *et al*. (2011) investigated the effect of financial deepening on the relationship between trade credit and cash holdings among Chinese listed firms. Trade payables and receivables of 1729 Chinese listed firms (14313 year-firm) were examined over the period from 1999 to 2009. They found that firms in regions with higher levels of financial deepening hold less cash for payables while substituting more receivables for cash.

Research hypotheses:

1- Considering the measure yardstick of financial deepening, there is a significant relationship between granted trade credit approach from trade receivables and cash holdings.

2- Considering the measure yardstick of financial deepening, there is a significant relationship between received trade credit approach from trade payables and cash holdings.

3. Research methodology:

The present study is a correlational deductive research which applied panel data analysis. Previous researches and econometric tests were also utilized. Multiple regression models were used in order to test research hypotheses.

4. Target population and sampling:

Target population of the research is consisting of all listed companies on Tehran Stock Exchange. Research Sampling was conducted considering the following criteria and applying Criteria-Filtering Technique:

1. The company's stock was actively traded during the research period from 2006 to 2011with no interruption more than three months.
2. Investment, service and financial intermediation institutions were eliminated from statistical sampling of the research.
3. The company's fiscal year should be leading to March during the process of research period without any changes.
4. Needed data was accessible.
5. The company should be considered as a profitable company during the research period.

Simple random sampling was applied and 127 firms were finally selected as the research sample.

5. Research variables:

Dependent variable:

Cash holdings:

Using cash is the most convenient way of purchasing a product or service or settling the obligations. Indeed, there is no limitation in using cash when trading. Cash can be consisting of paper money, coins, personal checks, deposits, check currency, bank money order, fund accounts, and saving deposits (Noravesh *et al*., 2006). In this study, cash holdings can be calculated through deducting cash at the end of the period from the cash at the beginning of the period.

Independent variable:

Trade Receivables:

Trade receivables include short-term credits for selling products or services, which are regarded as net realizable value (Noravesh *et al*., 2006).

Trade payables:

Credit payable accounts include liabilities for purchasing materials or products which are going to be paid in a year after the date of balance sheet (Noravesh *et al*., 2006).

Financial deepening:

Banking dictionary defines financial deepening as financial assets and the status when the speed of growing financial assets is more than non-financial assets (Khalatbari, 1992). The index of financial deepening can be assessed through dividing total liquidity by gross domestic product whose data can be derived from Central Bank of the Islamic Republic of Iran.

Control variables:

Control variables of the study are as follows: net working capital, firm size, leverage, ratio of long-term debt to total debt, ratio of the book value of assets to the market value of assets, ratio of operating cash flows to total assets

6. Hypotheses testing:

6.1. Model of first hypothesis testing:

$$\Delta Cash_{i,t} = \alpha_0 + \alpha_1 \Delta Crdt\_Pay_{i,t} + \alpha_2 \Delta Crdt\_Pay_{i,t} * Deepening_{i,t} + \alpha_3 Liquid_{i,t} + \alpha_4 Size_{i,t} + \alpha_5 Levrage_{i,t} + \alpha_6 Debt_{i,t} + \alpha_7 M/B_{i,t} + \alpha_8 CashFlow_{i,t} + \alpha_9 Deepening_{i,t} + \varepsilon_{i,t}$$

6.2. Model of second hypothesis testing:

$$\Delta Cash_{i,t} = \alpha_0 + \alpha_1 \Delta Crdt\_Rec_{i,t} + \alpha_2 \Delta Crdt\_Rec_{i,t} * Deepening_{i,t} + \alpha_3 Liquid_{i,t} + \alpha_4 Size_{i,t} + \alpha_5 Levrage_{i,t} + \alpha_6 Debt_{i,t} + \alpha_7 M/B_{i,t} + \alpha_8 CashFlow_{i,t} + \alpha_9 Deepening_{i,t} + \varepsilon_{i,t}$$

Where;

ΔCash: deducting the amount of cash at the end of the period from the cast at the beginning of the period and dividing the obtained amount by the total assets

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Crdt_PayΔ: deducting grant trade credit including total payable accounts at the end of the period from total payable accounts at the beginning of the period and dividing the obtained amount by the total assets

Crdt_RecΔ: deducting receive trade credit including total receivable accounts at the end of the period from total receivable accounts at the beginning of the period and dividing the obtained amount by the total assets

Liquid: the ratio of net working capital (deducting working capital from cash holdings and its equivalents) to the total assets

Size: total assets' logarithm

Leverage: dividing total debt by total assets

Debt: ratio of long-term debts to total debts

M/B: ratio of book value of assets to the market value of assets

CashFlow: ratio of operating cash flow to the total assets

Deepening: financial deepening index

Research hypotheses:

First hypothesis:

Preconditions of regression model:

Kolmogorov-Smirnov statistic is about 0.591 (more than 0.05), so residuals' normality is confirmed at the confidence level of %95.

Durbin-Watson statistic is about 1.882. Since this amount is near to 2, residuals' independence is accepted in the fitted model.

In the statistical scatter plot of standardized residuals, asymmetry was observed around the zero line. Thus, the homogeneity of residuals' variances can be confirmed.

Furthermore, bias-variance and tolerance of independent variables are respectively less than 5 and more than 0.1, so there is not any multicollinearity problem among independent variables.

Considering the fact that all aforementioned preconditions have been confirmed, the achieved findings of final fitted model can be verified.

Results of the first model's statistical analysis

Variable	Coefficient	T-student	Probability	Multicollianearity statistic	
(Constant)	-.806	-1.810	.071	Tolerance	Bias-variance
ΔCrdt_Pay	-.085	-1.041	.020	.477	2.097
ΔCrdt_Pay.Deepening	-.070	-.243	.808	.478	2.094
Liquid	-.297	-1.215	.225	.293	3.409
Size	.054	1.492	.136	.924	1.082
Leverage	-.198	-1.041	.298	.434	2.302
Debt	-.295	-1.460	.145	.367	2.725
M/B	-.007	-1.292	.197	.968	1.033
CashFlow	.022	2.213	.027	.981	1.019
Deepening	1.608	2.137	.033	.943	1.060
Correlation coefficient (R)	.131	Fisher statistic (F)	1.710	Total	.043
Coefficient of determination (R^2)	.017	Durbin-Watson statistic (D-W)		1.872	
Adjusted coefficient of determination ((adj) R^2)	.007	Kolmogorov-Smirnov statistic (K-S)		.480	

The model's coefficient of determination is about 0.017; it proves that %2 of the dependent variable's changes can be described through the independent variables.

F-statistic equals 0.043 (less than 0.05), thus H_0 is rejected and H_1 is confirmed. Since some independent variables were not significant, Backward regression model was applied to omit them.

Results of first hypothesis testing through the application of Backward regression model

Stage	Variable	Coefficient	T-student	Probability	Multicollianearity statistic	
10^{th}	(Constant)	-.888	-2.074	.038	Tolerance	Bias-variance
	CashFlow	.019	2.003	.045	1.000	1.000
	Deepening	1.472	2.014	.044	1.000	1.000
	Correlation coefficient (R)	.094	Fisher statistic (F)	3.968	Total	19.0
	Coefficient of determination (R^2)	009	Durbin-Watson statistic (D-W)		1.882	
	Adjusted coefficient of determination ((adj) R^2)	.007	Kolmogorov-Smirnov statistic (K-S)		.591	

The model's adjusted coefficient of determination equals 0.009; it proves that %1 of the dependent variable's changes can be described through the independent variables.

F-statistic equals 0.019 (less than 0.05), thus H_0 is rejected and H_1 is confirmed at the confidence level of %95.

Significant of the coefficient of the second model's variable (ΔCrdt_Pay.Deepening) determines the hypothesis significance. Regarding the fact that just independent variables which are significant remain in the final Backward regression model, this conclusion can be drawn that the mentioned variable cannot be significant in the final model. Thus, H_0 is confirmed and H_1 is rejected.

Second hypothesis:

Preconditions of regression model:

Kolmogorov-Smirnov statistic is about 0.591 (more than 0.05), so residuals' normality is confirmed at the confidence level of %95.

Durbin-Watson statistic is about 1.882. Since this amount is near to 2, residuals' independence is accepted in the fitted model.

In the statistical scatter plot of standardized residuals, asymmetry was observed around the zero line. Thus, the homogeneity of residuals' variances can be confirmed.

Furthermore, bias-variance and tolerance of independent variables show that there is not any multicollinearity problem among independent variables.

Considering the fact that all aforementioned preconditions have been confirmed, the achieved findings of final fitted model can be verified.

Results of the second model's statistical analysis

Variable	Coefficient	T-student	Probability	Multicollianearity statistic	
(Constant)	-.824	-1.856	.064	Tolerance	Bias-variance
ΔCrdt_Rec	.352	1.127	.260	.474	2.111
ΔCrdt_Rec.Deepening	-.338	-.973	.331	.474	2.111
Liquid	-.302	-1.232	.218	.292	3.422
Size	.052	1.447	.148	.928	1.078
Levrage	-.211	-1.111	.267	.433	2.311
Debt	-.297	-1.471	.142	.367	2.723
M/B	-.007	-1.272	.204	.968	1.033
CashFlow	.022	2.207	.028	.981	1.020
Deepening	1.654	2.204	.028	.947	1.056
Correlation coefficient (R)	.136	Fisher statistic (F)	1.958	Total	49.0
Coefficient of determination (R^2)	.019	Durbin-Watson statistic (D-W)		1.873	
Adjusted coefficient of determination ((adj) R^2)	.008	Kolmogorov-Smirnov statistic (K-S)		.410	

The model's coefficient of determination is about 0.019; it proves that %2 of the dependent variable's changes can be described through the independent variables.

F-statistic equals 0.049 (less than 0.05), thus H_0 is rejected and H_1 is confirmed.

Results of second hypothesis testing through the application of Backward regression model

Stage	Variable	Coefficient	T-student	Probability	Multicollianearity statistic	
10^{th}	(Constant)	-.888	-2.074	.038	Tolerance	Bias-variance
	CashFlow	.019	2.003	.045	1.000	1.000
	Deepening	1.472	2.014	.044	1.000	1.000
	Correlation coefficient (R)	.094	Fisher statistic (F)	3.968	Total	.019
	Coefficient of determination (R^2)	009	Durbin-Watson statistic (D-W)		1.882	
	Adjusted coefficient of determination ((adj) R^2)	.007	Kolmogorov-Smirnov statistic (K-S)		.591	

The model's adjusted coefficient of determination equals 0.009; it proves that %1 of the dependent variable's changes can be described through the independent variables.

F-statistic equals 0.019 (less than 0.05), thus H_0 is rejected and H_1 is confirmed at the confidence level of %95.

Significant of the coefficient of the second model's variable (ΔCrdt_Rec.Deepening) determines the hypothesis significance. Regarding the results of regression model, this conclusion can be drawn that the mentioned variable cannot be significant in the final model. Thus, H_0 is confirmed and H_1 is rejected.

7. Conclusion and discussion:

Different studies which were conducted in the field of Iran stock market. One research was done in 1990 which examined the distribution of stock price volatility on Iran Stock Exchange during two periods of 1973 to 1978 and 1985 to 1989. The results demonstrated inefficiency of Iran stock market (Emami, 1990). Another article which proved the same result was conducted in 1992 and investigated 17 firms during a period extending from 1989 to 1991 (Nasrollahi, 1992). Moreover, Fadayinezhad examined 50 listed companies on Tehran stock exchange in 1994 through the application of autocorrelation method. Findings of this study also showed the inefficiency of Tehran stock market. Another research was accomplished by Namazi and Shoushtari (1995) in which Tehran stock exchange was assessed from 1989 to 1994, and the same outcomes were obtained.

Considering the abovementioned findings, this conclusion can be generally drawn that Tehran stock exchange performs inefficiently. In order to confront this problem, the process of its efficiency should be accelerated. It was expected that the index of financial deepening significantly affects grant and receive trade credits, but this hypothesis was rejected. Considering the inefficiency of stock market, it can be stated that just few people get access to confidential information which improves their financial status.

8. Results' applications:

Due to the fact that none of the research hypotheses were confirmed and Iran stock market's inefficiency, scholars who apply the findings of this study should take this issue into consideration that many unknown elements can affect prices and returns which cannot be controlled by ordinary investors.

9. Suggestions for future studies:

9.1. Assessing the effect of financial deepening on financial variables is suggested.

9.2. Due to the weak existing databases which demonstrate financial issues, it is suggested that financial deepening index is examined on the basis of the specific provincial divisions.

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