Testing Trade-off Theory Between Net Working Capital and Firm Value: Empirical Evidence From Vietnam
--Manuscript Draft--

Manuscript Number:	AFE-D-20-00104R1
Full Title:	Testing Trade-off Theory Between Net Working Capital and Firm Value: Empirical Evidence From Vietnam
Article Type:	Research Paper
Keywords:	net-working-capital; firm value; trade-off theory; optimal level
Corresponding Author:	Khoa dang Duong, Ph.D. Ton Duc Thang University Ho Chi Minh City, VIET NAM
Corresponding Author Secondary Information:	
Corresponding Author's Institution:	Ton Duc Thang University
Corresponding Author's Secondary Institution:	
First Author:	Khoa Dang Duong, Ph.D.
First Author Secondary Information:	
Order of Authors:	Khoa Dang Duong, Ph.D.
	Anh Thi Tram Pham
	Duyen Thi My Le
Order of Authors Secondary Information:	
Abstract:	This study investigates empirically how net-working-capital (NWC) affects firm value, using a sample of the Vietnamese stock market. Our empirical results indicate an optimal NWC level that maximizes firm value. Our research also shows empirical evidence that deviations from actual and estimated NWC levels (above and below optimal level) can reduce firm value. We show that more than 40 percent of NWC observations in our sample on the right-hand side of the break-point reduce firm value. Managers tend to build up excessive working capital to prevent hiking funding costs after the 2008 crisis. Therefore, our findings help managers determine an optimal level of NWC, which enhances firm value. Our findings are consistent with the trade–off theory
Response to Reviewers:	I have consolidated the writing and emphasized the motivation of this paper. I found out that the lending rate in Vietnam increases significantly after the 2008 crisis. That's why finance managers tend to build up excessive working capital to prevent the external funding costs. This is the trade off between firm value and external funding costs. As a results, we suggest that there is an optimal level of working capital that maximize the firm value. .

TESTING TRADE-OFF THEORY BETWEEN NETWORKING CAPITAL AND FIRM VALUE: EMPIRICAL EVIDENCE FROM VIETNAM

Duong Dang Khoa[a*], Pham Thi Tram Anh[b], Le Thi My Duyen[c];

[a1] Faculty of Finance and Banking, Ton Duc Thang University, Ho Chi Minh City, Vietnam

[b] Faculty of Business Administration, Finance and Marketing University, Ho Chi Minh City, Vietnam

[c] Faculty of Finance and Banking, Van Lang University, Ho Chi Minh City, Vietnam

ABSTRACT

This study investigates empirically how net-working-capital (NWC) affects firm value, using a sample of the Vietnamese stock market. Our empirical results indicate an optimal NWC level that maximizes firm value. Our research also shows empirical evidence that deviations from actual and estimated NWC levels (above and below optimal level) can reduce firm value. We show that more than 40 percent of NWC observations in our sample on the right-hand side of the breakpoint reduce firm value. Managers tend to build up excessive working capital to prevent hiking funding costs after the 2008 crisis. Therefore, our findings help managers determine an optimal level of NWC, which enhances firm value. Our findings are consistent with the trade-off theory.

Keywords: net-working-capital, firm value, trade-off theory, optimal.

JEL classification: G31, G32

[1] Corresponding author. Tel: +84 947724321; Email address: duongdangkhoa@tdtu.edu.vn; Address: Faculty of Finance and Banking, Ton Duc Thang University, 19 Nguyen Huu Tho, District 7, Ho Chi Minh City, Vietnam

1. Introduction

Over the past three decades, working capital has drawn significant attention to both academic researchers and practitioners (Hawawini et al. 1986; Ban˜os-Caballero et al., 2012; Hill et al., 2010; Aktas et al., 2015; Kieschnick et al., 2013; Ding et al., 2013). Working capital is traditionally defined as the difference between current assets and current liabilities. Previous working capital studies could be categorized into two mains streams. In the first stream, researchers investigate a firm's management of its accounts receivable, accounts payable, and inventory jointly (Aktas et al., 2015; Kieschnick et al., 2013; Ban˜os-Caballero et al., 2012; Hill et al., 2010). They provide evidence that there is a relationship between working capital and firm performance. In the second stream, other researchers examine the impact of cash holding on corporate financial policy or firm value (Martínez-Sola et al., 2013; Ban˜os-Caballero, 2010; Faulkender and Wang, 2006). For example, Martínez-Sola et al. (2013) show that the existence of an optimal cash holding level that maximizes firm value is consistent with the trade-off theory.

In this study, we investigate how NWC affects firm value. Our research uses the traditional definition of NWC as the difference between current assets and current liabilities. We utilize this definition because of two reasons. Firstly, we argue that managers might find it challenging to decide cash holding and three main components, such as account receivables, inventories, and accounts payable separately. Moreover, these factors can directly affect firm performance through business processes. Therefore, the decisions about cash holding should be combined with the three main components. Secondly, some researchers argue that many theories cannot be independent in academic studies. For instance, Leland (1998) combines the capital structure theory with investment risk theory. Lambrecht and Myers (2012) combine fundamental theories such as the Theory of payout, debt, and investment in their paper. Bonaime et al. (2013) argue that payout policy and risk management decisions are jointly determined. In this research, we hence combine these components of working capital to compute NWC.

Our study is backed by the trade-off theory, which suggests that firms need to determine the optimal NWC to balance the costs and benefits of having liquid assets to derive an optimal NWC level. Initially, Stiglitz (1974) suggests that the financial decisions of firms would not change their value if there were no market imperfections. Thus, investing in NWC becomes irrelevant, and it would not affect shareholder's wealth (Opler et al., 2001). However, the existence of several market imperfections such as tax, transaction costs, and distress costs in practice implies a possible optimal NWC level that balances costs and benefits and maximizes firm value. Firms could gain competitive advantages if they have more liquid assets on the balance sheet to finance profitable projects when they arise. Faulkender and Wang (2006) suggest that a higher liquidity level helps firms reduce the likelihood of incurring financial distress costs if the firm's operations cannot generate sufficient cash flow to meet required debt payments. Moreover, a higher NWC level could support firms to prevent adverse cash flow shocks and financing costs because firms hold more liquid collaterals in their balance sheet.

On the other hand, investing in NWC would incur cost-of-carry because holding liquid assets generate a lower return relative to other investments of the same risk. Dittmar et al. (2003) suggest that the cost-of-carry higher NWC will become severe if firms have to forgo profitable investment to invest in NWC. Moreover, Jensen and Meckling (1976) indicate that holding a higher level of NWC also leads to higher agency costs because managers can waste funds on inefficient investments, which lead to a reduction in shareholder value. In short, there is a trade-off between investing in NWC and firm value, but their relationship has not been investigated recently.

We aim to fill the gap in the literature by investigating how NWC affects firm value for two main reasons. Firstly, working capital management is an essential factor in a firm. Knauer and Wohrmann (2013) review previous studies about working capital, and they show that managing a firm's current assets and liabilities is highly relevant to firm success. Corporate financial executives also review NWC as the main factor in determining firm value (Kieschnick et al., 2013). Secondly, in our sample, the sum of yearly aggregate values for cash, short-term investment, accounts receivable, and inventories to its total assets are very high, which is around 48.35 percent on average. However, the annual ratio of accounts payable to the total asset is relatively low, about 8.21 percent on average (see Appendix B). Hence, we present two questions about working capital management as follows. Do managers overinvest in NWC, and How does it affect their firm value, consequently?

Our paper contributes to the literature in several ways. Firstly, the study indicates that there is the presence of a non-linear relationship between NWC and firm value for the Vietnamese stock market. In other words, the findings indicate that firms have an optimal working capital level that maximizes their firm value. Secondly, we show that more than 40 percent of NWC observations in our sample on the right-hand side of the breakpoint reduce firm value. Hence, the finding indicates that firms could overinvest and employ inefficiently in NWC. According to the World Bank, the lending rate in Vietnam increased significantly from 11.18% in 2007 to about 17% in 2011. Therefore, firms tend to build up working capital intensively to reduce external funding costs even though there is an optimal level of NWC. Thirdly, deviations from actual and estimated NWC (above and below the optimal) could lead to a decrease in firm value. Finally, to the extent of our knowledge, this study is the first in-depth study, and it is consistent with the trade-off theory between NWC and firm value on the Vietnamese stock market.

When considering our research on NWC, our results should be compared to several related studies such as Ban˜os-Caballero et al., 2012; Ding et al., 2013; Aktas et al., 2015. Ban˜os-Caballero et al. (2012) indicate a non-linear relation between the working capital level and profitability of a firm. However, their study employs a sample of small and medium-sized enterprises (SMEs) in Spain, while we use the sample of listed firms. We also show that NWC directly affects firm value while their results do not provide that result because of the lack of market price of stocks. Aktas et al. (2015) show empirical evidence that the existence of an optimal level of working capital improves stock price and operating performance. However, they do not show the optimal level, which maximizes firm value, and

in the models are Tobin's Q and MABO as robustness. Deviations (DEVIATION) from NWC are defined as the absolute value of the residuals in Equation (4). In Equation (5a), we employ Equation (3) but eliminate two variables, namely NWC and Squared NWC, and then add in the Deviation variable. In Panel B of Table 5, we find that coefficients for Deviations are negative and significant at a reasonable level in all models. Our results imply that a deviation from NWC leads to a decrease in firm value. However, these results cannot distinguish whether these deviations are positive or negative, leading to a reduced value of a firm.

Panel B of Table 5 presents regressions with the interaction term. Our study shows that coefficients for deviation are negative and significant at 1 percent level in all models. However, coefficients of Interaction term are positive and significant at 5 percent level in eight regressions. Following Tong (2008), we calculate the sum of the two coefficients in each column. The value of the sums is always negative in all columns. Indeed, an F-test shows that the sum of the two coefficients in each column for eight models is significant at reasonable levels. These results support the hypothesis that a deviation on either side of optimal NWC reduces firm value.

[Insert Table 5 here]

In addition to the results in Panel B of Table 5, coefficients for Interaction term are significant at 5 percent level (in all regressions). These results imply that firms may raise their working capital level higher than the estimated level to get a potential growth in the future. It can lead to higher profitability and hence boost firm value. However, the coefficients of DEVIATION and Interaction term variables suggest that the cost of holding excessive working capital is higher than its benefits to firm performance. Therefore, firms should scrutinize and scale a working capital level, which exceeds the optimal level down to the optimal level. Overall, there is an existence of a non-linear relationship between NWC (NWC) and firm value (FV), and deviations from an actual and estimated NWC (above and below the optimal level) will reduce the firm value. These findings are consistent with the trade-off theory.

4. Conclusion

The study investigates how NWC impacts firm value for the Vietnamese stock market from 2007 to 2014. Our research shows that the presence of a quadratic relation between NWC and firm value. We figure out the turning point, which maximizes the firm value. In our sample, there are more than 40 percent NWC observations, which on the right-hand side of the breakpoint. The values of NWC from these observations may reduce the value of firms. Secondly, the study indicates that the deviation between actual and estimated NWC can decrease value firms. Therefore, NWC is an essential factor that affects firm market value. Overall, our results are consistent with the trade-off theory. The Theory suggests the existence of an optimal NWC level, which results from trading off its marginal benefits and costs. The change in the NWC level depends on firm size, leverage, cash flow, ROA, and the growth in net sales or total assets.

References

Aktas, N., Croci, E., and Petmezas, D., 2015, Is working capital management value-enhancing? Evidence from firm performance and investments, *Journal of Corporate Finance* 30, 98–113.

Banos-Caballero, S., Garcia-Teruel, P. J., and Martı́nez-Solano, P., 2010, Working capital management in SMEs, *Accounting and Finance* 50, 511–527.

Bonaimé, A. A., Öztekin, Ö. and Warr, R. S., 2014, Capital structure, equity mispricing, and stock repurchases, *Journal of Corporate Finance* 26, 182–200.

Deloof, M., 2003, Does working capital management affect profitability of Belgian firms?, *Journal of Business, Finance and Accounting* 30, 573–587.

Ding, S., Guariglia, A., and Knight, J., 2013, Investment and financing constraints in China: does working capital management make a difference?, *Journal of Banking and Finance* 37, 1490-1507.

Dittmar, A., Marth-Smith, J. and Servaes, H., 2003, International corporate governance and corporate cash holdings, *Journal of Financial and Quantitative Analysis* 38, 111–33.

Faulkender, M. and Wang, R., 2006, Corporate financial policy and the value of cash, *The Journal of Finance* 61, 1957–90.

Fazzari, S., and Petersen, B., 1993, Working Capital and Fixed Investment: New Evidence on Financing Constraints, *The RAND Journal of Economics* 24, 328–342.

Hausman, J., 1978, Specification Tests in Econometrics, *Econometrica 46,* 1251–57.

Hawawini, G., C. Viallet, and Vora A., 1986, Industry Influence on Corporate Working Capital Decisions, *Sloan Management Review* 27, 15–24.

Hill, M. D., Kelly, G., and Highfield, M. J., 2010, Net operating working capital behavior: A first look, *Financial Management* 39, 783–805.

Jensen, M. C., and Meckling, W., 1976, Theory of the firm: managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3, 305–60.

Keynes, J. M., 1936, The General Theory of Employment, *Interest and Money*, McMillan, London

Kieschnick, R., LaPlante, M., and Moussawi, R., 2013, Working capital management, access to financing, and firm value, *Review of Finance* 17, 1827–52.

Knauer T. and Wöhrmann A., 2013, Working capital management and firm profitability, *Journal of Management Control* 24, 77–87.

Lambrecht, B. M., and Myers, S. C., 2012, A Lintner Model of Payout and Managerial Rents, *The Journal of Finance* 67, 1761–1810.

Leland H. E., 1998, Agency costs, risk management, and capital structure, The journal of finance 53, 1213–1243.

Lin, C. and Su, D., 2008, Industrial diversification, partial privatization and firm valuation: evidence from publicly listed firms in China, *Journal of Corporate Finance* 14, 405–17.

Martínez-Sola, C., García-Teruel, P. J., and Martínez-Solano, P., 2011, Corporate cash holding and firm value, *Applied Economics* 45, 161–170.

Mcconnell, J. J., and Servaes, H., 1990, Additional evidence on equity ownership and corporate value, *Journal of Financial Economics* 27, 595–612.

Mcconnell, J. J., Servaes, H., and Lins, K. V., 2008, Changes in insider ownership and changes in the market value of the firm, *Journal of Corporate Finance* 14, 92–106.