Effect of Working Capital Strategies on Stock Price Changes and Cash Value Added of Companies Listed in Tehran Stock Exchange

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Abstract

The main purpose of this study was to evaluate the effect of working capital management strategies on stock price changes and the cash value added. Methodology of this study is practical and data is collected using library resources. Six hypotheses were developed in order to investigate the research topic. Working capital management strategies (conservative, bold and moderate strategies) are independent variables and dependent variables include stock price changes and cash value added. The studied group is all companies listed in TSE during 2008-2012. The samples include 110 companies. Calculations and classifications were conducted by software EXCEL; analyses were also performed by software Eviews7 and Stata11 through multiple linear regression and F and T tests. The results show that bold and moderate strategies influence the stock prices changes and working capital management strategies do not influence the cash value added.

Keywords: working capital strategies, stock price changes, cash value added

Introduction

Currently in all businesses, working capital forms a large part of the funds allocated to the organization and its management is of great importance. In this regard, working capital management which is the same management of current expenditures and resources seeks to achieve a surplus or deficit liquidity in order to maximize shareholder wealth. Failure to maintain adequate levels of liquidity for a company leads to failure in successful utilization of short-term investment opportunities and on-time access to the required materials to produce goods and meet customer demands. Businesses may meet difficulties to fulfil its obligations in a timely manner; this will adversely affect its credit. Continued situation may change the stock price (Dianati Deylami, et al., 2012). On the other hand, investors always tend to be aware of successful implementation of their investment and value creation and long-term increase in wealth by managers. To achieve this, a professional innovation has recently occurred in the field of internal and external performance evaluation well known as Cash Value Added (CVA). The basic objective of this measure is to evaluate the performance of management in favour of the value created for shareholders (Ottosson, 1996).

On the other hand, stock price fluctuations are common in all Stock Exchanges. Stock price is influenced by many factors including intra-organizational factors which fluctuate stock price. Intra-organizational factors refer to adoption of different types of working capital management strategies in the form of acid ratio changes, current ratio changes and debt ratio changes. Therefore, changes in one of these three factors influence other factors as well as stock price and CVA. Thus, working capital management strategies are expected to have significant effects on stock prices changes as well as CVA. The main problem of this study is whether different strategies of working capital influence the stock price changes and CVA.

Theoretical Background

The overall strategy of working capital management can be divided into three categories: 1) conservative strategy, 2) bold strategy, 3) moderate strategy. In the conservative strategy of working capital management, net working capital ratio will be high and liquidity is extremely high. In this case, management tries to approach the liquidity ratio (Acid) and current ratio of the company to a scale which is higher than the values of the average total industry and simultaneously lower than its current liabilities. In contrast, the bold strategy tries to use most
of the current liabilities by lowest current assets. Corporate financial management which adopts a bold strategy tries to reduce the value of these ratios; it tries to approach the current and acid ratios to values which are lower than the average total industry and perhaps make the net working capital negative and increase the current liabilities (Scherr, 1989).

Moderate strategy is the balanced level of current assets and current liabilities and accepts the reasonable risk (Abdeh, et al., 1997).

Stock price changes

Stock price change is inherent in markets based on supply and demand system. Stock price changes occur in Tehran Stock Exchange (TSE) by trading. If trading increases or decreases the stock price, stock price will change

Value Added Cash (VAC)

VAC is the same economic value added of which non-cash items have been removed; its concepts are different from both economic and financial perspectives. In the present study, CVA is calculated as follows (Moludi & Rezai, 2010):

\[
\text{CVA} = (\text{Dividends paid to shareholders} + \text{paid interest}) - \text{Taxes} - \text{Operating cash flow}
\]

Literature Review

Heydari (2004) evaluated the performance of companies listed in TSE using CVA compared to operating profit. Based on results, although relative preference of CVA has been confirmed on accounting profit and cash flows, the role of financial and accounting information has been underestimated in stimulating the price stock.

Hassanpour (2009) examined the effect of working capital strategies on stock returns. The results showed that various strategies are significantly different in average return; moreover, bold strategy has the highest return among other strategies in the industry.

Dianati Deylami et al (2012) assessed the effect of working capital management on reduced risk of fall in stock prices. This study was conducted to measure share price falling in 59 companies listed in Tehran Stock Exchange during 1999-2011. This study provides strong evidence that working capital management is likely to reduce the risk of fall in stock prices.

Moradi et al (2014) examined the effectiveness of different working capital strategies on market value added as a benchmark to assess companies in Tehran Stock Exchange. A sample of 83 companies was selected from 14 different industries. The results showed a significant difference between different strategies of working capital in the average market value added. The same results also indicated that the bold strategy had the highest market value added among other strategies of total industries.

The first study investigated the importance of accounting information is Ball and Brown (1968) which examined the relationship between annual earnings and stock prices. Their results indicated that changes in annual earnings and price stock changes are interrelated; therefore, accounting and the resulting information are valuable and can be helpful in economic decisions.

A research clearly related to working capital strategies is theoretical studies of Schwien Bacher (2006) done in the field of financing strategies. In his studies, he considered two financing strategies. Through conservative strategy, the business delays the main operation until enough cash is available for completing the project. In contrast, the business adopting the bold strategy performs some main operations of the project despite limited resources even before the external financing. Therefore, the type of strategy is helpful in adopting the project.

Fernandez (2008) argues that EVA and CVA do not measure value creation. He claims that the correlation between returns on equity in 1994-1995 and increase in CVA (according to the Boston Consulting Group) is 1.7 percent in 100 profitable companies around the world.

Examining the relationship between conservative accounting and stock price fall, Kim and Zhang (2010) concluded that conservative accounting reduced the likelihood of stock falling. To measure this variable, the Givoly and Hayn model was used (2000).
Hypotheses

In order to investigate the research objectives, this study has two main hypotheses and six sub-hypothesis:

1) Main hypothesis:
Working capital strategies influence the stock price changes in companies listed in Tehran Stock Exchange.

1.1) sub-hypothesis:
Conservative strategy influence stock prices changes.
Bold strategy influence stock prices changes.
Acid strategy influence stock prices changes.

2) The main hypothesis:
Working capital strategies influence the CVA of companies listed in Tehran stock exchange.

2.1) sub-hypothesis:
Conservative strategy influences CVA.
Bold strategy influences CVA.
Acid strategy influences CVA.

Methods

This practical study emphasized the correlation. The required data was collected by software Tadbir Pardaz, RahAvard Novin and databases of companies listed in TSE as well as website Codal.ir and ridis.ir.

Variables and measurements

Model to test hypotheses

In these two models, independent, dependent and control variables include stock prices changes and CVA, working capital management strategies (conservative, moderate or bold), and firm size, operating cash flows, profitability indicator and financial leverage, respectively.

\[
SPCH_{it} = \alpha + \beta_1 CS_{it} + \beta_2 BS_{it} + \beta_3 MS_{it} + \beta_4 SIZE_{it} + \beta_5 CFL_{it} + \beta_6 ROE_{it} + \beta_7 LEVERAGE_{it} + \varepsilon_{it}
\]

where,

SPSH_{it}: stock price changes in firm i for period t
CS_{it}: Conservative strategy of firm i for period t
BS_{it}: Bold strategy of firm i for period t
MS_{it}: Moderate strategy of firm i for period t
SIZE_{it}: Size of firm i for period t
CFL_{it}: Operating cash flow/total sales of firm i for period t
ROE_{it}: Indicator of profitability of firm i for period t
LEVERAGE_{it}: Financial leverage of firm i for period t
\varepsilon_{it}: Values of the model error

\[
CVA_{it} = \alpha + \beta_1 CS_{it} + \beta_2 BS_{it} + \beta_3 MS_{it} + \beta_4 SIZE_{it} + \beta_5 CFL_{it} + \beta_6 ROE_{it} + \beta_7 LEVERAGE_{it} + \varepsilon_{it}
\]

where,

CVA_{it}: Cash value added of firm i for period t
CS_{it}: Conservative strategy of firm i for period t
BS_{it}: Bold strategy of firm i for period t
MS_{it}: Moderate strategy of firm i for period t
SIZE_{it}: Size of firm i for period t
CFL_{it}: Operating cash flow/total sales of firm i for period t
ROE_{it}: Indicator of profitability of firm i for period t
LEVERAGE_{it}: Financial leverage of firm i for period t
**Stock price changes**

To calculate the dependent variable (stock price changes SPCH), the last price before the assembly (PB) and then the first price after the assembly (PA) was determined for each company in each of the years 2008-2012. By the time the stock prices changed in the sample companies, changes were made in the total market index; thus, total index of market before assembly (INB) and total index of market after assembly (INA) were determined for these years. Theoretically, PA should be equal to PB minus cash dividend. Usually, the declared dividends are paid after the assembly; companies are legally obliged to pay dividends 8 months after the assembly. For consistency, it is assumed that companies have totally paid the dividend right after the eight months, while the interest rate is considered 18%. The interest rate is based on average interest rates on government bonds during 2008-2012, as shown in Table 1.

<table>
<thead>
<tr>
<th>Year</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interest Rate of Bonds</td>
<td>17%</td>
<td>16%</td>
<td>19%</td>
<td>20%</td>
<td>20%</td>
</tr>
</tbody>
</table>

After assembly, the theoretical stock price is calculated as follows:

TP: theoretical prices  
PB: The last price before assembly  
D: dividend per share  
r: interest rate

\[
TP = PB - \frac{D}{(1 - r)^8} 
\]

To exclude the changes in the general level of stock prices from the intended price and calculate the net changes resulting from the paid profit, we adjust the theoretic price based the market index, as follows:

ATP: theoretical adjusted price

\[
A.T.P = TP \cdot \left(\frac{INA}{INB}\right)
\]

Sometimes, the real price of stock after assembly is higher than the theoretical adjusted price; this represents a positive change in the stock price. It means fewer dropped price, vice versa. To calculate the stock price changes, it is enough to calculate the difference between theoretical adjusted price and the price after assembly, namely:

\[
A.D = PA - ATP 
\]

Obviously, the stock price changes (AD) can be positive, zero or negative (Shoja & Shoja, 2012).

**Value Added Cash**

Cash Value Added (CVA) is the same economic value added of which non-cash items have been removed, CVA has different concepts from both economic and financial perspective. In the present study, CVA is calculated as follows (Moludi & Rezai, 2010):

\[
(\text{Dividends paid to shareholders + paid interest}) - \text{Taxes} - \text{Operating cash flow} = \text{CVA}
\]

**Working Capital Strategies**
The independent variables of the study include qualitative working capital strategies; thus, they are quantified for analyses and compared in the form of current ratio, acid ratio and debt ratio by the industry average. The conditions in which strategy is not determined are characterized as unknown strategy. The logic to determine strategies is:

1. If the current ratio and acid ratio are both higher than the industry average:
   - Debt ratio is higher than the expected industry average representing a moderate strategy (MS).
   - Debt ratio is equal to or less than the industry average, indicating a conservative strategy (CS).
2. If the current ratio and acid ratio are both lower than the industry average:
   - Debt ratio is lower than the expected industry average, reflecting a moderate strategy.
   - Debt ratio is equal to or more than the industry average, representing a bold strategy (BS).
3. If one of the acid ratio or current ratio is equal to industry average and the other is higher than the industry average:
   - Debt ratio is higher than the industry average, indicating a moderate strategy.
   - Debt ratio is equal to or less than the industry average, indicating a conservative strategy.
4. If one of the acid or current ratios is equal to industry average and the other is lower than the industry average:
   - Debt ratio is less than or equal to the industry average, indicating a moderate strategy.
   - Debt ratio is higher than the industry average, representing a bold strategy.
5. If either acid or current ratio is higher than the industry average and the other is lower than the industry average:
   - Debt ratio is equal to the industry average, indicating a moderate strategy.
   - Debt ratio is higher or lower than the industry average, representing an unknown strategy (Hassanpour, 2009).

**Firm size (SIZE):** To control the effect of firm size, the natural logarithm of total assets is used at the end of the period (Dianati Deylami, et al., 2012).

**Cash Flow (CFL):** Operating Cash Flow is defined as total sales (Vaez, et al., 2013).

**Profitability index (ROE):** to control possible simultaneity between firm profitability and the likelihood of falling stock prices, as Hutton et al (2009), the net income to sum of equity at end of period is used (Dianati Deylami, et al., 2012).

**Financial leverage (LEVERAGE):** is equal to total liabilities divided by total assets (Ramezani, 2011).

**The Studied Group and Samples**

The studied group included companies listed in Tehran Stock Exchange active during 2008-2012. The sample was selected by following restrictions using systematic elimination method:
1) The financial year ended at March 19 (142)
2) The companies were listed in TSE prior to 1387 (15)
3) The companies were not investment firms, financial intermediation and banks (34)
4) The shares were traded at March 20, 2008 until March 20, 2013 in Tehran Stock Exchange (43)
5) The required information was available in the considered fiscal period (18)
6) The coefficient (0.06) of Cochran formula was used (84)

By applying all five constraints in addition to Cochran formula, the sample size was 110 companies.

**Scope**

1) Time: the studied period was fiscal years 2008 until 2012.
2) Location: all companies listed in Tehran Stock Exchange
3) Subject: to examine the effect of working capital management strategies on stock price changes and CVA.

Results

Methodology

The purpose of practical studies is to develop the practical knowledge in a particular field. This study used a prospective descriptive-correlation methodology to determine the existence, level and type of the relationship between the tested variables. This study both examines the status quo and describes the previous situation in a systematic manner. It also discovers or determines the relationship between various variables using regression analysis.

The findings of the hypotheses

The first hypothesis

H₀: Conservative strategy does not influence the stock price changes.

H₁: Conservative strategy influence stock price changes.

Table 2: regression test of the first hypothesis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Impact factor</th>
<th>Deviation of estimation</th>
<th>t-statistic</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed</td>
<td>0.357</td>
<td>0.515</td>
<td>2.261</td>
<td>0.000 *</td>
</tr>
<tr>
<td>Conservative strategy</td>
<td>0.114</td>
<td>0.243</td>
<td>1.347</td>
<td>0.077</td>
</tr>
<tr>
<td>Firm size</td>
<td>0.347</td>
<td>0.515</td>
<td>2.169</td>
<td>0.006 *</td>
</tr>
<tr>
<td>Operating cash flow / total sales</td>
<td>0.103</td>
<td>0.384</td>
<td>1.598</td>
<td>0.054</td>
</tr>
<tr>
<td>Profitability Index</td>
<td>0.227</td>
<td>0.616</td>
<td>1.674</td>
<td>0.044 *</td>
</tr>
<tr>
<td>Financial Leverage</td>
<td>-0.186</td>
<td>0.224</td>
<td>-0.787</td>
<td>0.126</td>
</tr>
</tbody>
</table>

5% error

According to Table 2, impact factor of conservative strategy on stock price changes is 0.114, which suggests a direct and positive influence of conservative strategy on stock price changes. Given the significant t-statistics for variable conservative strategy on stock price changes, H₀ cannot be rejected by 95 confidence because it is not less than 5% error; therefore, conservative strategy does not influence stock price changes.

The second hypothesis

H₀: Aggressive strategy does not influence the stock price changes.

H₁: Aggressive strategy influence stock price changes.

Table 3: explainability and significance of the model

<table>
<thead>
<tr>
<th></th>
<th>R</th>
<th>Adjusted R</th>
<th>Durbin-Watson</th>
<th>ANOVA</th>
</tr>
</thead>
<tbody>
<tr>
<td>dt</td>
<td>0.544</td>
<td>0.538</td>
<td>1.706</td>
<td>11.263</td>
</tr>
</tbody>
</table>

1% error

According to Table 2, impact factor of aggressive strategy on stock price changes is 0.288, which suggests a direct and positive influence of aggressive strategy on stock price changes. Given the significant t-statistics for variable aggressive strategy on stock price changes, H₀ cannot be rejected by 95 confidence because it is not less than 5% error; therefore, aggressive strategy does not influence stock price changes.

The second hypothesis

H₀: Aggressive strategy does not influence the stock price changes.

H₁: Aggressive strategy influence stock price changes.

Table 4: regression test of the second hypothesis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Impact factor</th>
<th>Deviation of estimation</th>
<th>t-statistic</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed</td>
<td>0.154</td>
<td>0.462</td>
<td>1.724</td>
<td>0.022*</td>
</tr>
<tr>
<td>Aggressive strategy</td>
<td>0.288</td>
<td>0.314</td>
<td>2.223</td>
<td>0.000*</td>
</tr>
<tr>
<td>Firm size</td>
<td>0.252</td>
<td>0.619</td>
<td>1.748</td>
<td>0.035*</td>
</tr>
<tr>
<td>Operating cash flow / total sales</td>
<td>0.196</td>
<td>0.524</td>
<td>1.423</td>
<td>0.063</td>
</tr>
<tr>
<td>Profitability Index</td>
<td>0.394</td>
<td>0.243</td>
<td>2.018</td>
<td>0.009*</td>
</tr>
</tbody>
</table>
According to Table 5, impact factor of aggressive strategy on stock price changes is 0.288, which suggests a direct and positive influence of aggressive strategy on stock price changes. Given the significant t-statistics for variable aggressive strategy on stock price changes, $H_0$ can be rejected by 95 confidence because it is less than 5% error; therefore, aggressive strategy influences stock price changes.

The third hypothesis

$H_0$: Moderate strategy does not influence the stock price changes.

$H_1$: Moderate strategy influences stock price changes.

According to Table 6, impact factor of moderate strategy on stock price changes is 0.241, which suggests a direct and positive influence of moderate strategy on stock price changes. Given the significant t-statistics for variable moderate strategy on stock price changes, $H_0$ can be rejected by 95 confidence because it is less than 5% error; therefore, moderate strategy influences stock price changes.

The fourth hypothesis

$H_0$: conservative strategy does not influence CVA.

$H_1$: conservative strategy influences CVA.
According to Table 8, impact factor of conservative strategy on CVA is 0.164, which suggests a direct and positive influence of conservative strategy on CVA. Given the significant t-statistics for variable conservative strategy on CVA, H_0 cannot be rejected by 95 confidence because it is not less than 5% error; therefore, conservative strategy does not influence CVA.

The fifth hypothesis

H_0: aggressive strategy does not influence CVA.
H_1: aggressive strategy influences CVA.

Table 10: regression test of the fifth hypothesis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Impact factor</th>
<th>Deviation of estimation</th>
<th>t-statistic</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed</td>
<td>-0.274</td>
<td>0.476</td>
<td>-2.332</td>
<td>0.002*</td>
</tr>
<tr>
<td>Aggressive strategy</td>
<td>0.362</td>
<td>0.521</td>
<td>1.327</td>
<td>0.069</td>
</tr>
<tr>
<td>Firm size</td>
<td>0.278</td>
<td>0.274</td>
<td>2.169</td>
<td>0.007*</td>
</tr>
<tr>
<td>Operating cash flow / total sales</td>
<td>0.336</td>
<td>0.428</td>
<td>1.765</td>
<td>0.036*</td>
</tr>
<tr>
<td>Profitability Index</td>
<td>0.114</td>
<td>0.228</td>
<td>1.965</td>
<td>0.015*</td>
</tr>
<tr>
<td>Financial Leverage</td>
<td>-0.196</td>
<td>0.476</td>
<td>-1.027</td>
<td>0.092</td>
</tr>
</tbody>
</table>

5% error

According to Table 10, impact factor of aggressive strategy on CVA is 0.362, which suggests a direct and positive influence of aggressive strategy on CVA. Given the significant t-statistics for variable aggressive strategy on CVA, H_0 cannot be rejected by 95 confidence because it is not less than 5% error; therefore, aggressive strategy does not influence CVA.

The sixth hypothesis

H_0: Moderate strategy does not influence CVA.
H_1: Moderate strategy influences CVA.

Table 12: regression test of the sixth hypothesis

<table>
<thead>
<tr>
<th>Variable</th>
<th>Impact factor</th>
<th>Deviation of estimation</th>
<th>t-statistic</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed</td>
<td>0.175</td>
<td>0.625</td>
<td>1.821</td>
<td>0.025*</td>
</tr>
<tr>
<td>Moderate strategy</td>
<td>0.254</td>
<td>0.349</td>
<td>1.115</td>
<td>0.077</td>
</tr>
<tr>
<td>Firm size</td>
<td>0.362</td>
<td>0.485</td>
<td>2.169</td>
<td>0.006*</td>
</tr>
<tr>
<td>Operating cash flow / total sales</td>
<td>0.114</td>
<td>0.521</td>
<td>2.416</td>
<td>0.000*</td>
</tr>
<tr>
<td>Profitability Index</td>
<td>0.185</td>
<td>0.559</td>
<td>1.952</td>
<td>0.015*</td>
</tr>
<tr>
<td>Financial Leverage</td>
<td>-0.264</td>
<td>0.341</td>
<td>-1.475</td>
<td>0.068</td>
</tr>
</tbody>
</table>

5% error
According to Table 6, impact factor of moderate strategy on CVA is 0.254, which suggests a direct and positive influence of moderate strategy on CVA. Given the significant t-statistics for variable moderate strategy on CVA, $H_0$ cannot be rejected by 95% confidence because it is not less than 5% error; therefore, moderate strategy does not influence CVA.

Conclusion

The purpose of present study is to examine the effect of working capital management strategies on stock price changes and CVA. Developing and testing hypotheses, it was concluded that aggressive strategy positively and directly influences stock price changes; therefore, bold policies will lower the ratio of net working capital followed by reduced liquidity. In this case, the firm should take the risk of untimely payment of due debt. This is followed by increased likelihood of bankruptcy and reduced credit, which eventually can increase stock price falling. It was also determined that businesses can positively and significantly influence stock price changes in companies listed in TSE by adopting moderate policies which are the balanced utilization of assets and current debts and take the reasonable risk. On the other hand, working capital management strategies do not influence the CVA.

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