THE ANALYSIS OF COMPANY LIQUIDITY A USING CASH CONVERSION CYCLE APPLICATION: EVIDENCE FROM TAIWAN

Li-Hua Lin, TransWorld University
Szu-Hsien Lin, TransWorld University
Yi-Min Lin, TransWorld University
Chun-Fan You, TransWorld University

ABSTRACT

It is important to determine whether firms realize assets within a short period to settle liabilities when the debts are due. Most common indicators used to measure liquidity are the current and quick ratios. However, the cash conversion cycle period (CCC) may be a better approach. This study chooses two Taiwan companies in food industries: a listed company (Uni-President) and a delisted company (Tsin Tsin) to compare performance based on liquidity indicators. We examine financial data of the two companies from 1996 to 2005 (Tsin Tsin was delisted in 2006), to calculate their current ratio, quick ratio and cash conversion cycles. The research results show that CCC indicators better reflect the company's actual short-term debt-paying ability and liquidity.

JEL: G33, G34

KEYWORDS: Liquidity, Working Capital, Current Ratio, Cash Conversion Cycle

INTRODUCTION

Many people are familiar with the 5-major ratio analysis for financial ratios (Liu and Hsue, 2012; Hsieh, 2013). The first of these ratios is the liquidity ratio, which is commonly used to measure a company’s short-term liquidity. Such application is also known as the liquidity and the length of period for converting a company’s assets into cash or settling its liabilities when debts are due (Tsao, 2013, 22). A company’s liquidity is also related to creditors, investors, securities analysts and accounting auditors. Creditors usually demand that the borrowing company maintain a certain level of liquidity. Investors and securities analysts are concerned about the company’s ability to acquire cash, and whether or not has sufficient cash to handle the requirement for daily operations. Suppliers care about the company’s ability to pay cash to purchase necessary goods. In addition, for external auditors, the evaluation of a company’s liquidity is important.

It is important that a company is able to realize assets within a short period to settle their liabilities when the debts are due. If an enterprise is not able to pay off these debts within a short period, it may form bad debts and encounter the risk of bankruptcy. Generally, the most common indicators of measuring liquidity are the current and quick ratios (also known as “acid-test ratio”). However, different industries may have sizeable difference in these two ratios. Moreover, it is difficult to determine practical liquidity by directly using the ratio pitch, as well as hard to tell the good or bad according to the ratio descriptions (Cagle et al., 2013). Richards and Laughlin (1980) firstly pointed out that Cash Conversion Cycle (hereafter referred to as CCC) is a better approach than the current and quick ratios to evaluate corporate liquidity. It not only measures the outflow and inflow period of working capital, but also considers sales revenue (sales volume). Thus, it correctly evaluates whether a company’s working capital management policy is appropriate without the scale influence. A better working capital management policy shall strive for the reduction of CCC (Liu and Hsue, 2012).
This study uses practical cases of Taiwan listed companies to show the advantage of CCC relative to the current and quick ratio, to provide general creditors, investors, securities analysts and accounting auditors with deeper understanding of company’s liquidity. Following this introduction, the second section is the literature review. The third section is data and methodology, followed by the fourth section results. It compares the performance of liquidity indicators by focusing on Uni-President and a delisted company (Tsin Tsin). The last section is the concluding comments.

LITERATURE REVIEW

In terms of liquidity examinations, some authors stress the relationship between current assets and financing costs, such as Hoshi et al. (1991), John (1993). Other authors stress the optimal level of current assets or other determinants, such as Schilling (1996), James and Doug (1998), Kim et al. (1998), Chen and Chen (2002), Yang, Ku, and Huang (2007). The the correlation between current assets and company’s profitability, is examined by authors including Jose et al. (1996), Shin and Soenen (1988) and or the correlation between financial ratios and corporate governance, such as Yu and Wang (2011), Lin et al. (2012).

However, Cagle et al. (2013) noted that only using traditional current ratio and quick ratio to measure a company’s liquidity and short-term liquidity may be misleading. Thus, they suggested the CCC is a useful auxiliary approach to evaluate a company’s liquidity and profitability. However, this measure is usually neglected in accounting-related textbooks in U.S., and in Taiwan. Therefore, this study follows the approach of Cagle et al. (2013). We choose a company with normal operation and a company that was delisted due to financial risk and bad operations. We compare the performance of these aforesaid liquidity indicators.

DATA AND METHODOLOGY

This study examines Tsin Tsin Corporation, a well-known company in the food industry currently delisted. We also examine Uni-President Enterprises Corporation, a listed company with excellent operations currently. We use annual financial data of last decade (1996~2005) before Tsin Tsin’s delisting to calculate the current ratio, quick ratio and CCC for these two companies. The detailed equations are as follows:

\[
\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}} \quad (1) \\
\text{Quick Ratio} = \frac{(\text{Current Assets} - \text{Inventory} - \text{Prepaid Expenses})}{\text{Current Liabilities}} \quad (2) \\
\text{Cash Conversion Cycle (CCC)} = \text{Inventory Conversion Period} + \text{Average Collection Period} - \text{Payable Deferral Period} \quad (3) \\
\text{Inventory Conversion Period (C1)} = \frac{\text{Average Inventory}}{(\text{Cost of Goods Sold} / 365)} \quad (4) \\
\text{Average Collection Period (C2)} = \frac{\text{Average Accounts Receivable} - (\text{Net Sales} / 365)}{(\text{Cost of Goods Sold} / 365)} \quad (5) \\
\text{Payable Deferral Period (C3)} = \frac{\text{Average Accounts Payable} + (\text{Cost of Goods Sold} / 365)}{(\text{Cost of Goods Sold} / 365)} \quad (6)
\]

Ratios (1) and (2), measure the relative sizes between current assets and current liabilities. Among the above, current assets indicate assets that can be converted into cash in a short period (within one year). Current assets include cash and cash equivalents, short-term investments, accounts and notes receivable, other accounts receivable, inventory, prepaid expenses and prepayments, and other current assets. Current liabilities are debts that need to be settled in a short period (within one year), including short-term borrowings, commercial paper payable, accounts and notes payable, expenses payable, advance receipts, other accounts payable, income tax payable, current portion of long-term liabilities and other current liabilities. Inventory needs to be sold before converting into accounts receivable. Whether inventory is able to be sold cannot be controlled by the company. Prepaid expenses and prepayments (such as prepaid rent or insurance premium) belong to the company’s current assets, but mostly will not be converted into cash.
in the future; therefore, their ranking of liquidity is relatively low. The quick ratio deducts these items, including inventory, prepaid expenses and prepayments, from the current assets, to obtain quick assets, and then calculate the relative number between quick assets and current liabilities.

The main advantage of the current ratio and quick ratio is that it is easy to calculate, and covers the effects of all current assets and liabilities. However, it is unable to control for liquidity that is changing with time, and it is difficult to tell whether higher values of these two ratios are good or bad. For example, higher current ratios and quick ratios, in general, are considered good. But the ratios are too high to have efficiency in asset usage. On the contrary, low current and quick ratios seem to be bad. But, such low ratios are probably the result of effective working capital application (Cagle et al., 2013).

Equations 3 - 6 are described as follows:

1. Inventory Conversion Period (C_1) measures the average time needed to turn a company’s inventory into sales revenue. Generally speaking, the shorter the C_1 period is, the better the company’s liquidity. If product handling time from inventory to sales is too long, it will reflect on the day number of CCC. That is, such a company has a bad liquidity. On the other hand, the current ratio is a static equation, which contains inventory and accounts receivable into current assets. Thus, it is difficult to see such liquidity level by using the current ratio only.

2. Average Collection Period (C_2) measures the time needed to convert a company’s accounts receivable into cash. After products are sold, if the handling time of converting accounts receivable into cash is too long, it will reflect in a higher CCC. That is, such a company has a bad liquidity. On the contrary, it is difficult to see such liquidity level by using the current ratio (and quick ratio) only.

3. Payable Deferral Period (C_3) measures the time a company defers the payment of accounts payable (without paying interest). Longer deferral implies a benefit to working capital. But the reduction of current ratio (and quick ratio) caused by deferred accounts payable may instead cause concern about the company’s liquidity instead.

Cash Conversion Cycle (CCC) is the summarization of these three periods, which indicates the operating cycle for cash inflow and outflow of a company from purchasing raw materials, settling cash expense resulting from production costs, to selling the products, creating accounts receivable and converting accounts receivable into cash. In theory, smaller CCC values implies better working capital management. If a company has an excellent working capital management, then its CCC value may even be negative.

RESULTS

Tsin Tsin Corporation was founded in 1984 with capital of NT$ 600,000. Mr. Wang, Chien-lang was its president. It initiated from a MSG factory at Dehua Street, Taipei City originally named Pacific Chemical Industry Co., Ltd. In 1956, it increased capital by NT$ 3.5 million and merged with Tunghai Chemical Industry Co., Ltd. In 1959, it increased capital by NT$ 5 million, and began epoch-making innovated manufacturing method of MSG. It also changed names to Tsin Tsin MSG Co., Ltd. In 1964, it increased capital by NT$ 30 million and launched its stocks in the public market. In 1966, it increased capital by NT$ 16 million. It expanded its exporting business and developed the canned foods market. It built a canned foods factory in Changhua, integrated two factories in Taipei to implement a consistent operation producing MSG, and then renamed it to Tsin Tsin Food Industrial Corporation.

In 1977, it increased a capital by NT$ 200 million and expanded its Changhua factory. It replaced semi-automatic juice production equipment with fully automatic equipment and added an automatic retort pouch packing machine system. In 1978, it increased a capital by NT$ 150 million and continuously expanded its production equipment. It added production equipment for ice and dairy products, freezing equipment and cold storage. In 1995, Changhua’s first factory obtained the GMP certificate for its asparagus juice product. Tsin Tsin was once listed as the top three foods factories together with Wei Chuan and Ve Wong in Taiwan.
It occupied the top rank of stocks in food industry. During its peak, annual production was more than 100 million cans, and the number of employees exceeded 1400. In 1998, it reinvested in Hsieh Tsin construction Co., Ltd., and engaged in the construction of operation of leisure facilities. In 2005, it developed dairy products launching Green Mountain Ranch Milk Yogurt. However, due to the loss in reinvestment, in 2005, president Wang, Chien-lang and his younger brother Wang, Chien-hua have been accused of arranging many false trades of real estate during 1997 to 2004 to embezzle about NT$ 800 million from their family businesses, Tsin Tsin and Union Leather & Printing. Their checks were even bounced on July 22nd, 2005. In June 2006, Tsin Tsin was delisted (Chen, 2005, Pang, 2011, Yan, 2005).

Uni-President Corporation was established in 1967. Mr. Wu Hsiu-Chi was the first president of Uni-President, and Mr. Kao, Chin-Yen, the first general manager. They formally led Uni-President Corporation to build a flour mill and fodder factory at Yongkang Village, Tainan County. In 1969, it increased a capital by NT$ 16 million and built foods factory to launch the production of Uni-President instant noodles. In 1974, it invested in Ton Yi Industrial Corp., and increased capital to NT$ 256 million. GM Mr. Kao, Chin-Yen was awarded the 4th Top 10 Entrepreneurs in Taiwan. In 1975, it established the dairy product department, and Uni-President awarded as the First Top 10 Companies in R.O.C. In 1978, it established HQ factory at Chongli to produce bread, cake and desert. In 1979, it signed a contract with Southland Corporation to introduce the operating techniques of 7-ELEVEN, then opened 14 Uni-President Convenience Stores at the same time island-wide. In 1987, it became a listed company. In 1996, it was awarded by Common Wealth Magazine as the Most Admired Companies in Taiwan. In 2012, it was awarded 2nd place of “2012 The most attractive company for the new generation-Top 100” by Cheers Magazine, “The benchmarking companies of digital service in 2012” by Business Next Magazine, and “2012 Most Admired Companies in Taiwan” by Common Wealth Magazine. Currently, Mr. Kao, Chin-Yen is its chairman, Mr. Alex C. Lo is its president, and its capital is NT$ 51.542 billion.

In the following, we use data from Taiwan Economic Journal Database to compare the results of the equations 1 - 6 for the financial statements between Uni-President and Tsin Tsin within 10 years (1996-2005) before Tsin Tsin was delisted (June 2006). First, the data shows that during the period 1996-2005, Tsin Tsin’s average current ratio is 1.32, which is higher than 0.90 of the excellent Uni-President. Similarly, during this period, Tsin Tsin’s quick ratios are roughly higher than Uni-President’s (both average quick ratios are 0.97 and 0.58, respectively, refer to Figures 1 and Figure 2).

Figure 1: The Comparison of Current Ratios between Tsin Tsin and Uni-president
Tsin Tsin’s liquidity is better than Uni-President’s. However, during the same period, Uni-President’s cash conversion cycle (CCC) is only 43.8 days, but 107 days for Tsin Tsin as shown in Figure 3. Based on CCC indicators, Uni-President’s liquidity is significantly better than Tsin Tsin’s. Further, Uni-President’s Inventory Conversion Period (C1) is 27 days shorter than Tsin Tsin’s. Uni-President’s Average Collection Period (C2) is 71 days shorter than Tsin Tsin’s. But Uni-President’s Payable Deferral Period (C3) is 23 days, 35 days shorter than Tsin Tsin’s 58 days. This may be caused by Uni-President’s management policy of accounts receivable. In the same industry, Wei Chuan’s C3 is 54 days, and Ve Wong is 37 days, thus further examination is warranted.

In summary, CCC indicators show that Uni-President’s liquidity is significantly better than that of Tsin Tsin, but the indicators of current ratio and quick ratio show that Tsin Tsin’s liquidity is better than Uni-President’s. Based on delisting for Tsin Tsin in 2006 due to its financial issues, the CCC indicators can better reflect actual short-term debt-paying ability and liquidity. In addition, the data show that during 2006-2012, Uni-President’s CCC value continuously decreased to an average of 31 days, which is mainly due to the quick decrease of Average Collection Period (C2) with an average decrease of 10 days. Thus, we can tell that Uni-President has more effective accounts receivable management. However, some items including current liabilities, such as interest, wage and tax are not considered in CCC. These issues may cause significant effect on its liquidity. On the contrary, the current ratio considers all current liabilities. Therefore, it is better to observe both current ratio and CCC to evaluate a company’s liquidity.

CONCLUDING COMMENTS

We use Taiwan Economic Journal Database to compare Uni-President’s and Tsin Tsin’s financial statements for the 10 years from 1996-2005, before Tsin Tsin delisting in June 2006. We examine the current ratio, quick ratio and Cash Conversion Cycle. The data shows that during this period, Tsin Tsin’s average current ratio is 1.32, which is higher than 0.90 of Uni-President. Tsin Tsin’s quick ratios are higher than Uni-President’s. Tsin Tsin’s liquidity is better than Uni-President’s. However, during the same period, Uni-President’s cash conversion cycle (CCC) is only 43.8 days, but 107 days for Tsin Tsin. Thus, CCC indicators show Uni-President’s liquidity is significantly better than Tsin Tsin’s. Since Tsin Tsin was delisted in 2006 due to financial issues, we conclude CCC indicators better reflect short-term solvency and liquidity.
However, the CCC approach also has limitations. Current liabilities, such as interest, wage and tax are not considered in CCC. These issues may cause significant effect on liquidity. Since the current ratio indicators consider all current liabilities, it is advised that related parties observe both current ratio and CCC to evaluate liquidity. Investors, creditors, suppliers and accounting auditors need to understand a company’s working capital management, thus it is important to enhance their understanding of CCC indicators, which will improve their ability to understand a company’s liquidity.

Figure 3: The Comparison of CCC between Tsin Tsin and Uni-President

This figure shows the comparison of CCC between the two companies. Tsin Tsin’s CCC is longer than Uni-President’s.

REFERENCES


**ACKNOWLEDGEMENT**

We are indebted to two anonymous referees for sowing the seeds for this research in many valued feedbacks and insightful comments. We also appreciate Professor Mercedes Jalbert (the editor) for numerous helpful suggestions.

**BIOGRAPHY**

Mrs. Li-Hua Lin is a lecturer of Department of Information Management, TransWorld University, Taiwan. She can be contacted at: 1221, Jen-Nang Rd., Chia-Tong Li, Douliou, Yunlin, Taiwan R.O.C. Email: llh@twu.edu.tw

Dr. Szu-Hsien Lin, the corresponding author, is an assistant professor of Department of Finance, TransWorld University, Taiwan. He can be contacted at: 1221, Jen-Nang Rd., Chia-Tong Li, Douliou, Yunlin, Taiwan R.O.C. Email: aleclin.tw@gmail.com

Dr. Yi-Min Lin is associate professor of Department of Information Management, TransWorld University, Taiwan. He can be contacted at: 1221, Jen-Nang Rd., Chia-Tong Li, Douliou, Yunlin, Taiwan R.O.C.

Dr. Chun-Fan You, is an assistant professor of Department of Finance, TransWorld University, Taiwan. He can be contacted at: 1221, Jen-Nang Rd., Chia-Tong Li, Douliou, Yunlin, Taiwan R.O.C.