

Optimal Value of Current Ratio

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Abstract: This article deals with the optimal value of current ratio. The paper originated in response to two contradictory statements. The first one states that working capital should be positive, i.e. that current assets are higher than current liabilities. The second statement states that current assets should be paid from short-term sources and fixed assets from long-term sources. This would mean that current assets should be equal to current liabilities. The dependence of current ratio on business success expressed by indicators of profitability – return on assets (ROA) and return on equity (ROE) – was measured on a sample of over four thousand Czech companies. It has been found that for companies with inventory, the ROE rises up to the value of current ratio of 2.5, although the growth rate decreases with increasing liquidity, which means that it is more advantageous for them to have positive working capital, where the amount of assets exceeds the current liabilities 2.5 times. The dependences regarding the ROA and for companies with no inventory cannot be generalized according to the conducted research.

Keywords: current ratio; working capital; profitability

JEL Classification: G32

1. Introduction

The article deals with research of current ratio as a ratio of current assets to current liabilities. On the one hand, it is stated that the ratio of current assets to current liabilities would be about 2, i.e. more precisely in the range of 1.5-2.5 (Altman 1993; Hrdý and Krechovská 2013; Meritum 2007), i.e. that working capital, defined as the difference between current assets and current liabilities, should be positive, or even that current assets should be double the current liabilities. On the other hand, there is the well-known golden rule of financial management that current assets should be covered by short-term resources and fixed assets by long-term sources (Brealey 2000; Brealey and Myers 1996; Myers and Rajan 1998; Myers 2001; Fazzari and Petersen 1993), therefore, current assets should be equal to short-term sources. Permanent current assets are an exception, for example a certain level of inventory which should be financed by long-term sources (Jindřichovská 2013), but this type of assets certainly cannot have a major impact in today's globalized world of just-in-time supplies. It follows from the foregoing that the question is whether it is more profitable for an undertaking to comply with the rule of appreciably positive working capital, where the ratio of current assets is twice the current liabilities or whether equality of current assets and current liabilities is more favourable.

Jindřichovská (2013) states that a company can reduce a risk of insolvency (low liquidity) only by reducing profitability and vice versa, because funds bound in current assets yield no or little return. Quasim and Ramiz (2011) and Quicklons (2011) also suggest that there is a trade-off between liquidity and profitability. Kubenka (2015) states that liquidity ratios may conflict with other key financial ratios. They can show antagonistic indices on the financial health of an analysed entity. For example, there may be a conflict between a low level of liquidity ratios with a high asset turnover ratio or a high profitability.

Kim et al. (1998) believe that optimal investment in liquidity is increasing in the cost of external financing which empirical tests on a large panel of U.S. industrial firms supported. This would mean that current assets should be financed from internal sources, which are essentially all of a long-term nature, which would deny the balance between current assets with short-term sources and fixed assets with long-term sources.

2. Methodology

This research has been developed because of fundamental discrepancies among the basic rules of financial management. It should show which approach to working capital size management is more profitable for a company. This means that the level of current ratio at which business profitability increases will be examined. Based on the findings, it will be deduced whether the equality of short-term current assets and liabilities is more favourable or whether the current assets should be about twice the current liabilities. In connection with this, the following hypotheses are set:

- H1a: For a company with inventory, it is more profitable to adhere to the principle of equality of current assets and current liabilities in terms of profitability expressed by Return on Assets.
- H1b: For a company with inventory, it is more profitable to adhere to the principle of twice as high of current assets as current liabilities in terms of profitability expressed by Return on Assets.
- H2a: For a company with inventory, it is more profitable to adhere to the principle of equality of current assets and current liabilities in terms of profitability expressed by Return on Equity.
- H2b: For a company with inventory, it is more profitable to adhere to the principle of twice as high of current assets as current liabilities in terms of profitability expressed by Return on Equity.

The basic sample for research includes 3,907 Czech companies, which account for inventory, i.e. they have all three components of current assets – stocks, receivables and money. For these companies, profitability is examined in 2018 depending on current ratio.

The secondary research involves 760 companies, which do not account for inventory, i.e. their current ratio is identical to the quick ratio, as current assets consist only of receivables and money. Thus, one component of current assets is missing, which also affects the amount of working capital and, potentially, the relationship of profitability to current ratio. These companies are therefore examined separately and the following hypotheses are verified:

- H3a: For a company with no inventory, it is more profitable to adhere to the principle of equality of current assets and current liabilities in terms of profitability expressed by Return on Assets.
- H3b: For a company with no inventory, it is more profitable to adhere to the principle of twice as high of current assets as current liabilities in terms of profitability expressed by Return on Assets.
- H4a: For a company with no inventory, it is more profitable to adhere to the principle of equality of current assets and current liabilities in terms of profitability expressed by Return on Equity.
- H4b: For a company with no inventory, it is more profitable to adhere to the principle of twice as high of current assets as current liabilities in terms of profitability expressed by Return on Equity.

The hypotheses with the letter “a” are intended to confirm the advantage of the principle of equality of current assets and short-term sources. The hypotheses with the letter “b” are intended to confirm the advantage of the principle of twice as high of current assets as current liabilities.

The data on current assets, current liabilities and profitability are taken from the data from the financial statements in the Commercial Register. Profitability is measured using both the most important indicators Return on Assets and Return on Equity (Kabajeh et al. 2012).

The data are examined using linear regression dependence:

$$y = ax + b, \quad (1)$$

where y is profitability and x is current ratio. Direct or indirect dependence and its strength is determined by the coefficient “a”. The coefficient “b” is an intercept.

Current ratio is examined in ranges. The first range is 0-0.4, which corresponds to the recommended cash position ratio values. The second range is 0.5-0.7, followed by a range corresponding to the quick ratio of 0.8-1.2, with current assets (approximately) equal to current liabilities. Other ranges are current ratio at levels of 1.3-1.5 and 1.6-2.5. The range 1.6-2 is the level at which the recommended value for current ratio is found, i.e. where current assets are approximately twice as high as current liabilities. The last range is a current ratio of more than 2.5.

It follows from the above that the hypotheses are determined by the current ratio ranges for values of 0.8-1.2 (for Ha hypotheses) and 1.6-2.5 (for Hb hypotheses).

3. Results

The progression of the function of dependence of profitability on current ratio is interesting for the sample of companies that account for inventory. On the contrary, the overall dependence is uncertain for the function of samples of companies not accounting for inventory.

3.1. Results for companies with inventory

This subchapter presents the results of the calculated dependences summarized in Table 1 and further confirms or rejects the hypotheses H1 and H2.

As already mentioned, linear regression dependence (1) is investigated to determine whether the coefficient "a" is positive, expressing direct dependence, or negative, expressing indirect dependence. Furthermore, based on the magnitude of this coefficient, it is estimated whether the dependence curve is flatter or steeper, with a flatter curve showing low sensitivity to the change in current ratio, while a steeper curve reflecting a stronger dependence of profitability on the change in current ratio.

Table 1. Dependence of profitability on current ratio (companies with inventory).

Current Ratio Range	Coefficient "a" for ROA	Coefficient "a" for ROE
0-0.4	0.0497	0.0590
0.5-0.7	0.0099	0.0321
0.8-1.2*	0.0048	0.0217
1.3-1.5	0.0115	0.0013
1.6-2.5*	0.0053	0.0010
More than 2.5	-0.0010	-0.0062

* Ranges for testing hypotheses

Concerning the hypotheses, the following confirmations or rejections are expressed from the observed dependences:

- H1a: For a company with inventory, it is more profitable to adhere to the principle of equality of current assets and current liabilities in terms of profitability expressed by Return on Assets. In the range where current assets approach the equality of long-term liabilities (current ratio is in the range of 0.8-1.2), the ROA increases. The value of the coefficient "a" is 0.0048, which is less than in the current ratio range 1.6-2.5, where the value is 0.0053. The hypothesis H1a is rejected.
- H1b: For a company with inventory, it is more profitable to adhere to the principle of twice as high of current assets as current liabilities in terms of profitability expressed by Return on Assets. In the range where current assets amount to twice current liabilities (current ratio is in the range of 1.6-2.5), the ROA also increases. The value of the coefficient "a" is 0.0053, which is more than in the current ratio range of 0.8-1.2, where the value is 0.0048. The hypothesis H1b is confirmed.
- H2a: For a company with inventory, it is more profitable to adhere to the principle of equality of current assets and current liabilities in terms of profitability expressed by Return on Equity. In the range where current assets approach the equality of long-term liabilities (current ratio is in the range of 0.8-1.2), the ROE increases. The value of the coefficient "a" is 0.0217, which is more than in the current ratio range of 1.6-2.5, where the value is 0.0010. The hypothesis H2a is confirmed.
- H2b: For a company with inventory, it is more profitable to adhere to the principle of twice as high of current assets as current liabilities in terms of profitability expressed by Return on Equity. In the range where current assets exceed twice long-term liabilities (current ratio is in the range of 1.6-2.5), the ROE indicator increases. The value of the coefficient "a" is 0.0010, which is less than in the current ratio range of 0.8-1.2, where the value is 0.0217. The hypothesis H2b is rejected.

3.2. Results for companies with no inventory

This subchapter presents the results of the calculated dependences summarized in Table 2 and further confirms or rejects the hypotheses H3 and H4.

Table 2. Dependence of profitability on current ratio (companies with no inventory).

Current Ratio Range	Coefficient "a" for ROA	Coefficient "a" for ROE
0-0.4	0.0028	-0.1556
0.5-0.7	0.0309	-0.3223
0.8-1.2*	-0.0067	0.1005
1.3-1.5	0.0640	-0.0501
1.6-2.5*	0.0422	0.0207
More than 2.5	0.0192	0.0054

* Ranges for testing hypotheses

Concerning the hypotheses, the following confirmations or rejections are expressed from the observed dependences:

- H3a: For a company with no inventory, it is more profitable to adhere to the principle of equality of current assets and current liabilities in terms of profitability expressed by Return on Assets. In the range where current assets approach the equality of long-term liabilities (current ratio is in the range of 0.8-1.2), the ROA decreases. The value of the coefficient "a" is -0.0067, which is less than in the current ratio range of 1.6-2.5, where the value is 0.0442. The hypothesis H3a is rejected.
- H3b: For a company with no inventory, it is more profitable to adhere to the principle of twice as high of current assets as current liabilities in terms of profitability expressed by Return on Assets. In the range where current assets amount to twice current liabilities (current ratio is in the range of 1.6-2.5), the ROA increases. The value of the coefficient "a" is 0.0422, which is more than in the current ratio range of 0.8-1.2, where the value is negative -0.0067. The hypothesis H3b is confirmed.
- H4a: For a company with no inventory, it is more profitable to adhere to the principle of equality of current assets and current liabilities in terms of profitability expressed by Return on Equity. In the range where current assets approach the equality of long-term liabilities (current ratio is in the range of 0.8-1.2), the ROE increases. The value of the coefficient "a" is 0.1005, which is more than in the current ratio range of 1.6-2.5, where the value is 0.0207. The hypothesis H4a is confirmed.
- H4b: For a company with no inventory, it is more profitable to adhere to the principle of twice as high of current assets as current liabilities in terms of profitability expressed by Return on Equity. In the range where current assets exceed twice long-term liabilities (current ratio is in the range of 1.6-2.5), the ROE increases. The value of the coefficient "a" is 0.0207, which is less than in the current ratio range of 0.8-1.2, where the value is 0.1005. The hypothesis H4b is rejected.

3.3. Summary of hypothesis testing results

For both types of companies (both with and without inventory), the growth rate of ROA was found to be higher in current ratio in the range of 1.6-2.5 than in the range of 0.8-1.2. By contrast, the growth rate of ROE is higher in the current ratio range of 0.8-1.2 compared to the range of 1.6-2.5.

4. Discussion

From the above it can be stated that the ROA and ROE indicators achieve different results in the current ratio ranges. The profitability of equity increases when inventory, receivables and money are approximately equal to current liabilities. Conversely, with higher working capital, the growth rate of

this indicator declines. On the other hand, the return on assets increases more with significantly positive working capital.

It is generally stated that profitability decreases with greater liquidity. According to the research conducted, this relationship applies to current ratio of more than 2.5. In companies with inventory, the indicator of profitability of equity increases in all monitored ranges and decreases only in the last range. In Table 1, it is clear how the growth rate of ROE profitability with higher ranges is decreasing, but profitability is still increasing. It is no longer increasing in the current ratio range of more than 2.5, where it is decreasing.

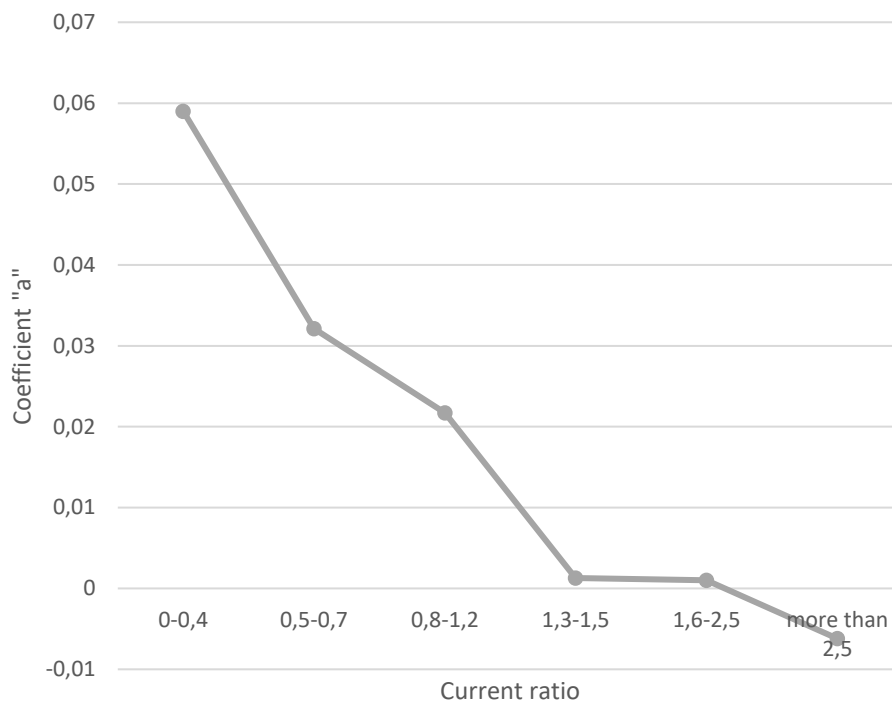


Figure 1. The curve of dependence of ROE profitability expressed by coefficient "a" at the level of current ratio (on the sample of companies with inventory).

Figure 1 shows this trend. Growth rate of the ROE indicator declines steeply between the current ratio ranges 0-0.4, but the growth of this indicator continues up to the range of 1.6-2.5, or the ROE growth in this range is almost zero. With current ratio above 2.5, profitability of equity of ROE is declining.

5. Conclusions

The indicator of profitability of ROE equity is more sensitive to current ratio changes. It is found that ROE profitability declines only after exceeding the current ratio limit of 2.5. In this case, the additional unit of working capital no longer generates added profit for a company. The claim that the higher the liquidity, the lower the profitability is therefore refuted, or adjusted. Profitability for companies with inventory expressed by the ROE indicator is increasing up to the level of current ratio of 2.5, although at a slower pace. Thus, if a company with inventory moves at the current ratio levels of up to 2.5, it will continue to increase its return on equity, faster in the lower ranges of current ration, slower in the higher ranges.

Regarding the ROA profitability indicator and the sample of companies with inventory, it cannot be stated that there is a dependence in terms of current ratio, as well as in companies with no inventory. In this case, it can only be stated that the growth rate of ROA is higher with current ratio in the range of 1.6-2.5 than in the range of 0.8-1.2. By contrast, the growth rate of ROE is higher in the current ratio range of 0.8-1.2 compared to the range of 1.6-2.5.

The following recommendation follows from the above that current ratio of up to 2,5 is favourable for companies with inventory, as the return on equity increases to this level, and the lower current ratio, the faster growth of ROE. It is therefore more advantageous for these companies to have positive working capital, where the amount of assets is 2.5 times the current liabilities.

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