

Tibor Pupos (Hungary), Zsolt Péter (Hungary), Gábor Horváth (UK)

## Methodological issues of determining capital needs

### Abstract

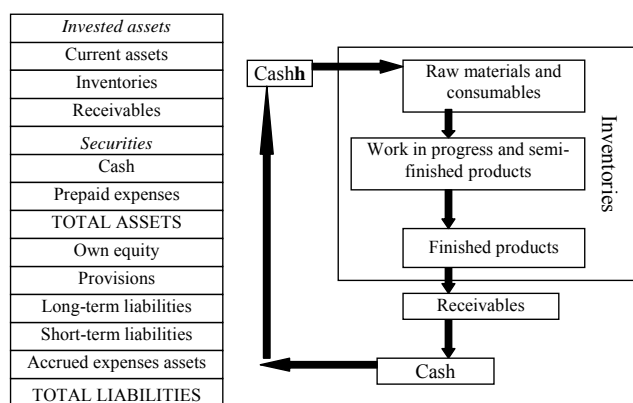
Having reliable financial information about the organizations is essential for corporate management. In the references there are several groups of indicators and related definitions recommended by certain authors for analyzing corporate financial situations. On the basis of the related earlier research it has been concluded that the professional validity of these indicators and their mechanical application methods are raising further questions. Therefore it is an important issue how to calculate the indicators that reflect a realistic liquidity of a company. The definition of working capital implies that the asset value decreased by provisions can not entirely be the liquidity for short-term liabilities since its release would endanger the safety of continuous production. The importance of this theory is demonstrated through agricultural examples of unfinished production.

**Keywords:** working capital, working capital, long-term current assets, agriculture.

**JEL Classification:** Q14.

### Introduction

Reliable information about financial stability is essential for corporate management. In the references there are several groups of indicators and related definitions recommended by certain authors for analyzing corporate financial situations (I. Illés, 1994; Brealey-Myers, 1993; Béhm, 1994, 1995; Tétényi-Gyulai, 2001; Takács, 1995). On the basis of the related earlier research it has been concluded that the professional validity of these indicators and their mechanical application methods are raising further questions. The financial analysis of current assets management is the least clear field of topic. As one can see the main problem may be the ambiguous and professionally unacceptable interpretation of **working (or turnover) capital, net working capital and long-term current assets**. To understand these definitions, Figure 1 shows a total balance and the production procedure of a given product taking the circulation of current assets as a basis.



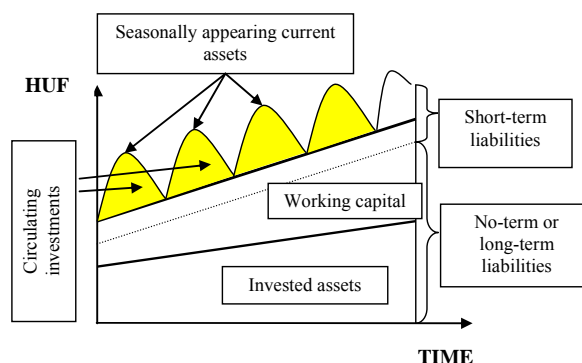
**Fig. 1. Theoretical model of the definition of working capital**

While studying the production procedure one can see in the figure above that securities do not take part in the circulation of turnover assets from the perspective of accounting if we look at the group of current assets. Securities as current assets are ‘only’

accounting categories, which are natural to include in the balance sheet. Taking current assets circulation as a basis it is evident that the basic condition of continuous production is the simultaneous existence of cash, inventories and receivables. The amount of permanently locked-up capital depends highly on the characteristics of production procedures and related decisions (e.g., payment due date, standard of inventory management, etc.).

On the basis of these contexts we can draw the following conclusions:

- ◆ The definition of current assets is a larger category than working (turnover) capital.
- ◆ Working capital functions as the capital of a constantly present and constant amount of total assets value of current assets circulation in a given period in order to guarantee continuous production determined by the characteristics of production management: items, inventories, receivables and cash (securities) (Pupos, 2005).
- ◆ Seasonally appearing current assets are the ones that appear beyond working capital.
- ◆ Circulating investments are the asset value of seasonally appearing current assets which emerge from the beginning of continuous production till the return of assets (realization of turnover).



**Fig. 2. Aggressive corporate financing strategy**

We emphasize that the phrase ‘turnover’ in the expression “turnover capital” refers merely to the fact that this quota of current assets functions as capital but is permanently locked-up. It is obviously not ‘turning over’, namely it does not return in the turnover. We can conclude from the above mentioned argument that the production can only be financed with equities or long-term liabilities without endangering the continuity of production. We believe that international references – as well as the Hungarian ones – define working capital wrongly, because they do not make difference between working capital and net working capital (Brealey-Meyers, 1993; Collins & Collins, 1963; Dambolerm & Shulman, 1988; Cohen, 1997; Illésné, 1994; Béhm, 1994). These authors define net working capital as the difference of current assets and short-term liabilities; therefore, taking the data of the balance sheet as a basis, they come up with the following:

**Net working capital = (Current assets + Prepaid expenses – Provisions) – (Current liabilities + Accrued expenses).**

On the basis of this argument working capital is the assets value of current assets to which the company assigns long-term or no-term liabilities. It is easy to see that this method of calculation obviously determines the definition of net working capital because of the compulsory equalities of the balance sheet. However, this net working capital is not necessarily equated with the working capital, which guarantees the continuous production.

Further essential characteristic of net working capital is that it can also have a negative prefix depending on the company’s strategy. In this case our theory that net working capital cannot be identical with working capital is justified because net working capital only allows drawing a conclusion about the time factor. The negative prefix of the net turnover capital refers to an aggressive corporate financing strategy, which means that the company assigns short-term liabilities to a given invested asset, too. The above mentioned facts should be taken into consideration when calculating related financial indicators, e.g. liquidity and efficiency rates, etc.

The interpretation of the described theory and the calculation of working capital are not problematic in the case of continuous (industrial) production procedures. It is, however, an important issue to find out to what extent the known characteristics of agricultural production modify this theory.

In the case of agricultural companies the definition of working capital cannot be interpreted automatically since the expression ‘permanently locked-up

capital’ does not suit the characteristics of the sectors. In the case of agricultural production – on corporation level – working capital is identical with the available current assets at the time of analysis. The time of analysis ideally should be a date when the company’s current assets value is at a sustainable level for continuous production. This date is practically the 31<sup>st</sup> of December or the 31<sup>st</sup> of August, depending on the particular sector. However, due to the different characteristics of the agricultural sector we consider this type of working capital as permanently locked-up current assets. It is questionable whether it is identical with the definition of working capital. If we look at their role in production the answer is “yes”. The only further intersection of the two definitions is regarding to financing and liability needs, because in order to guarantee financial stability, long-term or no-term liabilities should be assigned to permanent current assets.

Due to the described theory we are facing several problems when calculating indicators of corporate liquidity on the basis of the balance sheet or calculating efficiency and profitability indicators related to financial situations. The data in Table 1 help to understand our theory.

Table 1. Balance sheet of an agricultural company for the years 2004-2005

Balance sheet	2004	2005
	THUF (Thousand Hungarian Forint)	
Invested assets	13,504	60,098
Current assets	52,305	169,508
<i>Inventories</i>	<i>30,931</i>	<i>98,501</i>
<i>Raw materials and consumables</i>	<i>11,070</i>	<i>11,415</i>
<i>Animals for breeding and fattening and other livestock</i>	-	<i>39,407</i>
<i>Work in progress and semi-finished products</i>	<i>19,537</i>	<i>33,441</i>
<i>Finished products</i>	<i>324</i>	<i>12,488</i>
<i>Receivables</i>	<i>5,557</i>	<i>44,823</i>
<i>Securities</i>	-	-
<i>Cash</i>	<i>15,817</i>	<i>26,184</i>
Prepaid expenses	157	9,306
<b>TOTAL ASSETS</b>	<b>65,966</b>	<b>238,912</b>
Own equity	9,597	65,270
<i>Capital reserve</i>	<i>-110</i>	-
<i>Profit or loss for the year</i>	<i>7,367</i>	<i>26,621</i>
Provisions	-	-
Long-term liabilities	-	35,000
<i>Long-term loans</i>	-	<i>33,000</i>
<i>Other long-term credits</i>		
Short-term liabilities	54,622	124,038
Accrued expenses	1,747	14,604
<b>TOTAL LIABILITIES</b>	<b>65,966</b>	<b>238,912</b>

The data show that the company produced only raw materials in 2004. The company bought a dairy farm in 2005, which became the main profile of the

company. We used referenced and frequently applied indicators in the following calculations:

$$\text{Liquidity ratio I} = \frac{\text{Cash} + \text{Securities} - \text{Provisions}}{\text{Current liabilities} + \text{Accrued expenses}};$$

$$\text{Liquidity ratio II (Acid test ratio)} = \frac{\text{Cash} + \text{Securities} + \text{Receivables} - \text{Provisions}}{\text{Current liabilities} + \text{Accrued expenses}};$$

$$\text{Liquidity Ratio III (Current ratio)} = \frac{\text{Current Assets} - \text{Provisions}}{\text{Current liabilities} + \text{Accrued expenses}};$$

$$\text{Net working capital} = (\text{Current assets} + \text{Prepaid expenses} - \text{Provisions}) - (\text{Current liabilities} + \text{Accrued expenses});$$

$$\text{ROI} = \frac{\text{After tax profit}}{\text{Total capital}^*};$$

**Note:** \* **Total capital** (From the balance sheet) = *Invested assets* + *Net working capital*.

When doing the calculation 50% of raw material and finished products, 100% of animals and semi-finished products and 20% of receivables (only in 2005) were considered permanently locked-up current assets. We supposed that the value of securities is 5000 THUF. No dividends were paid at the company during the two years, so the result after tax payment was identical with the result of the balance sheet. We have summed up the results in Table 2. We did not evaluate the indicators; they were only explained in relation to our interpretation of definitions. We would like to draw attention to the calculation methods and information content of the highlighted (with bold and italics characters) indicators to prove the validity of our theory.

Table 2. Liquidity indicators

Denomination	2004	2005	2004	2005
			Corrected numbers	
Liquidity ratio I	0.28	0.19	<i>0.19</i>	<i>0.15</i>
Liquidity ratio II	0.38	0.51	<i>0.29</i>	<i>0.41</i>
Liquidity ratio III	0.93	1.22	-	-
<i>Net working capital</i>	-3907	40172	<i>-3907</i>	<i>40172</i>
ROI	0.77	0.27	-	-
Working capital	<i>30234</i>	<i>98765</i>	<i>30234</i>	<i>98765</i>
Total capital	-	-	<i>38738</i>	<i>153863</i>
Net working capital ratio %	-	-	<i>Calculation is not possible</i>	<i>40.7</i>
Total IPC/(Potentially cashable) Liquidity	-	-	<i>0.39</i>	<i>0.51</i>
ROI	-	-	<i>0.17</i>	<i>0.18</i>

On the basis of the data in the balance sheet it is not difficult to calculate the liquidity indicators that appear in Table 2. The calculation of net working capital, on the basis of the theory, can also easily be carried out. We can see from the results that the

company's net working capital had a negative prefix in 2004. However, it only refers to the fact that the company's financial strategy was aggressive. In consequence, the net working capital cannot be identical with the working capital since the company's working capital need cannot depend on, and does not depend on, the company's financing strategy. It is, however, another – and an important – issue that how long this strategy can be sustained.

The calculation of the ROI indicator on the basis of the balance sheet would only be acceptable if the time factor theory is realized, namely, if the company financed its assets with no-term capital (own equities) or long-term liabilities. Only in that case the following equality would be true:

**Total capital = Invested assets + Working capital.**

It is evident that this is not fully realized in practice. The ROI, calculated on the basis of the balance, does not give a realistic result. It is essential therefore to calculate the value of working capital/permanently locked-up assets. We have quantified the permanently locked-up current assets value on the basis of the above mentioned criteria in Table 3.

Table 3. Calculation of working capital/permanently locked-up current assets

Denomination	Calculation method	2004	2005
		THUF (Thousand Hungarian Forint)	
Raw materials and consumables	11,070*0,5 and 11,415*0,5	5,535	5,708
Animals for breeding and fattening and other livestock	Balance sheet data	-	39,407
Work in progress and semi-finished products	Balance sheet data	19,537	33,441

Table 3 (cont.). Calculation of working capital/permanently locked-up current assets

Denomination	Calculation method	2004	2005
		THUF (Thousand Hungarian Forint)	
Finished products	324*0,5 and 12,488*0,5	162	6,244
Receivables	44,823*0,5	-	8,965
Securities	Not part of turnover capital	-	-
Cash	Given criteria	5,000	5,000
Working capital	-	30,234	98,765

The items of working capital/permanently locked-up current assets should be considered as a decreasing factor when calculating liquidity indicators. We have done the calculations accordingly.

$$\text{Total /PC/ (Potentially cashable) Liquidity} = \frac{\text{Current assets} + \text{Prepaid expenses} - \text{Provisions} - \text{Working capital}}{\text{Current liabilities} + \text{Accrued expenses}}$$

Net working capital ratio indicator also carries important information. It can be defined as:

$$\text{Net working capital ratio \%} = \frac{\text{Net working capital}}{\text{Working capital}} \times 100.$$

This indicator gives the ratio of current assets functioning as capital financed with no-term (own equity) or long-term liabilities. This information is necessary for the evaluation of corporate financial stability and financing strategy.

On the basis of our theory we are convinced that the following calculation of the ROI indicator is well justified:

#### References

1. Brealey-Myers. Modern vállalati pénzügyek. Első kötet. Budapest: 1993, 463-484.
2. Béhm I. Vállalkozások pénzügyi tervezése. NOVORG Kft. Budapest: 1994, 183-263.
3. Béhm I. Gazdasági mutatók és alkalmazásuk III. Számvitel és könyvvizsgálat. XL.évf. 3. 1995, 225-247.
4. E. Cohen. Fonds de roulement, besoin en fonds de roulement et trésorerie. Chaptire 9, Analyse Financière. 4 édition, Economica, Paris: 1997, 267-300.
5. Illés I-né. Társaságok pénzügyei. SALDO, Budapest: 1994.
6. Dambolerm, I.G., Shulman, J.M. A Primary Rule for Detecting Bankruptcy: Watch the Cash. Financial analysts journal / september-october D 75, 1988.
7. J. Markham Collins-Rebecca, A. Collins. About finances not only for financial experts. Co-nex-training bt. ISBN 963 04 3269 2, 1963.
8. Pupos, T. A tőkeszükséglet meghatározásának módszertani kérdései. In: Jávör A. szerk. A mezőgazdaság tőkeszükséglete és hatékonysága, 2005, 35-41.
9. Takács, J. Működő tőke hatása a vállalkozások fizetőképességére. Számvitel és könyvvizsgálat. XL.évf. 2., 1995, 60-62.
10. Tétényi, Z., Gyulai, I. Vállalkozás finanszírozás. SALDO Rt. Budapest: 2001.

E.g., Liquidity ratio II = 0.41.

$$\text{Liquidity ratio II} = \frac{(26,184 - 5,000) + (44,823 - 8,965)}{138,642} = \frac{57,042}{138,642} = 0.41.$$

Consequently, it is an important issue how to calculate the indicators that reflect a realistic liquidity of a company. The definition of working capital implies that the asset value decreased by provisions can not entirely be the liquidity (Potentially cashable) for short-term liabilities since its release would endanger the safety of continuous production. The importance of this theory can be demonstrated through agricultural examples of unfinished production /field inventory/, reduction of stock value of forage for livestock, etc. There is a correction needed, therefore the total /PC/ Liquidity Indicator should be defined according to the following:

$$\text{ROI} = \frac{\text{After tax profit}}{\text{Total capital}};$$

$$\text{Total capital} = \text{Invested assets} + \text{Working capital}.$$

As a summary it can be stated, that the calculated and defined indicators shown in Table 3 and highlighted with bold letters prove the professional validity of our research results.