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MANAGEMENT OF CURRENT FINANCIAL ASSETS RISK MANAGEMENT IN TRANSPORT COMPANY

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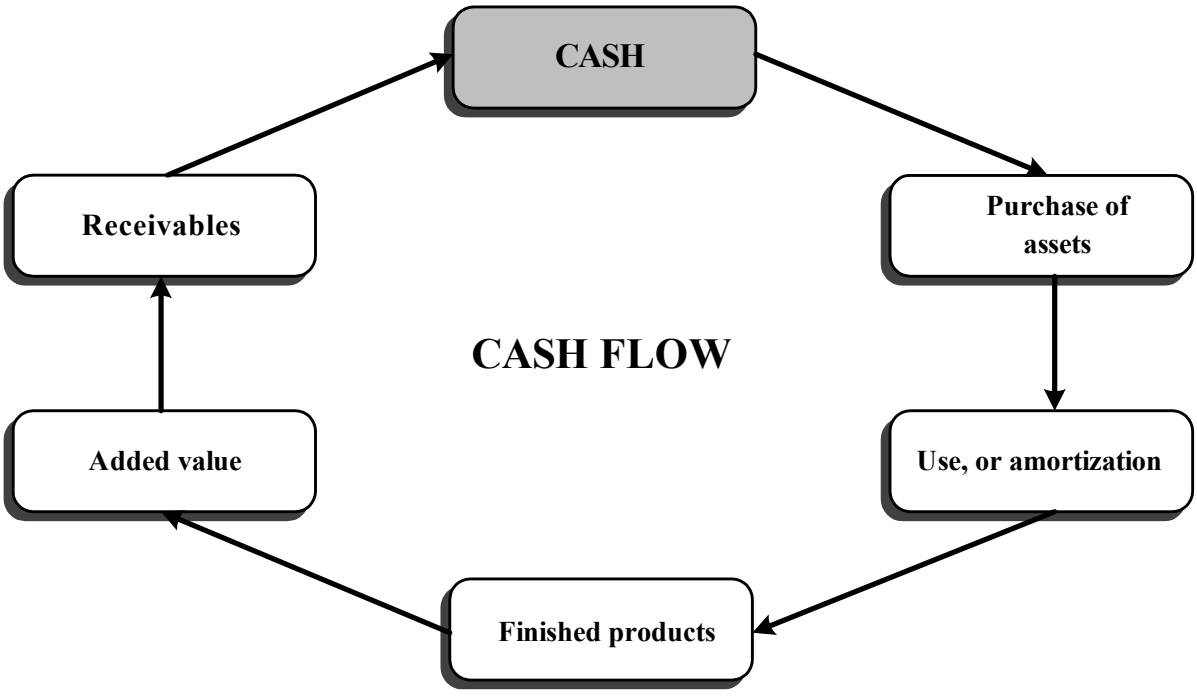
Introduction

Quantification of risk or risks connected to management and optimization of any current assets components, that is reserves and current receivables, is for a transport company also crucial when current financial assets possession in concerned. This article deals with so called Lambda liquidity index that helps to mange and diversify risks to a certain extent.

All companies (and all individuals for that matter) have some liquidity reserves in their possession. Liquidity management influences financial assets management. The cash cycle in a transport company is shown in Picture1.



Picture 1 *Cash cycle in trasport company*

The reasons for possessing financial assets justify the possession of a certain amount of financial assets by transport companies. Financial assets management mostly deals with

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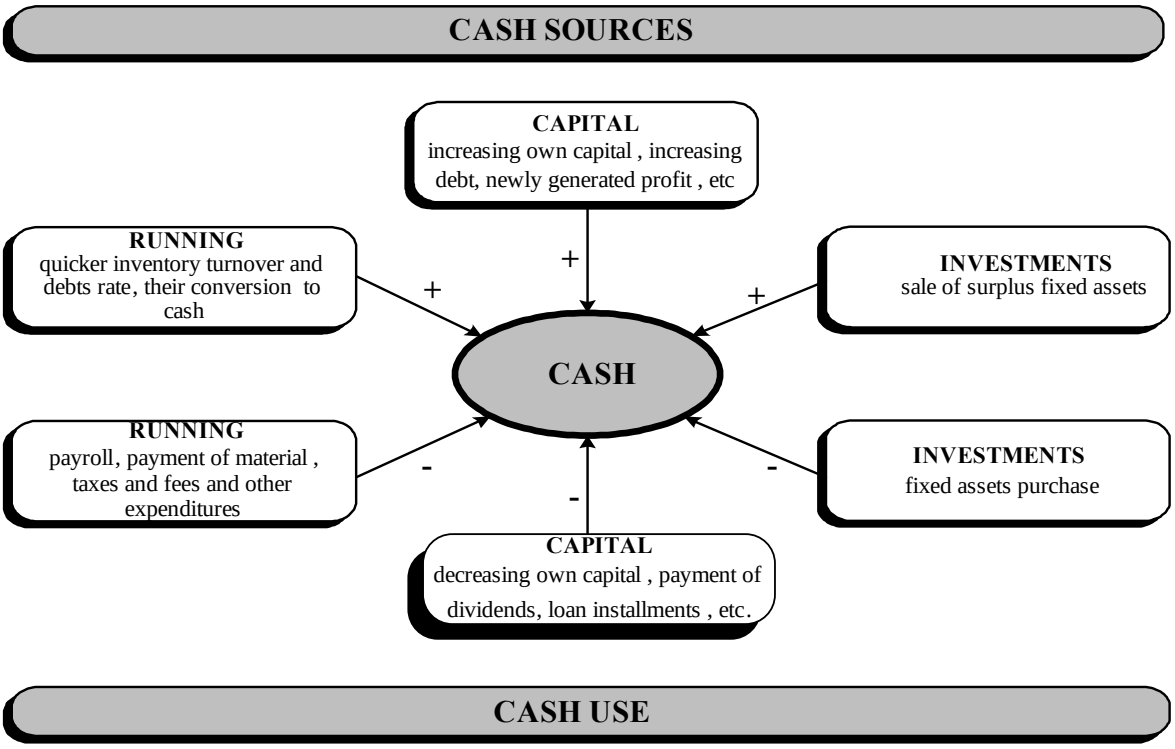
setting the optimal level for these assets, which means searching for the minimum that would allow undisturbed and smooth company running.

Transport company can acquire financial assets by:

- increasing its capital (generating profit, increasing basic capital, donations and subsidies, etc.),
- receiving loans of various kinds in form of money,
- selling products, goods and services in cash,
- debts collection,
- selling other non-cash components of fixed and current assets in cash, that means equity conversion,
- etc.

Transport company uses (spends) financial assets by:

- lowering its capital,
- repaying its delivery liabilities in cash,
- payment of bank loans and interest payment,
- tax payment, payrolls and other liabilities,
- purchasing non-cash assets components,
- etc.



Picture 2 *Cash sources and their use*

Model of Current Financial Assets Risk

When managing financial assets in transport company effectively, it is good to know the variables that condition their level. We use a balance sheet (1) and definition of net working capital (2).

$$NWC + FXA = LBF \tag{1}$$

$$NWC = FA + D + R - SBF \tag{2}$$

After certain operations it is possible to quantify transport company financial assets using the formula (7). The right side shows that increasing long-term borrowed funds and company capital and lowering fixed assets and adjusted net working capital increases company financial assets and vice versa.

$$NWC = FA + OCA - SBF \tag{3}$$

$$OCA = D + R \tag{4}$$

$$FA + OCA - SBF = LBF + C + FXA \tag{5}$$

$$NWC_A = NWC - FA \tag{6}$$

$$FA = LBF + C\text{-}NWC_A\text{-}FXA \tag{7}$$

where:

NWC - net working capital

FXA - fixed assets

LBF - long-term borrowed funds

SBF - short-term borrowed funds

C - capital

FA - financial assets

OCA - other current assets

D - debts

R - reserves

NWC_A - adjusted net working capital

How much financial assets or liquidity does a transport company need? The answer is not unambiguous. The lack of liquidity may have fatal consequences for the transport company, on the other hand too much liquidity is not desirable, too. It will be up to the company management to choose one of the options. Liquidity can also be influenced by a number of objective factors that are exogenous and endogenous variables influencing the company as a whole.

Therefore it is vital to properly quantify liquidity as such. The easiest and the most often used way is immediate liquidity index. It is calculated as a ratio of short-term financial assets and short-term receivables. A ratio increasing with time signalizes a higher liquidity level. A falling one means possible problems with liquidity.

There is one significant problem with immediate liquidity index; it takes variables as deterministic, which means, it cannot be used to quantify risk and uncertainty influence. Emery and Cogger3 tried to eliminate this deficiency by quantifying liquidity level with the use of probability function, taking into account the probability of spending liquidity reserves in company and constructed the liquidity index known as Lambda (1). It consists of three components:

[3] EMERY, G., W. - COGGER, K., O.: The Measurement of Liquidity, *Journal of Accounting Research,* Autumn 1982, pp. 290-303.

1. Liquidity sources – the sources that can be changed to cash without violation of company operation. Examples can be cash, easily convertible funds, credit limits.
2. Level of operating cash flow expected in planned horizon.
3. Operating cash flow forecast variability.

$$\lambda = \frac{LS + CF_E}{\sigma_{CF}} \tag{8}$$

kde:

λ - liquidity index

LS - liquidity sources

CF_E - cash flow forecast

σ_{CF} - cash flow forecast variability expressed by standard deviation

Cash flow forecast variability can be assessed using two ways. Either using a time line, if the next cash flow is expected to be similar to the previous one; then it is possible to use historic data to determine the next CF.

$$\overline{CF} = \frac{1}{n}\sum_{i=1}^{n} CF_i \tag{9}$$

$$\sigma^2{}_{CF} = \frac{1}{n-1}\sum_{i=1}^{n}\left(CF_i - \overline{CF}\right) \tag{10}$$

$$\sigma_{CF} = \sqrt{\sigma^2{}_{CF}} \tag{11}$$

where:

σ^2_{CF} - cash flow forecast variability expressed by difusion[4]

σ_{CF} - cash flow forecast variability expressed by standard deviation

$\overline{CF}$ - average cash flow for a period of time

CF_i - period *i* of cash flow

n - number of periods (days, weeks, months, quarters, etc.)

[4] cash flow is monitored in equidistant intervals, e.g. weekly, monthly, quarterly, etc.

Or using expert judgement (12), that means, it is possible to estimate range of the next expected cash flow distribution.

$$\sigma_{CF} = \frac{CF_{opt} + CF_{pes}}{6} \tag{12}$$

where:

CF_{opt} - optimistic cash flow forecasts

CF_{pes} - pesimistic cash flow forecasts

Using the calculated value of lambda and table of standardised normal division (Table 1) we can determine probability of insolvency, which is, insufficient company liquidity. For example, if lambda is 3, it means that the chance of the need of liquidity sources exceeding available cash sources (company being insolvent in future) is approximately 1 in 3. If lambda equals .65, there is a 5% chance of depleting liquidity sources, which at the same time means with the probability of 95% that this transport company will not be insolvent in future. Therefore the value of lambda gives approximate estimate of possible transport company liquidity problems.

Table. 1. *Normal distribution values*

λ	Distribution function	Insolvency probability [%]	λ	Distribution function	Insolvency probability [%]
1.645	0.9500	5.00	2.053	0.9800	2.00
1.670	0,9525	4.75	2.108	0.9825	1.75
1.695	0,9550	4.50	2.170	0.9850	1.50
1.722	0,9575	4.25	2.241	0.9875	1.25
1.751	0,9600	4.00	2.326	0.9900	1.00
1.780	0,9625	3.75	2.432	0.9925	0.75
1.812	0.9650	3.50	2.576	0.9950	0.50
1.845	0.9675	3.25	2.808	0.9975	0.25
1.881	0.9700	3.00	2.879	0.9980	0.20
1.919	0.9725	2.75	2.969	0.9985	0.15
1.960	0.9750	2.50	3.090	0.9990	0.10
2.004	0.9775	2.25	3.291	0.9995	0.05

Liquidity index lambda brings information about how the operating cash flow is likely to be divided and how it influences liquidity and, most of all, transport company solvency or insolvency. Putting it simply – significant liquid reserves are necessary to bear unpredictable

circumstances that occur when future events are highly uncertain. If future is relatively fixed, that the necessity of significant liquidity reserves decreases.

Company insolvency is an indicator of future company problems and thus it becomes a significant factor that allows one to predict company future financial health. In 1982 Emery and Cogger carried out an empiric research in the sample of 104 companies (52 bankrupting and 52 with excellent financial health) and using the liquidity index they came to the following results (Table 2).

Table. 2 *Liquidity index λ values for particular types of companies*

Years before failure	Number of correctly categorised companies [%]	λ Mean value	
		Failing companies	Flourishing companies
5	81	0.42	4.43
4	90	0.19	4.59
3	93	0.03	5.46
2	93	-0.66	6.78
1	94	-2.30	9.10

Source: EMERY, G., W. - COGGER, K., O.: The Measurement of Liquidity, *Journal of Accounting Research,* Autumn 1982, pp. 290-303.

When taking the first look it may seem that the possession of financial assets brings loss because cash does not bring profit. The paradox is that reality is different. Several authors state some reasons for possession of financial assets. For example John Maynard Keynes explained possession of liquid reserves with three reasons:

1. *Transaction* - the necessity to possess certain financial assets occurs since it is not possible to synchronize incomes and expenditures in an ideal way. An entrepreneur must create a certain reserve that serves for stabilizing day-to day unbalance between incomes and expenditures. At the same time there must be reserves for specific expenditures such as dividends, purchase of fixed assets, etc.
2. *Prevention* – it expresses the necessity to possess liquidity reserves in order to enable unpredictable unplanned expenditures caused by lower revenues or increased interest rates in commercial banks.

3. *Speculation* – it is connected to possession of liquidity reserves intended to allow future profit investments, purchase of raw materials for more favourable prices in the near future, etc.

Conclusion

Damodaran states the first reason for financial assets possession is transaction. It means that financial assets cover needs occurring during normal company operations (payment of suppliers invoices, payrolls, taxes, deposits redemption, etc.). These needs vary depending on:

- *branch of business* (there are other cash needs in case of a restaurant and a building company)
- *size of the company* – bigger companies keep their financial assets lower compared to their revenues than smaller ones. Bigger companies use decreasing range gains and their bigger power when dealing with banks, suppliers and customers.
- *bank system and payment mechanism level and advancement* – companies in economies with advanced cashless payment keep their cash financial assets lower

This need may also be influenced by seasonal fluctuation. The second reason is *caution*, which is supposed to cover unpredicted events and unplanned needs. Companies with less volatile financial flows need less financial assets and vice versa. This kind of financial assets demand is influenced by availability of external financing. If a company is able to cover such a need with lower costs (e.g. an overdraft), it is very unlikely its cash balance will be high.

Brealey and Myers[5] state other two reasons for keeping cash. Firstly, companies keep their cash on ex-interest accounts to reward banks for their services. Secondly, large companies have hundreds of accounts in dozens of different domestic and foreign bank. It is often better to keep the accounts on hold than follow them and make transfers daily.

According to Ross, Westerfield and Jaffe there are two main reasons for keeping cash balance. First, just like it has been mentioned above, is *transaction*. Needs related to transactions are connected to cash assets usage and company activities that lead to acquiring them. Cash is used for paying company debts, taxes, payrolls and dividends. Incomes consist of sales concerning economic activities, selling assets and new financing. Incomes and

[5] BREALEY, R. A., MYERS, S. C.: Teorie a praxe firemních financí. pp. 857-858

expenditures are not synchronized and that is why there is a need for a certain cash balance. If the company only keeps a small amount of cash assets and there is a sudden shortage of cash, selling marketable securities or taking loans represent trading costs.[6] Other reasons for keeping cash are compensating balances[7], which are account balances claimed by banks for the services provided.[8]

Reasons for keeping financial assets do not exclude each other and in real life it would be quite complicated and above all impractical to divide company financial assets according to their specific purpose. Total financial sources can be considered a whole that consists of:

- cash,
- current account balances in banks,
- marketable short-term securities,
- treasury bills.

Cash and current accounts balances represent liquidity assets with zero gain. Keeping short-term securities and treasury bills is connected to some gain but to change them to the most liquidity assets requires further transaction costs.

Acknowledgements

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References

[1] BREALEY, R. A. MAYERS, S. C.: *Teorie a praxe firemních financií,* CPRESS, Praha 2000, ISBN 80-7226-189-4.

[2] DAMODARAN, A. *Corporate finance: therory and practice*. 2nd edition., New York: Wiley, 2001. 982 p. ISBN 978-0-471-28332-4.

[3] EMERY, G., W. - COGGER, K., O.: The Measurement of Liquidity, *Journal of Accounting Research*, Autumn 1982

[6] ROSS, S. A., WESTERFIELD, W., JAFFE, J.: *Corporate finance 9th Edition,* New York. p. 698

[7] Cash balances are kept in commercial banks and serve as a reward for bank services provided for the companies. Minimal required compensating balance in banks providing credit services enables lower limit for cash assets kept by companies.

[8] DAMODARAN, A.: *Corporate finance*. New York 2010, p. 257

[4] ROSS, S. A., WESTERFIELD, W., JAFFE, J. *Corporate finance*. 7th edition., Boston: The McGraw-Hill Companies, 2005. 942 p. ISBN 0-07-282920-6.

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