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CASH AND OPERATING CYCLE INFLUENCE ON NONPROFIT ORGANIZATIONS EFFICIENCY¹

1. Introduction

Organizations can work as taxed commercial businesses or as non-taxed nonprofit organizations². As is widely believed, the advantage of commercially driven businesses is more effective management than in government controlled organizations³. In that paper we study the nonprofit organization operating cycle management. We do that in the context of three different situations by comparison of: non-taxed government controlled organization, non-taxed nonprofit organization and taxed commercially managed business⁴. In after-crisis weak economic situation, many nonprofit organizations (NPO), face on the one side, smaller cash inflows and financing possibilities and on the other side higher demand on their services. After the crisis, that organizations face specific incumbent needs, which are the result of higher unemployment and other similar factors⁵.

The main financial aim of the nonprofit organization is not the maximization of firm value but the best realization of the mission of that organization⁶. But for assessment of financial decision NPO, should be used analogous rules like for for-profit firms⁷. According to that rules, the higher risk is, the higher cost of capital rate should be used to evaluate the future results of current decision. Of course, that is also positively linked with the level of efficiency and effectiveness in realization of the NPO mission. Cost of financing net liquid assets (working capital) depends on the risk included to the organization strategy of financing and/or investment in liquidity.

What is the value we may attribute to liquidity for non-profit organization? Managers in non-profit organizations have a lot of important reasons for which their enterprises should

¹ Acknowledgment. The research is financed from the Polish science budget resources in the years 2010-2012 as the research project NN113021139

² Lane G.P., Longstreth E., Nixon V., (2001), *A Community Leaders Guide to Hospital Finance, The Access project, Suite 2001*, p. 1-17.

³ Nowicki M., (2004), *The Financial Management of Hospitals and Healthcare Organizations*, Health Administration Press, New York 2004., p. 29.

⁴ Berger P. (2008), *Fundamentals of Health Care Financial Management*, Wiley, New York 2008, p. 46-47.

⁵ Zietlow J., (2010), *Nonprofit financial objectives and financial responses to a tough economy*, *Journal of Corporate Treasury Management*, vol.3, nr 3., May 2010, Henry Steward Publications, ISSN1753-2574, p. 238-248.

⁶ Zietlow J., J.A.Hankin, A.G.Seidner, (2007), *Financial Management for Nonprofit Organizations*, Wiley, NewYork, 2007, p. 6-7.

⁷ Brigham E.F., Gapenski L.C. (2000), *Zarządzanie finansami*, PWE, Warszawa, 2000, p. 524-536.

possess some money resources reserves even if current interest rate is positive⁸. The reasons may be classified into three main groups:

- the necessity of current expenses financing (transactional reason),
- fear of future cash flows uncertainty (precautional reason),
- future interest rate level uncertainty (speculative reason).

Liquidity, especially cash, understood as money resources in organization safe is not a source of any or small interests. Maintaining liquidity reserve in the non-profit organization is a result of belief that the value of lost income on account of interest will be recompensed by the benefits for incumbents of non-profit organization⁹. The hypothetical benefits are from higher profitability that organization mission will be completed, thanks adequate liquidity level. Then organizations maintaining such reserves assume that in equilibrium conditions, marginal liquidity value is equal to the interest rate of the Treasury Bonds investments (or interest rate being a cost of short-term credit we took out to obtain liquidity. Without doubt, the statement that liquidity does not bring any benefits may be rejected at once. From such a perspective, liquidity would be treated as a "necessary evil" linked only to the costs resulting from interests lost. Another incorrect conclusion would be an assumption that present net value always equals zero. It would be a result of the statement that due to the fact that marginal liquidity value is always equal to interests lost, cash reserves size has no significance at all¹⁰.

For organization being in possession of liquid reserves, the marginal utility of liquidity changes. Along with the growth in amount of cash possessed, the marginal cash value decreases. So it may be noticed that for the market Treasury Bond rate or short-term credit rate, it pays to keep some money reserve only to the specific level. There is a point corresponding with the optimal (critical) liquidity level, up to which the amount of liquid assesses in the non-profit organization may be increased at a profit¹¹. The term: liquidity degree (or level) is connected with the known from economic literature conception of "liquidity container". The more liquid assesses (which may be easily convertible into known amount of money resources and sensible only to a slight value change risk), the higher is enterprise liquidity level.

⁸ Kim C-P., D. C. Mauer, A. E. Sherman (1998), *The Determinants of Corporate Liquidity: Theory and Evidence*, *Journal of Financial and Quantitative Analysis*, vol. 33, nr 3, September. Michalski G., (2008a), *Corporate inventory management with value maximization in view*, *Agricultural Economics-Zemledska Ekonomika*, ISSN:0139-570X, 54/5, pp.187-192.

⁹ Kim C-P., D. C. Mauer, A. E. Sherman (1998), *The Determinants of...*, op. cit. Lee C.F., J. E. Finnerty (1990), *Corporate finance. Theory, method and application* p. HBJ Publishers, San Diego. Michalski G., (2008e), *Value-based inventory management*, *Romanian Journal of Economic Forecasting*, ISSN:1582-6163, 9/1, pp.82-90.

¹⁰ Henderson J.W., T. P. Maness (1989), *The financial analyst's deskbook: A Cash flow approach to liquidity*, Van Nostrand Reinhold, New York, p. 95. Kim C-P., D. C. Mauer, A. E. Sherman (1998), *The Determinants of...*, op. cit. Lee C.F., J. E. Finnerty (1990), *Corporate finance...*, op. cit., p.540. Michalski G., (2008d), *Risk reduction in SME financing: JEREMIE fund influence on financial situation of small and middle enterprises*, *Managing and Modeling of Financial Risk*, ISBN:978-80-248-1846-7, pp.138-147.

¹¹ Washam J., D. Davis (1998), *Evaluating Corporate Liquidity*, *TMA Journal*, March / April, vol. 18, nr 2, p. 28. Henderson J.W., T. P. Maness (1989), *The financial...*, op. cit. Lee C.F., J. E. Finnerty (1990), *Corporate finance...*, op. cit. Michalski G., (2007), *Portfolio management approach in trade credit decision making*, *Romanian Journal of Economic Forecasting*, ISSN:1582-6163, 8/3, pp.42-53.

After crossing this *critical liquidity level*, the Treasury Bonds sale or taking out a short-term debt is unprofitable for the non-profit organization. The marginal benefit from higher cash reserve is lower than the cost of interests lost¹².

2. Liquidity definition

Liquidity is defined in economic literature in many various ways. It is understood as an *enterprise solvency* i.e. ability to regulate its obligations that result from usual transactions, unexpected events or situations enabling "bargain" purchase of goods¹³. On the other hand, liquidity is considered as a *transaction space* on the financial market. It occurs when there is a "liberty" of carrying out "huge" sale or purchase transactions on the market, with no fear that you will not find appropriate demand or supply. Another popular definition of liquidity its description as an *assesses convertibility* into other assesses. In other words, liquidity is an easiness of carrying out the exchange transactions with low transaction costs.

There are important connections among these three looks on liquidity. If there appears the necessity of regulating an obligation exceeding cash reserves in enterprise possession, the possibility of repayment depends on whether it is possible to exchange assesses possessed for cash or not. If so, it will be paid off on time. At the same time, the possibility of such an exchange depends on the capacity of the non-profit organization assesses market. It means that the ability to regulate non-profit organization obligations (short-term solvency) is dependent on the capacity of the market of assesses constituting non-profit organization reserves (or more generally: its property). Financial liquidity is therefore an internal category of the non-profit organization, influenced both by the managing team and other factors occurring inside the non-profit organization or in its surroundings. The long-term liquidity is totally disregarded here¹⁴.

We will understand non-profit organization financial liquidity as ***liquid assesses reserve, which may be used in order to carry out transaction without any time or financial loss*** resulting from normal operational activity (transactional liquidity) or because of unexpected needs (precautional liquidity) or because of attractive profit opportunities expectations (speculative liquidity)¹⁵.

¹² Rast B., (2000), *Household Liquidity – Why You Need It*, Business & Economic Review, January – March. Washam J., D. Davis (1998), *Evaluating ...*, op. cit. Henderson J.W., T. P. Maness (1989), *The financial analyst's ...*, op. cit. Michalski G., (2008b), *Decreasing operating risk in accounts receivable management: influence of the factoring on the firm value*, *Managing and Modelling of Financial Risk*, ISBN:978-80-248-1846-7, pp.130-137.

¹³ Henderson J.W., T. P. Maness (1989), *The financial analyst's ...*, op. cit. Lee C.F., J. E. Finnerty (1990), *Corporate finance ...*, op. cit. Michalski G., (2008c), *Operational risk in current assets investment decisions: Portfolio management approach in accounts receivable*, *Agricultural Economics-Zemedeľska Ekonomika*, ISSN:0139-570X, 54/1, pp.12-19.

¹⁴ Washam J., D. Davis (1998), *Evaluating ...*, op. cit. Henderson J.W., T. P. Maness (1989), *The financial ...*, op. cit. Lee C.F., J. E. Finnerty (1990), *Corporate finance ...*, op. cit. Michalski G., (2010a), *Planning optimal from the firm value creation perspective. Levels of operating cash investments*, *Romanian Journal of Economic Forecasting*, ISSN:1582-6163, 13/1, pp.198-214.

¹⁵ Washam J., D. Davis (1998), *Evaluating ...*, op. cit. Beck P.E. (1993), *The Option Value of Money*, Working Paper nr 93-15, November, Department of Economics, University of Delaware. Lee C.F., J. E. Finnerty (1990), *Corporate finance ...*, op. cit. Michalski G., (2008d), *Risk reduction in SME financing: JEREMIE fund influence on financial situation of small and middle enterprises*, *Managing and Modeling of Financial Risk*, ISBN:978-80-248-1846-7, pp.138-147.

The non-profit organization transactional and precautional liquidities on sufficient level enable prompt fulfillment of internal (salary payments etc.) and external creditors (suppliers payment etc.). The non-profit organization financial liquidity (operational and precautional) usually concerns operational activity and is not linked to investment activity. If it comes to enfeeblement or loss of operational and precautional liquidity in the non-profit organization, it menaces with¹⁶:

- lowering decision making elasticity
- deteriorating non-profit organization ability to set the organization mission
- higher foreign capital raising cost
- demobilization of donors
- worsening non-profit organization position.

In order to avoid such dangers, constant monitoring of non-profit organization financial liquidity is necessary, and then taking actions guaranteeing its economic-financial equilibrium.

3. Option liquidity value

Liquid resources resulting from the “speculative” liquidity demand may bring some benefits, but do not have to. As we can see, liquidity exceeding the every day transactions demand, provides the non-profit organization with an option to take up unexpected projects worth realization to better realization of the mission¹⁷. Keeping an access to liquidity that exceeds transactional needs, the non-profit organization is in possession of call option.

For example, if in the period when the non-profit organization possesses speculative liquidity sources, there appears purchase possibility of assesses which normal long-term value amounts to 5 million euros and at the given moment, they can be purchased for 2 million euros, the NPV of such a “project” will come to 3 million euros. If non-profit organization possesses the required money reserves, it will have benefit of 3 million euros. If the non-profit organization has not the access to additional liquidity – it will lose the possibility of investment project realization together with 3 million euros. Typical options have a value equal to the assesses value reduced by the price of realization and option price. If purchased assesses value exceeds the sum of those two quantities, speculative liquidity reserves generates profits equal to NPV of the project taken. It is about the situation while the speculative reserves are being used, i.e. when operational net cash flows is not sufficient to cover costs resulting from taking up the investment¹⁸. In other case, there is no profit from additional liquidity resources doming from speculative demand.

¹⁶ Scherr F.C. (1989), *Modern Working Capital Management. Text and Case.*, Prentice Hall, Englewood Clifff. Washam J., D. Davis (1998), *Evaluating...*, op. cit. Beck P.E. (1993), *The Option Value...*, op. cit. Michalski G., (2009), *Inventory management optimization as part of operational risk management, Economic Computation and Economic Cybernetics Studies and Re-search, ISSN:0424-267X, 43/4, pp.213-222.*

¹⁷ Washam J., D. Davis (1998), *Evaluating...*, op. cit. Beck P.E. (1993), *The Option Value...*, op. cit.. Michalski G., (2008c), *Operational risk in current...*, op. cit., pp.12-19.

¹⁸ Scherr F.C. (1989), *Modern Working Capital Management...*, op. cit. Washam J., D. Davis (1998), *Evaluating...*, op. cit. Beck P.E. (1993), *The Option Value...*, op. cit. Michalski G., (2009), *Inventory management optimization as part of operational risk management, Economic Computation and Economic Cybernetics Studies and Re-search, ISSN:0424-267X, 43/4, pp.213-222.*

Option liquidity value is dependent on 6 factors¹⁹. First of them is the present net value project value. If the potential project profitability increases, the value of project taking option will increase as well. Another factor determining liquidity value is the non-profit organization cash flow. If other factors are constant, option value will increase along with the decrease of operational cash flows level, and will fall together with those flows level increase.

It is because, along with increased operational cash flow level, the probability that the unexpected investment project cost will be covered with those flows increases too. Therefore, the probability of using additional liquidity linked to speculative demand is decreased. The third and the fourth factor determining option liquidity value is the cash flows and project cost changeability.

If operational cash flows changeability increases, we are faced with lower probability of using additional speculative liquidity – and therefore the option liquidity value decreases. The probability of using additional liquidity decreases along with increase in project cost changeability. Such increase in changeability is also accompanied with the diminishing project profitability.

The other factors influencing the option liquidity value are: interest rate and the correlation between operational cash flows and costs. If interest rate increases, present project value will decrease, and then – option liquidity value will decrease as well. But correlation between operational cash flows and costs is quite different. If this correlation increases, option liquidity value will increase too. It results from the fact that the probability of using to take up the investment some operational cash flows omitting liquid speculative reserves will be decreased then²⁰.

4. Setting the optimal liquidity level on the basis of its value

It is profitable to increase liquidity level but only to a specific optimal quantity. It results from the current market liquidity value (short-term deposit interest rate or short-term credit interest rate available for a non-profit organization). The point to which non-profit organization liquidity level may be increased at a benefits for incumbents of the non-profit organization, results from. From equalizing of market liquidity value and internal non-profit organization liquidity value (i.e. for $v_m = v_i$):

$$V_i(pp_{opt}) = v_m$$

where: $V_i(pp_{opt})$ – internal liquidity value corresponding to the optimal non-profit organization financial liquidity value.

After crossing his optimal liquidity level (pp_{opt}) increased liquidity (e.g. by abandoning to deposit the resources and/or liquidation of existing deposits, or taking short-term debt) is uneconomic for the non-profit organization. That unprofitability among other things results from the fact that marginal utility of higher financial liquidity level is lower than the cost of lost interests benefits. This cost arises as a result of the loss of open deposit interest linked

¹⁹ Beck P.E. (1993), *The Option Value...*, op. cit.

²⁰ Hill N.C., W. L. Sartoris (1995), *Short-Term Financial Management. Text and Casep.*, Prentice Hall, Englewood Clifff. Puxty A. G., J. C. Dodds (1992), *Financial Management Method and Meaning.*, Chapman and Hall, London.

profits in case of resignation from depositing the sources or unnecessarily incurred financial costs if the enterprise uses “unnecessary” outside financing. Optimal financial liquidity level (pp_{opt}) being a result of comparing the market liquidity level v_m , available for a non-profit organization and the internal liquidity value $v_i(pp_{opt})$.

The following conditions are implied by these fact: carrying out investment 2., taking up the credit 3., and equilibrium 4.

$$\text{carrying out investment condition: } v_i < v_m \quad (2)$$

$$\text{taking up the credit condition: } v_i > v_m \quad (3)$$

$$\text{equilibrium condition (optimal liquidity level): } v_i = v_m \quad (4)$$

where: v_i – internal financial liquidity value in the non-profit organization,

v_m – market financial liquidity value (available for the non-profit organization).

Example: X non-profit organization has a short-term credit of bank A at its disposal. v_m is the cost of this credit. If the non-profit organization management estimates that the internal liquidity value amounts to: v_i , it will delay taking the credit until the internal liquidity value v_i will be higher than market value v_m . When these two values become equal, enterprise financial liquidity value will reach the optimal value. But whereas v_i exceeds the v_m level, the firm will demand external financing.

Current finance management begins with determining the optimal liquidity level because it guarantees the best effects²¹. In order to determine his level information about internal liquidity value is needed (about the course of the curve representing it) and non-profit organization market liquidity value must be known too.

Financing of the liquidity has its cost depending on risk linked with liquidity strategies used by the financed organization. If we have higher risk, we will have higher cost of financing (cost of capital) and as result other financially measured effects of nonprofit organization.

Cost of financing of liquidity depends on kind of financing, next on level of liquidity in relation to sales and last but not least danger for nonprofit organization mission caused by risk exposition.

Choosing between various levels of liquidity in relation to sales, we use one from three strategies:

- restrictive strategy when for realization of the mission of nonprofit organization we use the most risky but the cheapest, the smallest as possible, level of liquidity,
- moderate strategy when for realization of the mission of nonprofit organization we moderate between risk and costs of holding liquidity, and
- flexible strategy when for realization of the mission of nonprofit organization we use the most expensive and rather high levels of working capital wanting to hedge the nonprofit organization before risk of shortage of liquidity.

Risk exposition depends on the kind of mission realized by nonprofit organization. If the risk exposition should be higher, then more smart is to choose more flexible and more conservative solutions to have better results. It works in opposite direction also. The safer

²¹ McMenamin J. (1999), *Financial Management – an introduction*, Routledge, London.

mission realized by nonprofit organization, the more restrictive and more aggressive strategies give better results.

Nonprofit organization property consists of total assets, i.e. fixed assets and current assets known also as liquid assets. We can see that property as fixed capital and working capital also. Generally working capital equal to current assets is defined as a sum of inventory, short term receivables (including all the accounts receivable for deliveries and services regardless of the maturity date) and short-term investments (cash and its equivalents) as well as short-term prepaid expenses²². Money tied in liquid assets serve nonprofit organization as protection against risk²³ but that money also are considered as an investment. It is because the nonprofit organization resigns from instant utilization of resources to realization of the mission for eventually future benefits that could be used for future realization of the mission²⁴.

Liquidity level is the effect of processes linked to the production organization or services realization. So, it results from the processes that are operational by nature and therefore correspond to the willingness to produce on time services that are probably desired by final incumbents of organization mission²⁵. It exerts influence mainly on the inventory level and

²² Mueller F.W., (1953), *Corporate Working Capital and Liquidity*, *The Journal of Business of the University of Chicago*, vol. 26, no. 3, Jul. 1953, p. 157-172. Graber P.J., *Assets*, (1948), *The Accounting Review*, vol. 23, no. 1, Jan. 1948, p. 12-16. Khoury N.T., K.V. Smith, P.I. MacKay, (1999), *Comparing Working Capital Practices in Canada, the United States and Australia*, *Revue Canadienne des Sciences de l'Administration*, vol. 16, no. 1, Mar. 1999, p. 53-57. Cote J.M., C.K. Latham, (1999), *The Merchandising Ratio: A Comprehensive Measure of Working Capital Strategy*, *Issues in Accounting Education*, vol. 14, no. 2, May 1999, p. 255-267.

²³ Merton R.C, A.F. Perold, (1999), *Theory of Risk Capital in Financial Firms*, in: D.H. Chew, *The New Corporate Finance. Where Theory Meets Practice*, McGraw-Hill, Boston 1999, p. 506. Lofthouse P., (2005), *Investment Management*, Wiley, Chichester 2005, p. 27-28. Parrino R., D.P. Kidwell, (2008), *Fundamentals of Corporate Finance*, Wiley, New York 2008, p. 224-233. Poteshman A., R. Parrino, M. Weisbach, (2005), *Measuring Investment Distortions when Risk-Averse Managers Decide Whether to Undertake Risky Project*, *Financial Management*, vol. 34, Spring 2005, p. 21-60.

²⁴ Levy H., D. Gunthorpe, (1999), *Introduction do Investments*, South-Western College Publishing, Cincinnati 1999, p. 6. Reilly F.K., (1992), *Investments*, The Dryden Press, Fort Worth 1992, p. 6. Fabozzi F.J., (1999), *Investment Management*, Prentice Hall, Upper Saddle River 1999, p. 214.

²⁵ Baumol W.J., (1952) *The Transactions Demand for Cash: An Inventory Theoretic Approach*, *Quarterly Journal of Economics*, nr 66, listopad 1952, p. 545-556. Beck P.E., D.R. Stockman (2005), *Money as Real Options in a Cash-in-Advance Economy*, *Economics Letters*, 2005, vol. 87, p. 337-345. Beranek W. (1963), *Analysis for Financial Decisions*, R. D. IRWIN, Homewood 1963. Emery G.W., (1988), *Positive Theories of Trade Credit*, *Advances in Working Capital Management*, JAI Press, vol. 1, 1988, p. 115-130. Gallinger G., A. J. Ifflander, (1986), *Monitoring Accounts Receivable Using Variance Analysis* *Financial Management*, zima 1986, 69-76. Holmstrom B., J.Tirole, (2001), *LAPM: a liquidity-based asset pricing model*, *Journal of Finance*, 2001, vol. 56, p. 1837-1867 {WP6673, National Bureau of Economic Research, Cambridge, 1998}. Kim C-P., D. C. Mauer, A. E. Sherman (1998), *The Determinants of...*, op. cit. Kim Y.H., J. C. Atkins, (1978), *Evaluating Investments in Accounts Receivable: A Wealth Maximizing Framework*, *Journal of Finance*, vol. 33, nr 2, 1978, p. 403-412. Lyn E. O., G.J. Papaioannou, (1996), *Liquidity and the Financing Policy of the Firm: an Empirical Test*, *Advances in Capital Management*, Londyn 1996, vol. 3, p. 65-83. Tobin J., (1958), *Liquidity Preference as Behavior Toward Risk*, *Review of Economic Studies*, 1958 r. nr 25, p. 65-86. Stone B. K., (1972), *The Use of Forecasts and Smoothing in Control - Limit Models for Cash Management*, *Financial Management*, 1972, p. 72-84. Miller M.H., D. Orr, (1966), *A Model of the Demand for Money by Firms*, *Quarterly Journal of Economics*, 1966, nr 80, p. 413-435. Miller T. W., B. K. Stone, (1996), *The Value of Short-Term Cash Flow Forecasting Systems*, *Advances in Working Capital Management*, JAI Press Inc., London 1996, vol. 3, p. 3-63. Myers P. C., R. G. Rajan, (1998), *The Paradox of Liquidity*, *Quarterly Journal of Economics* 113, nr 3, Cambridge, 1998, p. 733-771. Opler T., R. Stultz, R. Williamson, (1999), *The determinants and implications of corporate cash holdings*, *Journal of Financial Economics*, vol. 52, no. 1, 1999, p. 3-46.

belongs to the area of interest of operational management²⁶. Nevertheless, current assets are also the result of active customer winning and maintaining policy²⁷. Such policy is executed by finding an offer and a specific market where the product or service is sold. This policy consequences are reflected in the final products inventory level and accounts receivable in short term.

Among the motivating factors for investing in current assets, one may also mention uncertainty and risk. Due to uncertainty and risk, it is necessary to stock up circumspect (cautionary) cash, material and resources reserves that are inevitable in maintaining the continuity of production and preparing final services needed for realization of nonprofit organization mission.

Many organizations could act in a fast changing environment where the prices of needed materials and resources are subject to constant change. Other factors – like exchange rates for instance, are very changeable, too. It justifies keeping additional cash sources allotted for realization of built-in call options (American type) by buying the raw materials more cheap than the long term expected equilibrium price would suggest.

Nonprofit organization relationships with suppliers of materials, resources and services that are necessary to produce and sell final products usually result in adjourning the payments. Such situation creates accounts payable and employees (who are to some extent internal services providers). We will call such categories of obligations the non financial current obligations in order to differentiate between them and current obligations that result from taking on financial obligations, e.g. short term debt.

Required payments postponement exerts impact on reducing the demand for these nonprofit organization resources that are engaged in current asset financing. Current assets reduced by non financial current obligations (non financial short term obligations) are called net current assets. Net current assets are the resources invested by the company in current assets equated with the capital tied in these assets.

5. Operating cycle and cost of financing

Next it is necessary to consider the influence of time period of operating cycle on the rate of cost of capital financing non-profit organization and that influence on the its economic results.

In the first variant, one must assume that capital providers (lenders) seriously consider while defining their claims to rates of return the liquidity investment strategy chosen by the organization they invested in. Let us also assume that the correction SZ function graph connected with strategy choice could be even and linear (fig. 1).

²⁶ Peterson R., E.A. Silver, (1979), *Decision Systems for Inventory Management and Production Planning*, Wiley, New York 1979, p. 67-69. Orlicky J., (1975), *Material Requirements Planning*, McGraw-Hill, New York 1975, p. 17-19. Plossl G.W., (1985), *Production and Inventory Control, Principles and Techniques*, Prentice Hall, Englewood Cliffs 1985. P. 421-424.

²⁷ Bougheas P., Mateut P., Mizen, P. (2009), *Corporate trade credit and inventories: New evidence of a trade-off from accounts payable and receivable*, *Journal of Banking & Finance*, vol. 33, no. 2, 2009, p. 300-307.

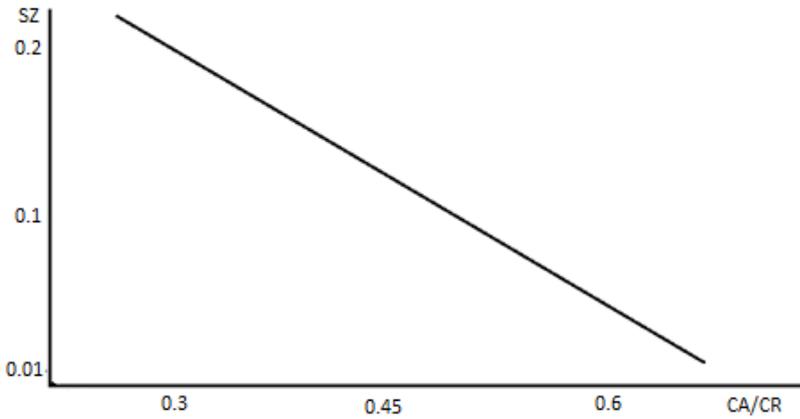


Figure 1. The shape of line of correction SZ as a function of CA/CR in the SZ1 variant.

Source: hypothetical data.

SZ variant. We assume here that capital providers take into consideration the nonprofit organization liquidity investment strategy while defining their claims as regards the rates of return. Restrictive strategy is perceived as more risky and therefore depending on investors risk aversion level, they tend to ascribe to the financed nonprofit organization applying restrictive strategy an additional expected risk premium. To put it simply, let us assume that ascribing the additional risk premium for applied liquidity investment strategy is reflected in the value of β risk coefficient. For each strategy, the β risk coefficient will be corrected by the corrective coefficient SZ corresponding to that specific strategy in relation to the CA/CR situation.

The risk free rate is 4%, and rate of return on market portfolio is 18%. If XYZ nonprofit organization is a representative of W sector for which the non-leveraged risk coefficient $\beta_u = 0.77$. On the basis of Hamada relation, we can estimate the equity cost rate that is financing that organization in case of each of the three strategies in the SZ1 variant.

$$\beta_l = \beta_u \times \left(1 + (1 - T) \times \frac{D}{E} \right) = 0.77 \times \left(1 + 0.81 \times \frac{0.4}{0.6} \right) = 1.19$$

Where: T – effective tax rate²⁸, D – organization financing capital coming from creditors (a sum of short term debt and long term debt $D=D_s+D_l$), E – organization financing capital coming from founders / owners of the organization, β – risk coefficient, β_u – risk coefficient for an assets of the non-profit organization that not use debt, β_l – risk coefficient for an organization that applying the system of financing by creditors capital (here we have both asset and financial risk).

For restrictive strategy, where CA/CR is 0.3; the SZ risk premium is 0.2:

²⁸ According to (Brigham 2000) even non-profit corporations that are exempt from taxation, and they have the right to issue tax-exempt debt but individual contributions to these non-profit organizations can be deducted from taxable income by the donor, so: “non-profit businesses have access to tax-advantaged contributed capital”.

$$\beta_{l_r}^* = \beta_u \times \left(1 + (1 - T) \times \frac{D}{E}\right) \times (1 + SZ) = 0.77 \times \left(1 + 0.81 \times \frac{0.4}{0.6}\right) \times 1.2$$

$$= 1.19 \times 1.2 = 1.43$$

Where: SZ – risk premium correction dependent on the liquidity investment strategy.

For moderate strategy, where CA/CR is 0.45 the SZ risk premium is 0.1:

$$\beta_{l_m}^* = \beta_u \times \left(1 + (1 - T) \times \frac{D}{E}\right) \times (1 + SZ) = 0.77 \times \left(1 + 0.81 \times \frac{0.4}{0.6}\right) \times 1.1$$

$$= 1.19 \times 1.1 = 1.31$$

For flexible strategy, where CA/CR is 0.6 the SZ risk premium is 0.01:

$$\beta_{l_f}^* = \beta_u \times \left(1 + (1 - T) \times \frac{D}{E}\right) \times (1 + SZ) = 0.77 \times \left(1 + 0.81 \times \frac{0.4}{0.6}\right) \times 1.01$$

$$= 1.19 \times 1.01 = 1.2$$

Using that information we can calculate cost of equity rates for each liquidity investment strategy. For restrictive strategy:

$$k_{e_r} = \beta_l \times (k_m - k_{RF}) + k_{RF} = 1.43 \times 14\% + 4\% = 24\%;$$

For moderate strategy:

$$k_{e_m} = \beta_l \times (k_m - k_{RF}) + k_{RF} = 1.31 \times 14\% + 4\% = 22.3\%;$$

And for flexible strategy:

$$k_{e_f} = \beta_l \times (k_m - k_{RF}) + k_{RF} = 1.2 \times 14\% + 4\% = 20.8\%.$$

Where: k – rate of return expected by capital donors and at the same time (from non-profit organization perspective) – cost of financing capital rate, k_e – for cost rate of the equity, k_{dl} – for long term debt rate, k_{ds} – for short term debt rate, k_m – for average rate of return on typical investment on the market, k_{RF} – for risk free rate of return whose approximation is an average profitability of treasury bills in the country where the investment is made.

In similar way, we can calculate the risk premiums for XYZ alternative rates. We know that long term debt rates differ for $9\% \times (1 + SZ)$ in relation of equity to long term debt. From that we can get long term debt cost rates for each alternative strategy. For restrictive strategy:

$$k_{dl_r} = k_{e_r} - 9\% \times 1.2 = 24\% - 10.8\% = 13.2\%;$$

For moderate strategy:

$$k_{dl_m} = k_{e_m} - 9\% \times 1.1 = 22.3\% - 9.9\% = 12.4\%;$$

And for flexible strategy:

$$k_{dl_f} = k_{e_f} - 9\% \times 1.01 = 20.8\% - 9.1\% = 11.7\%.$$

Next we can calculate the risk premiums for XYZ alternative cost of short term rates. We know that short term debt rates differ for $12\% \times (1 + SZ)$ in relation of cost of equity rates

to short term debt rates. From that we can get short term debt cost rates for each alternative strategy. For restrictive strategy:

$$k_{ds_r} = k_{e_r} - 12\% \times 1.2 = 24\% - 14.4\% = 9.6\%;$$

For moderate strategy:

$$k_{ds_m} = k_{e_m} - 12\% \times 1.1 = 22.3\% - 13.2\% = 9.1\%;$$

And for flexible strategy:

$$k_{ds_f} = k_{e_f} - 12\% \times 1.01 = 20.8\% - 12.1\% = 8.7\%.$$

As a result, cost of capital rate will amount to:

$$CC = \frac{E}{E + D_l + D_s} \times k_e + \frac{D_l}{E + D_l + D_s} \times k_{dl} \times (1 - T) + \frac{D_s}{E + D_l + D_s} \times k_{ds} \times (1 - T)$$

However, for each strategy – this cost rate will be on another level (calculations in the table 1. below).

Table 1. *Cost of capital and changes in economic results depending on the choice of liquidity investment strategy (before the crisis influence).*

Operating cycle	short	medium	long
Cash Revenues (CR)	2000	2080	2142,4
Fixed assets (FA)	1400	1445	1480
Current assets (CA)	600	936	1285
Total assets (TA) = Total liabilities (TL)	2000	2381	2765
Accounts payable (AP)	300	468	643
Capital invested (E+D _l +D _s)	1700	1913	2122
Equity (E)	680	765	849
Long-term debt (D _l)	340	383	424
Short-term debt (D _s)	680	765	849
EBIT share in CR	0.5	0.45	0.40
Earnings before interests and taxes (EBIT) ²⁹	1000	936	857
Free Cash Flows in 1 to n periods (FCF _{1..n})	1000	936	857
Initial Free Cash Flows in year 0 (FCF ₀)	-1700	-1913	-2122
SZ risk premium correction	0.2	0.1	0.01
Leveraged and corrected risk coefficient β _l	1.428	1.309	1.2019
Cost of equity rate (k _e)	23.99%	22.33%	20.83%
Long-term debt rate (k _{dl})	13.19%	12.43%	11.74%
Short-term debt rate (k _{ds})	9.59%	9.13%	8.71%

²⁹ Because of exempt of taxation, EBIT is equal to net operating profit after taxes (NOPAT).

Cost of capital (CC)	14.84%	13.90%	13.05%
Economic result of liquidity strategy	5037.77	4821.18	4443.17

Source: hypothetical data.

As it is shown in the table, rates of the cost of capital financing the non-profit organization are different for different approaches to liquidity investment. The lowest rate: CC = 13.1%; is observed in flexible strategy because that strategy is linked with the smallest level of risk but the highest economic effect is linked with restrictive strategy of investment in liquidity.

Cost of capital for restrictive strategy of investment in liquidity:

$$CC_r = \frac{680}{1700} \times 24\% + \frac{340}{1700} \times 13.2\% \times (1 - 0.19) + \frac{680}{1700} \times 9.6\% \times (1 - 0.19) = 14.8\%$$

Expected growth of economic result of liquidity strategy:

$$\Delta ER_r = FCF_0 + \frac{FCF_{1..n}}{CC} = -1700 + \frac{1000}{0.148} = 5057.$$

Cost of capital for moderate strategy of investment in liquidity:

$$CC_m = \frac{765}{1913} \times 22.3\% + \frac{383}{1913} \times 12.4\% \times (1 - 0.19) + \frac{765}{1913} \times 9.1\% \times (1 - 0.19) = 13.9\%;$$

Expected growth of economic result for that strategy:

$$\Delta ER_m = -1913 + \frac{936}{0.139} = 4821;$$

Cost of capital for flexible strategy of investment in liquidity:

$$CC_f = \frac{849}{2122} \times 20.8\% + \frac{424}{2122} \times 11.7\% \times (1 - 0.19) + \frac{849}{2122} \times 8.7\% \times (1 - 0.19) = 13.1\%;$$

Expected growth of economic result for flexible strategy:

$$\Delta ER_f = -2122 + \frac{857}{0.131} = 4420.$$

The expected after crisis changes will correct both the market liquidity value and the cost of capital rate. Both factors influence the target (and optimal) liquidity level for non-profit organization. That will result with more restrictive liquidity levels because of change in equilibrium point for intrinsic and market liquidity values³⁰. The cost of capital will be

³⁰ Michalski G., (2010b), *Strategiczne zarządzanie płynnością finansową w przedsiębiorstwie*, CeDeWu, Warszawa 2010, ISBN: 978-83-7556-167-8, p. 86-88. Rzeczycka A., (2006), *Zarządzanie środkami pieniężnymi w przedsiębiorstwie (in): Zarządzanie Finansami Przedsiębiorstwa*, G. Golawska-Witkowska, A.Rzeczycka, H.Zalewski, OW Branta, Bydgoszcz 2006, ISBN:9788360186428, p. 144, 340. Jaworski J., (2010), *Teoria i praktyka zarządzania finansami przedsiębiorstw*, CeDe-Wu, Warszawa 2010, ISBN:9788375562262, p. 366-368.

higher after crisis than before³¹ (Fernandez, Aguirreamalloa, Corres 2011, p. 4-7, Fernandez, Campo, 2010, p. 4-7, Fernandez 2008, p. 5-8).

6. Empirical data

Observation of NPO data can inform us about interesting customs of NPO managing teams. Generally, basing on the data collected from Opolskie area in Poland, for 2009 and 2010 years, we can see that average operating cycle for such group of organizations vary differ, in 2009 was short (about 5,89 days for 2009 data, with standard deviation = SD = 22,69 days) and in 2010 was shorter (about 3,59 days for 2010 data, with SD = 9,35 days)

Table 2. Operating cycle indicators for OPOLSKIE (POLAND) nonprofit organizations in 2009 and 2010.

	Operating cycel	Cash cycle	ROA	ROE
M 2009	5,89	-1,47	-169,96%	7,15%
SD 2009	22,69	33,55	1272,09%	533,11%
M 2010	3,59	-7,1	2,21%	1258,21%
SD 2010	9,35	50,34	120,35%	11463,45%

Where: SD = standard deviation, M = arithmetic mean

Source: own calculation for 80 selected nonprofits in OPOLSKIE [Bopp 2011]/

Selected data confirm that there is no hard link between operating cycle and ROA and ROE results. Operating cycle policy must be first of all a slave of the best realization of the mission nonprofit organization. The economic results are important, but the second or even third in the queue of the aims.

7. Conclusions

Depending on the non-profit organization business type, sensibility to liquidity financing method risk might vary a lot. Character of non-profit organization mission also determines the best strategy that should be chosen. The best choice is that with the adequate cost of financing and highest economic result of liquidity strategy. This depends on the structure of financing costs. The lower the financing cost, the higher effectiveness of non-profit organization activity measured by the economic result of liquidity strategy. The organization choosing between various solutions in liquidity needs to decide what level of risk is acceptable for her owners and capital suppliers. It was shown in solutions presented in that paper. If the risk exposition is higher, will be preferred more safe solution. That choice results with cost of financing consequences. In this paper, we considered that relation between risk and expected benefits from the liquidity decision and its results on financing costs for the nonprofit organization and economic result of liquidity strategy.

³¹ Fernandez P., Aguirreamalloa J., Avendaño L.C., (2011), *Market Risk Premium Used in 56 Countries in 2011: A Survey with 6,014 Answers* (April 25, 2011). Available at SSRN: <http://ssrn.com/abstract=1822182>, p. 4-7. Fernandez P., Del Campo B.J., (2010), *Market Risk Premium Used in 2010 by Professors: A Survey with 1,500 Answers* (May 13, 2010). Available at SSRN: <http://ssrn.com/abstract=1606563>, p. 4-7. Fernandez P., (2008), *Market Risk Premium Used in 2008 by Professors: A Survey with 1,400 Answers* (April 16, 2009). Available at SSRN: <http://ssrn.com/abstract=1344209>, p. 5-8.

Although, cash maintained in the non-profit organization is not a source of any interests and although the close to cash assesses together with credit lines available for non-profit organization are connected with resigning from realization of the part of incomes or costs, non-profit organizations could decide to maintain some liquidity reserves. And not only this resulting from transactional needs, but also from precautional and speculative reasons. Precautional liquidity results from a will to protect oneself against higher costs connected with impossible to predict negative economic events. It should be assessed from safeguard's point of view. However, investment in liquid reserves resulting from speculative demand for money may be assessed by usage a call option approach. In his paper, each of the above-mentioned aspects of liquidity was taken into consideration and presented. Pondering option liquidity value six factors most influencing it were pointed out. Further analysis of the liquidity value problem would aim At finding the credible methods of its determination. The non-profit organization liquidity value determination may often significantly contribute to the solution of working capital management problems.

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Summary

Resulting from cash cycle and operating cycle current assets maintained in nonprofit organizations are not a source of any interests and although the close to cash assesses together with credit lines available for enterprise are connected with resigning from realization of the part of incomes or costs, firms decide to maintain some liquidity reserves. And not only this resulting from transactional needs, but also from precautional and speculative reasons. In the article, each of these aspects of results of operating cycle was taken into consideration and presented from nonprofit perspective. Nonprofit liquidity value determination may often significantly contribute to the solution of working capital management problems in these organizations.

Keywords: cash cycle, operating cycle, intrinsic liquidity value, nonprofit financial management, financial liquidity.

JEL CLASSIFICATION: G31, L31, M21

WPLYW CYKLI GOTÓWKOWEGO I OPERACYJNEGO NA EFEKTYWNOŚĆ ORGANIZACJI NONPROFIT

Streszczenie

Rodzaj realizowanej przez organizację nonprofit misji wpływa na wrażliwość organizacji na ryzyko. Spośród innych czynników, tego rodzaju ryzyko, jest także rezultatem długości cyklu gotówkowego i cyklu operacyjnego modelujących poziom inwestycji w płynność oraz wynikająca z nich potrzeba finansowania. Wyższej ekspozycji na ryzyko, towarzyszyć powinny dłuższe cykle. Organizacja nonprofit wybierając między różnymi dostępnymi jej rozwiązaniami w zakresie długości cyklu gotówkowego i cyklu operacyjnego kierować się powinna interesem swoich donatorów oraz dostawców kapitału finansującego realizację misji. Artykuł prezentuje w jaki sposób w opinii autora decyzyje w zakresie długości cykli gotówkowego i operacyjnego wpływają

mogą na ryzyko organizacji i jej ekonomicznych rezultatów w czasie realizacji głównej misji działania organizacji nonprofit.

Słowa kluczowe: Cykl gotówki, Cykl operacyjny, Wartość płynności, zarządzanie finansami NPO, płynność finansowa

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