



Munich Personal RePEc Archive

# **Crisis Caused Changes in Intrinsic Liquidity Value in Non-Profit Institutions**

Michalsky, Grzegorz

Wroclaw University of Economics

1 December 2012

Online at <https://mpra.ub.uni-muenchen.de/43397/>

MPRA Paper No. 43397, posted 24 Dec 2012 03:49 UTC

# **Crisis Caused Changes in Intrinsic Liquidity Value in Nonprofit Institutions<sup>1</sup>**

Grzegorz Michalski PhD  
Wroclaw University of Economics  
Komandorska 118/120, p.Z-2, KFPiZW  
PL53-345 Wroclaw, Poland  
<http://michalskig.com/>  
[Grzegorz.Michalski@ue.wroc.pl](mailto:Grzegorz.Michalski@ue.wroc.pl)  
Ph. +48503452860

**ABSTRACT:** Liquid assets which nonprofit institutions holds are not a source of any special interests and although the close to cash assesses together with credit lines available for nonprofit institution are connected with resigning from realization of the part of incomes or costs, nonprofit institutions decide to hold some liquidity reserves. And not only this resulting from transactional needs, but also from precautional and speculative reasons. Investment in liquid reserves resulting from speculative demand for money may be assessed by usage of capital budgeting methods. In the paper, each of these aspects of liquidity 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 institutions.

**KEY WORDS:** Intrinsic liquidity value, Nonprofit financial management, financial liquidity

**JEL CLASSIFICATION:** G31, L31, M21

## **Introduction**

Social economy institutions can work as taxed commercial businesses or as non-taxed nonprofit institutions (Michalski 2011, Lane, Longstreth, Nixon, 2001, p. 1-17). The advantage of commercially driven institutions are more effective managed than government controlled ones (Nowicki 2004, p. 29). In that paper the nonprofit institution liquidity management model is analyzed. That is done in the context of three basic different situations by comparison of: non-taxed government controlled institution, non-taxed nonprofit institution and taxed commercially managed business (Berger, 2008, p. 46-

---

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

47). The after-crisis weaker economic situation, cause that many nonprofit institutions, 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 institutions face specific incumbent needs, which are the result of higher unemployment and other similar factors (Zietlow, 2010, p. 238-248).

The nonprofit institution differ from for-profit institutions, because their basic aim, is not the maximization of institution value, but the best realization of their mission (Zietlow, Hankin, Seidner, 2007, p. 6-7). But for assessment of financial decision nonprofit institution, should be used analogous rules like for for-profit institutions (Brigham, Gapenski, 2000, p. 524-536). The rules teach, 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 nonprofit institution mission. Cost of financing net liquid assets (working capital) depends on the risk included to the institution strategy of financing and/or investment in liquidity.

The value which could be attributed to liquidity for nonprofit institution depends on the current liquidity needs of the nonprofit institution. Managing team in nonprofit institutions have a lot of important reasons for which their institution should possess some high liquid resources reserves even if current interest rate is positive (Kim 1998). The reasons may be classified into three main groups: (1) transactional reason as the result of the necessity of current expenses financing, (2) precautional reason as the result of fear of future cash flows uncertainty, (3) so called speculative reason, as the result of the future interest rate level uncertainty.

Liquid assets like money resources in institution safe is not a source of any or small interests. Maintaining liquidity reserve in the nonprofit institution is a result of belief that the value of lost income on account of interest will be recompensed by the benefits for incumbents of nonprofit institution (Kim 1998, Lee 1990). The hypothetical benefits are from higher profitability that institution mission will be completed, thanks adequate liquidity level. Then institutions 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 all (Henderson 1989, p. 95; Kim 1998, Lee 1990, p. 540).

For institution 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 nonprofit institution may be increased at a profit (Washam 1989, p.28; Henderson 1989, Lee 1990). 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 nonprofit institution liquidity level.

After crossing this *critical liquidity level*, the Treasury Bonds sale or taking out a short-term debt is unprofitable for the nonprofit institution. The marginal benefit from higher cash reserve is lower than the cost of interests lost (Rast 2000, Washam 1989; Henderson 1989).

### **Nonprofit institutions liquidity definition**

In economic literature liquidity is defined in many various ways. It is understood as an *nonprofit institution solvency* i.e. ability to regulate its obligations that result from usual transactions, unexpected events or situations enabling “bargain” purchase of goods (Henderson 1989, Lee 1990). 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 nonprofit institution 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 nonprofit institution assesses market. It means that the ability to regulate nonprofit institution obligations (short-term solvency) is dependent on the capacity of the market of assesses constituting nonprofit institution reserves (or more generally: its property). Financial liquidity is therefore an internal category of the nonprofit institution, influenced both by the managing team and other factors occurring inside the

nonprofit institution or in its surroundings. The long-term liquidity is totally disregarded here (Washam 1989, Henderson 1989, Lee 1990).

We will understand nonprofit institution 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) (Washam 1989, Beck 1993, Lee 1990).

The nonprofit institution transactional and precautional liquidities on sufficient level enable prompt fulfillment of internal (salary payments etc.) and external creditors (suppliers payment etc.). The nonprofit institution 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 nonprofit institution, it menaces with (Scherr 1989, Washam 1989, Beck 1993): (a) lowering decision making elasticity, (b) deteriorating nonprofit institution ability to set the institution mission, (c) higher foreign capital raising cost, (d) demobilization of donors, (e) worsening nonprofit institution position.

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

### **Option value of liquidity in nonprofit institutions**

Liquid resources resulting from the “speculative” liquidity demand may bring some benefits, but do not have to. As we can see, liquidity exceeding the everyday transactions demand, provides the nonprofit institution with an option to take up unexpected projects worth realization to better realization of the mission (Washam 1989, Beck 1993). Keeping an access to liquidity that exceeds transactional needs, the nonprofit institution is in possession of call option.

If in the period when the nonprofit institution possesses speculative liquidity sources, there appears purchase possibility of assesses which normal long-term value amounts to 8 thousand euros and at the given moment, they can be purchased for 3 thousand euros, the NPV of such a “project” will come to 5 thousand euros. If nonprofit institution possesses the required money reserves, it will have benefit of 5 thousand euros. If the nonprofit institution has not the access to additional liquidity – it will lose the possibility of investment project realization together with 5 thousand 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 investment (Scherr 1989, Washam 1989, Beck 1993). In other case, there is no profit from additional liquidity resources coming from speculative demand.

Option liquidity value is dependent on 6 factors (Beck 1993). 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 nonprofit institution 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 then (Hill 1995, Puxty 1992).

### **Nonprofit institution optimal liquidity level fixed on the basis of conception of value of liquidity**

Increasing liquidity level has sense only to a specific optimal quantity (Michalski 2011b). It results from the current market liquidity value (short-term deposit interest rate or short-term credit interest rate available for a nonprofit institution). The point to which nonprofit institution liquidity level may be increased at a benefits for incumbents of the nonprofit institution, results from. From equalizing of market liquidity value and internal nonprofit institution 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 nonprofit institution 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 nonprofit institution. 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 profits in case of resignation from depositing the sources or unnecessarily incurred financial costs if the nonprofit institution uses “unnecessary” outside financing. Optimal financial liquidity level ( $pp_{opt}$ ) being a result of comparing the market liquidity level  $v_m$ , available for a nonprofit institution 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.

$$\text{carrying out investment condition: } v_i < v_m \tag{2}$$

$$\text{taking up the credit condition: } v_i > v_m \tag{3}$$

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

where:  $v_i$  – internal financial liquidity value in the nonprofit institution,  
 $v_m$  – market financial liquidity value (available for the nonprofit institution).

Example: Nonprofit institution has a short-term credit of bank at its disposal.  $v_m$  is the cost of this credit. If the nonprofit institution management estimates that the internal liquidity value amounts to:  $v_p$ , 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, nonprofit institution financial liquidity value will reach the optimal value. But whereas  $v_i$  exceeds the  $v_m$  level, the nonprofit institution will demand external financing.

Current finance management begins with determining the optimal liquidity level because it guarantees the best effects (McMenamin 1999). In order to determine his level information about internal liquidity value is needed (about the course of the curve representing it) and nonprofit institution 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 institution. If we have higher risk, we

will have higher cost of financing (cost of capital) and as result other financially measured effects of nonprofit institution.

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 institution mission caused by risk exposition.

Choosing between various levels of liquidity in relation to sales, we use one from three strategies: (RES) restrictive strategy when for realization of the mission of nonprofit institution we use the most risky but the cheapest, the smallest as possible, level of liquidity, (MOD) moderate strategy when for realization of the mission of nonprofit institution we moderate between risk and costs of holding liquidity, and (FLX) flexible strategy when for realization of the mission of nonprofit institution we use the most expensive and rather high levels of working capital wanting to hedge the nonprofit institution before risk of shortage of liquidity.

Exposition on the risk depends on the kind of mission realized by nonprofit institution. 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 mission realized by nonprofit institution, the more restrictive and more aggressive strategies give better results.

Nonprofit institution 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 expenses (Mueller 1953; Graber 1948; Khoury 1999; Cote 1999). Money tied in liquid assets serve nonprofit institution as protection against risk (Merton 1999, p. 506; Lofthouse 2005, p. 27-28; Parrino 2008, p. 224-233, Poteshman 2005, s. 21-60) but that money also are considered as an investment. It is because the nonprofit institution resigns from instant utilization of resources to realization of the mission for eventually future benefits that could be used for future realization of the mission (Levy 1999, p. 6; Reilly 1992, p. 6; Fabozzi 1999, p. 214).

Level of liquid assets is the effect of processes linked to the production institution or services realization (Nita 2011). 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 institution mission (Michalski 2012, Baumol 1952, Beck 2005, Beranek 1963, Emery 1988, Gallinger 1986, Holmstrom 2001, Kim 1998, Kim 1978, Lyn

1996, Tobin 1958, Stone 1972, Miller 1966, Miller 1996, Myers 1998, Opler 1999). It exerts influence mainly on the inventory level and belongs to the area of interest of operational management (Michalski 2011c, Peterson 1979, s. 67-69; Orlicky 1975, s.17-19; Plossl 1985, s. 421-424). Nevertheless, current assets are also the result of active customer winning and maintaining policy (Bougheas 2009). 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 institution mission.

Many institutions 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 institution 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 institution 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.

### **Working capital investment strategies and nonprofit institution efficiency**

Next it is necessary to consider the influence of each strategy of investment in the liquidity on the rate of cost of capital financing nonprofit institution 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 institution they invested in. Let us also

assume that the correction SZ function graph connected with strategy choice could be even and linear (figure 1).

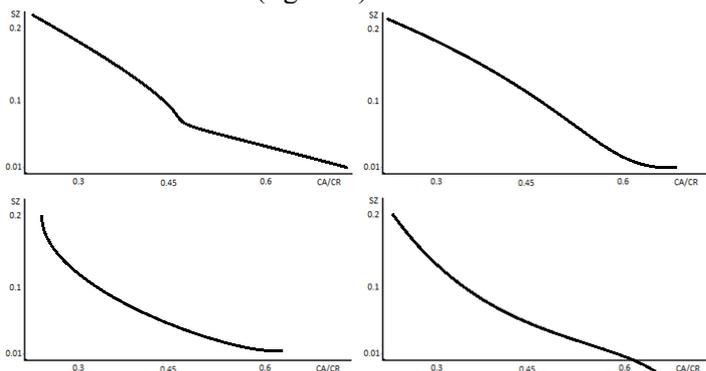


Figure 1. Hypothetical shapes of line of correction SZ as a function of CA/CR in the SZ1 variant.

Source: hypothetical data

**SZ1 variant.** Capital providers take into consideration the nonprofit institution 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 institution 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  $\beta$  risk coefficient. For each strategy, the  $\beta$  risk coefficient will be corrected by the corrective coefficient SZ corresponding to that specific strategy in relation to the CA/CR situation.

The basic risk free rate is 4,5%, and rate of return on market portfolio is 10%. If analyzed nonprofit institution is a representative of sector for which the non-leveraged risk coefficient  $\beta_u = 0,6$ . On the basis of so called Hamada relation, we can estimate the equity cost rate that is financing that institution in case of each of the three strategies in the SZ1 variant.

$$\beta_l = \beta_u \times \left( 1 + (1 - T) \times \frac{D}{E} \right) = 0,6 \times \left( 1 + 0,81 \times \frac{0,4}{0,6} \right) = 0,924$$

Where: T – effective tax rate<sup>2</sup>, D – institution financing capital coming from creditors (a sum of short term debt and long term debt  $D=D_s+D_l$ ), E – institution financing capital coming from founders / owners of the institution,

<sup>2</sup> According to (Brigham 2000) even **nonprofit** corporations that are exempt from taxation, and they have the right to issue tax-exempt debt but individual contributions to these **nonprofit** organizations can be deducted from taxable income by the donor, so: “**nonprofit** businesses have access to tax-advantaged contributed capital”.

$\beta$  – risk coefficient,  $\beta_u$  – risk coefficient for an assets of the nonprofit institution that not use debt,  $\beta_l$  – risk coefficient for an institution that applying the system of financing by creditors capital (here we have both asset and financial risk).

For each individual strategy, where CA/CR is 0,3 or 0,45 or 0,6; the SZ risk premium is 0,2 or ),1 or 0,01:

$$\beta_{l...}^* = \beta_u \times \left(1 + (1 - T) \times \frac{D}{E}\right) \times (1 + SZ)$$

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

Using that information is possible the calculation of the cost of equity rates for each liquidity investment strategy:

$$k_{e...} = \beta_l \times (k_m - k_{RF}) + k_{RF}$$

where:  $k$  – rate of return expected by capital donors and at the same time (from nonprofit institution 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 alternative rates. Next there is possible to calculate the risk premiums for alternative cost of short term rates. 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).

Liquidity investment strategy	RES	$\Delta$	MOD	$\Delta$	FLX
Cash Revenues (CR)	1500	$\nearrow$	1560	$\nearrow$	1607
Fixed assets (FA)	1200	$\nearrow$	1238	$\nearrow$	1268
Current assets (CA)	450	$\nearrow$	702	$\nearrow$	964
Total assets (TA) = Total liabilities (TL)	1650	$\nearrow$	1940	$\nearrow$	2232
Accounts payable (AP)	225	$\nearrow$	351	$\nearrow$	482

Capital invested (E+D <sub>l</sub> +D <sub>s</sub> )	1425	↗	1589	↗	1750
Equity (E)	855	↗	954	↗	1050
Long-term debt (D <sub>l</sub> )	285	↗	318	↗	350
Short-term debt (D <sub>s</sub> )	285	↗	318	↗	350
EBIT share in CR	0,5	↘	0,45	↘	0,40
Earnings before interests and taxes (EBIT) <sup>3</sup>	750	↘	702	↘	643
Free Cash Flows in 1 to n periods (FCF <sub>1..n</sub> )	750	↘	702	↘	643
Initial Free Cash Flows in year 0 (FCF <sub>0</sub> )	-1425	↘	-1589	↘	-1750
SZ risk premium correction	0,2	↘	0,1	↘	0,01
Leveraged and corrected risk coefficient $\beta_l$	1,1	↘	1,02	↘	0,93
Cost of equity rate (k <sub>e</sub> )	10,6%	↘	10,1%	↘	9,6%
Long-term debt rate (k <sub>dl</sub> )	7,2%	↘	6,9%	↘	6,7%
Short-term debt rate (k <sub>ds</sub> )	6,5%	↘	6,4%	↘	6,2%
Cost of capital (CC)	8,6%	↘	8,2%	↘	7,9%
Economic result of liquidity strategy	<b>7312</b>	↘	6967	↘	6422

Source: hypothetical data

As it is shown in the table, rates of the cost of capital financing the nonprofit institution are different for different approaches to liquidity investment. The lowest rate: CC = 7,9%; 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 but the best result is for restrictive strategy: **7312**.

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 nonprofit institution. That will result with more restrictive liquidity levels because of change in equilibrium point for intrinsic and market liquidity values (Michalski 2010, p. 86-88, Golawska-Witkowska, Rzczycka, Zalewski, 2006, p. 144, Jaworski, 2010, p. 366-368). The cost of capital will be higher after crisis than before (Fernandez, Aguirreamalloa, Corres 2011, p. 4-7, Fernandez, Campo, 2010, p. 4-7, Fernandez 2008, p. 5-8). That will result with changes in efficiency of liquidity policy for nonprofit institutions (as shown in Table 2).

<sup>3</sup> Because of exempt of taxation, EBIT is equal to net operating profit after taxes (NOPAT).

Table 2. Cost of capital and changes in economic results depending on the choice of liquidity investment strategy (after the crisis influence).

Liquidity investment strategy	RES	Δ	MOD	Δ	FLX
Cash Revenues (CR)	1400	↗	1456	↗	1500
Fixed assets (FA)	1120	↗	1156	↗	1184
Current assets (CA)	420	↗	655	↗	900
Total assets (TA) = Total liabilities (TL)	1540	↗	1811	↗	2083
Accounts payable (AP)	210	↗	328	↗	450
Capital invested (E+D <sub>l</sub> +D <sub>s</sub> )	1330	↗	1483	↗	1634
Equity (E)	798	↗	890	↗	980
Long-term debt (D <sub>l</sub> )	266	↗	297	↗	327
Short-term debt (D <sub>s</sub> )	266	↗	297	↗	327
EBIT share in CR	0,5	↘	0,45	↘	0,40
Earnings before interests and taxes (EBIT)	700	↘	655	↘	600
Free Cash Flows in 1 to n periods (FCF <sub>1..n</sub> )	700	↘	655	↘	600
Initial Free Cash Flows in year 0 (FCF <sub>0</sub> )	-1330	↘	-1483	↘	-1634
SZ risk premium correction	0,2	↘	0,1	↘	0,01
Leveraged and corrected risk coefficient $\beta_l$	1,1	↘	1	↘	0,93
Cost of equity rate (k <sub>e</sub> )	21,6%	↘	20,3%	↘	19%
Long-term debt rate (k <sub>dl</sub> )	15,2%	↘	14,2%	↘	13,3%
Short-term debt rate (k <sub>ds</sub> )	13,2%	↘	12,5%	↘	11,9%
Cost of capital (CC)	17,6%	↘	16,5%	↘	15,5%
Economic result of liquidity strategy	<b>2650</b>	↘	2494	↘	2244

Source: hypothetical data

As it is shown in table 2, the after crisis changes influence the efficiency of the liquidity investment of nonprofit institution. Of course that change depend on nonprofit institution risk sensitivity. Depending on their risk sensitivity, an additional risk premium for a nonprofit institution that implemented this type of strategy should be used. As presented on figure 2., we have stronger risk sensitivity than in previous situation.

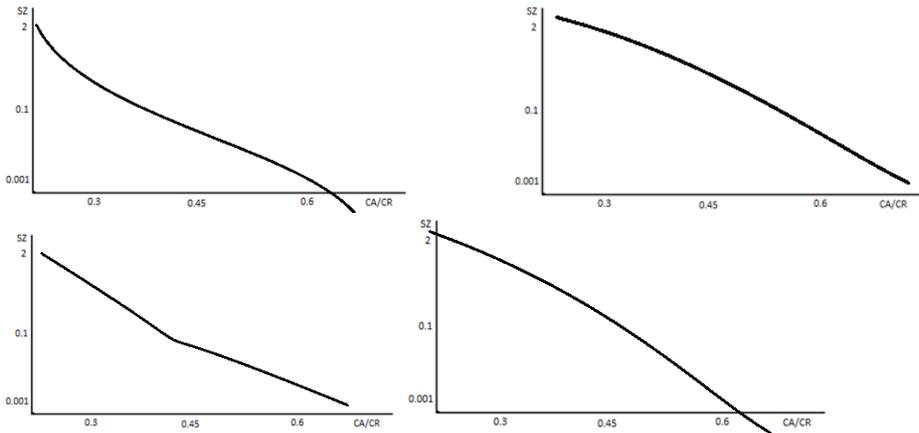


Figure 2. Hypothetical shapes of line of correction SZ as a function of CA/CR in the SZ2 variant.

Source: hypothetical data.

In the table 3. There are calculations for that variant. For each strategy the cost of capital rate  $CC$  will be on another level.

Table 3. Cost of capital and changes in economic results depending on the choice of liquidity investment strategy (before the crisis influence).

Liquidity investment strategy	RES	MOD	FLX
Cash Revenues (CR)	1500	1560	1607
Fixed assets (FA)	1200	1238	1268
Current assets (CA)	450	702	964
Total assets (TA) = Total liabilities (TL)	1650	1940	2232
Accounts payable (AP)	225	351	482
Capital invested ( $E+D_l+D_s$ )	1425	1589	1750
Equity (E)	855	954	1050
Long-term debt ( $D_l$ )	285	318	350
Short-term debt ( $D_s$ )	285	318	350
EBIT share in CR	0,5	0,45	0,4
Earnings before interests and taxes (EBIT)	750	702	643
Free Cash Flows in 1 to n periods ( $FCF_{1..n}$ )	750	702	643
Initial Free Cash Flows in year 0 ( $FCF_0$ )	-1425	-1589	-1750
SZ risk premium correction	2	0,1	0,001
Leveraged and corrected risk coefficient $\beta_l$	2,8	1	0,93
Cost of equity rate ( $k_e$ )	19,8%	10,1%	9,6%

Long-term debt rate ( $k_{dl}$ )	14,2%	6,9%	6,7%
Short-term debt rate ( $k_{ds}$ )	9,9%	6,4%	6,2%
Cost of capital (CC)	15,7%	8,2%	7,8%
Economic result of liquidity strategy	3340	<b>6967</b>	6457

Source: hypothetical data

In similar way we can calculate for situation with higher after crisis cost of capital rates levels. The result is presented in table 4.

Table 4. Cost of capital and changes in economic results depending on the choice of liquidity investment strategy (after the crisis influence).

Liquidity investment strategy	RES	MOD	FLX
Cash Revenues (CR)	1400	1456	1500
Fixed assets (FA)	1120	1156	1184
Current assets (CA)	420	655	900
Total assets (TA) = Total liabilities (TL)	1540	1811	2083
Accounts payable (AP)	210	328	450
Capital invested ( $E+D_l+D_s$ )	1330	1483	1634
Equity (E)	798	890	980
Long-term debt ( $D_l$ )	266	297	327
Short-term debt ( $D_s$ )	266	297	327
EBIT share in CR	0,5	0,45	0,4
Earnings before interests and taxes (EBIT)	700	655	600
Free Cash Flows in 1 to n periods ( $FCF_{1..n}$ )	700	655	600
Initial Free Cash Flows in year 0 ( $FCF_0$ )	-1330	-1483	-1634
SZ risk premium correction	2	0,1	0,001
Leveraged and corrected risk coefficient $\beta_l$	2,8	1	0,93
Cost of equity rate ( $k_e$ )	47%	20,3%	18,9%
Long-term debt rate ( $k_{dl}$ )	40%	14,2%	13,2%
Short-term debt rate ( $k_{ds}$ )	27%	12,5%	11,8%
Cost of capital (CC)	39%	16,6%	15,4%
Economic result of liquidity strategy	473	<b>2494</b>	2269

Source: hypothetical data

### Conclusions

Depending on the nonprofit institution business type, sensibility to liquidity financing method risk might vary a lot. Character of nonprofit institution 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.

Figure 3. Model influence of the current assets investing strategy choice on the key performance indicators in nonprofit organization.

<b>Restrictive</b>		<b>Flexible</b>
↘	<b>CR</b>	↗
↘	<b>CE</b>	↗
↗↘	<b>FCF</b>	↗↘
↗	<b><math>\beta</math></b>	↘
↗	<b>CC</b>	↘
↗↘,↗	NPO performance	↗↘,↘

Source: own proposal.

where: NPO – nonprofit institution

This depends on the structure of financing costs. The lower the financing cost, the higher effectiveness of nonprofit institution activity measured by the economic result of liquidity strategy. The institution 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 institution and economic result of liquidity strategy.

Although, liquid assets maintained in the nonprofit institution is not a source of any special interests and although the close to cash assesses together with credit lines available for nonprofit institution are connected with resigning from realization of the part of incomes or costs, nonprofit institutions 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 nonprofit institution liquidity value determination may often significantly contribute to the solution of working capital management problems.

### References

- 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. (1993), The Option Value of Money, Working Paper nr 93-15, November, Department of Economics, University of Delaware.
- 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.
- Berger P. (2008), *Fundamentals of Health Care Financial Management*, Wiley, New York 2008, p. 46-47.
- 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.
- Brigham E.F. (2006), *Financial Management* 11e, [http://www.swlearning.com/finance/brigham/theory11e/web\\_chapters/bri5968\\_9\\_ch30\\_web.pdf](http://www.swlearning.com/finance/brigham/theory11e/web_chapters/bri5968_9_ch30_web.pdf) (last visit: April 2011).
- Brigham E.F., Gapenski L.C. (2000), *Zarządzanie finansami*, PWE, Warszawa, 2000, p. 524-536.
- 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.
- Emery G.W., (1988), *Positive Theories of Trade Credit*, *Advances in Working Capital Management*, JAI Press, vol. 1, 1988, p. 115-130.
- Fabozzi F.J., (1999), *Investment Management*, Prentice Hall, Upper Saddle River 1999.
- 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>

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>

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>

Gallinger G., A. J. Ifflander, (1986), Monitoring Accounts Receivable Using Variance Analysis Financial Management, zima 1986, 69-76.

Graber P.J., Assets, (1948), The Accounting Review, vol. 23, no. 1, Jan. 1948, p. 12-16.

Henderson J.W., T. P. Maness (1989), The financial analyst's deskbook: A Cash flow approach to liquidity, Van Nostrand Reinhold, New York

Hill N.C., W. L. Sartoris (1995), Short-Term Financial Management. Text and Case., Prentice Hall, Englewood Clifff.

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}.

Jaworski J., (2010), Teoria i praktyka zarządzania finansami przedsiębiorstw, CeDeWu, Warszawa 2010, ISBN:9788375562262, p. 362, 364, 366, 367, 369, 371, 372, 385, 496.

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.

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.

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.

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

Lee C.F., J. E. Finnerty (1990), Corporate finance. Theory, method and applicationp. HBJ Publishers, San Diego.

Levy H., D. Gunthorpe, (1999), Introduction do Investments, South-Western College Publishing, Cincinnati 1999.

Lofthouse P., (2005), Investment Management, Wiley, Chichester 2005.

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.

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

- 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.
- Michalski G., (2004), Leksykon zarządzania finansami, C.H. Beck, Warszawa 2004.
- Michalski G., (2010), Strategiczne zarządzanie płynnością finansową w przedsiębiorstwie, CeDeWu, Warszawa 2010, ISBN: 978-83-7556-167-8, p. 88.
- Michalski G., (2011), Operating cycle and nonprofit institutions efficiency, Journal of academic research in economics, 3 (3), 2011, ISSN 2066-0855, p. 584-598.
- Michalski G., (2011b), Influence of the post-crisis situation on cost of capital and intrinsic liquidity value in non-profit organizations, International journal of management and social sciences (IJMSS), vol. 1 (1), p. 67-78.
- Michalski G., (2011c), Efektywność inwestycji w zapasy w opodatkowanych i nieopodatkowanych organizacjach, [w:] Zarządzanie finansami. Inwestycje, wycena przedsiębiorstw, zarządzanie wartością, D. Zarzecki [red.], Zeszyty Naukowe, Uniwersytet Szczeciński nr 639, Szczecin.
- Michalski G., (2012), Poziom zaangażowania kapitału w zapasach w organizacjach non-profit, Zeszyty naukowe Uniwersytetu Szczecińskiego nr 690, Finanse, rynki finansowe, ubezpieczenia nr 51, Zarządzanie finansami: inwestycje, wycena przedsiębiorstw, zarządzanie wartością, D. Zarzecki [red.], p. 203-209.
- 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., Londyn 1996, vol. 3, p. 3-63.
- 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.
- Myers P. C., R. G. Rajan, (1998), The Paradox of Liquidity, Quarterly Journal of Economics 113, nr 3, Cambridge, 1998, p. 733-771.
- Nita B., Syntetyczny wskaźnik płynności finansowej w ujęciu statycznym w kontekście zapotrzebowania na kapitał obrotowy netto, [w:] Rachunek kosztów i pomiar dokonań, E. Nowak, M. Nieplowicz [red.], Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu nr 182, Wrocław, ISSN: 1899-3192, p. 364-374.
- Nowicki M., (2004), The Financial Management of Hospitals and Healthcare Organizations, Health Administration Press, New York 2004., p. 29
- Opler T., R. Stulz, R. Williamson, (1999), The determinants and implications of corporate cash holdings, Journal of Financial Economics, vol. 52, no. 1, 1999, p. 3-46.

- Orlicky J., (1975), *Material Requirements Planning*, McGraw-Hill, New York 1975.
- Parrino R., D.P. Kidwell, (2008), *Fundamentals of Corporate Finance*, Wiley, New York 2008.
- Peterson R., E.A. Silver, (1979), *Decision Systems for Inventory Management and Production Planning*, Wiley, New York 1979.
- Plossl G.W., (1985), *Production and Inventory Control, Principles and Techniques*, Prentice Hall, Englewood Cliffs 1985.
- 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.
- Puxty A. G., J. C. Dodds (1992), *Financial Management Method and Meaning*, Chapman and Hall, London.
- Rast B., (2000), *Household Liquidity – Why You Need It*, *Business & Economic Review*, Januarz – March.
- Reilly F.K., (1992), *Investments*, The Dryden Press, Fort Worth 1992.
- 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.
- Scherr F.C. (1989), *Modern Working Capital Management. Text and Casep.*, Prentice Hall, Englewood Cliff.
- Šoltés, V., Gavurová, B., Balloni, A. J., Pavličková, V. (2012), *ICT in Medical Institutions in Selected Regions of the Slovak Republic. Research report of the GESITI Project: An Evaluation of the Management of the Information Systems (IS) and Technologies (IT) in Hospitals*. Center for Information Technology Renato Archer – Ministry of Science, Technology and Innovation, Brasil.
- Stone B. K., (1972), *The Use of Forecasts and Smoothing in Control - Limit Models for Cash Management*, *Financial Management*, 1972, p. 72-84.
- Tobin J., (1958), *Liquidity Preference as Behavior Toward Risk*, *Review of Economic Studies*, 1958 r. nr 25, p. 65-86.
- Washam J., D. Davis (1998), *Evaluating Corporate Liquidity*, *TMA Journal*, March / April, vol. 18, nr 2.
- 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.
- Zietlow J., J.A.Hankin, A.G.Seidner, (2007), *Financial Management for Nonprofit Institutions*, Wiley, NewYork, 2007, p. 6-7;