



OPTIMAL STRATEGY OF LIQUIDITY FINANCING FOR NON-PROFIT ORGANIZATIONS¹

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ABSTRACT. Independently of the kind of a realized mission, sensitivity on risk, which is a result of decision about liquidity financing policy, is on another level. The kind of non-profit organization influences the best strategy choice. If an exposition on liquidity strategy risk is greater, the more conservative will be the strategy. If the exposition on that risk is smaller, the more aggressive will be the net working capital strategy. The paper shows how decisions about liquidity strategy inflow the risk of the non-profit organizations and its economical results during realization of main mission.

Introduction

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 consequently 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 smarter 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 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 expenses [Mueller 1953; Graber 1948; Khoury 1999; Cote 1999]. Money tied in liquid assets serve nonprofit organization 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 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 mission [Levy 1999, p. 6; Reilly 1992, p. 6; Fabozzi 1999, p. 214].

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 mission [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 [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. These 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 cheaper 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.

Working capital investment strategies and cost of financing

Next it is necessary to consider the influence of each strategy of investment in the liquidity on the rate of cost of capital financing non-profit organization and that influence on 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).

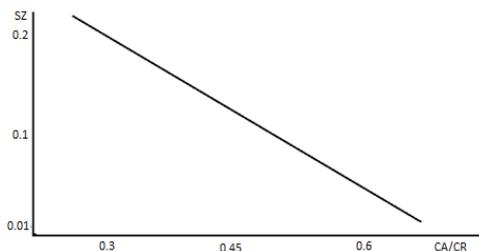


Fig. 1. The shape of line of correction SZ as a function of CA/CR in the SZ1 variant

Source: Author's study.

SZ1 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. Of course, **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 non-profit 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 rate², 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:

$$\begin{aligned}\beta_{l_r}^* &= \beta_u \times \left(1 + (1 - T) \times \frac{D}{E}\right) \times (1 + SZ) \\ &= 0.77 \times \left(1 + 0.81 \times \frac{0.4}{0.6}\right) \times 1.2 = 1.19 \times 1.2 \\ &= 1.43\end{aligned}$$

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:

$$\begin{aligned}\beta_{l_m}^* &= \beta_u \times \left(1 + (1 - T) \times \frac{D}{E}\right) \times (1 + SZ) \\ &= 0.77 \times \left(1 + 0.81 \times \frac{0.4}{0.6}\right) \times 1.1 = 1.19 \times 1.1 \\ &= 1.31\end{aligned}$$

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

$$\begin{aligned}\beta_{l_f}^* &= \beta_u \times \left(1 + (1 - T) \times \frac{D}{E}\right) \times (1 + SZ) \\ &= 0.77 \times \left(1 + 0.81 \times \frac{0.4}{0.6}\right) \times 1.01 = 1.19 \times 1.01 \\ &= 1.2\end{aligned}$$

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 nonprofit 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:

$$CC = \frac{E}{E + D_1 + D_2} \times k_e + \frac{D_1}{E + D_1 + D_2} \times k_{dl} \times (1 - T) + \frac{D_2}{E + D_1 + D_2} \times k_{ds} \times (1 - T)$$

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

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.

Table 1. Cost of capital and changes in economic results depending on the choice of liquidity investment strategy.

Liquidity investment strategy	Restrictive	Moderate	Flexible
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) ³	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)	24%	22.3%	20.8%
Long-term debt rate (k _{dl})	13.2%	12.4%	11.7%
Short-term debt rate (k _{ds})	9.6%	9.1%	8.7%
Cost of capital (CC)	14.8%	13.9%	13.1%
Economic result of liquidity strategy	5057	4821	4420

Source: Author's study

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:

$$CC_m = \frac{765}{1913} \times 22.3\% + \frac{382}{1913} \times 12.4\% \times (1 - 0.19) + \frac{765}{1913} \times 9.1\% \times (1 - 0.19) = 13.9\%$$

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:

$$\Delta ER_f = -2122 + \frac{837}{0.131} = 4420.$$

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.

NOTES

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2. According to [Brigham 30-2] 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.”

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

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