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A simple model for cash flow management in nonprofits

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Abstract

Cash flow management is one of the most significant challenges that face nonprofit organizations. A shortage is cash, even if it's temporary, is a major risk factor for the organization. Nevertheless the standard method for cash flow management – a cash flow projection - does not produce satisfactory results for nonprofits. The weak point of the cash flow projection method is that it ignores the inherent unpredictability of the income stream. This is a typical characteristic of the nonprofits sector, due to its reliance on income stream from donations and grants.

In this article I present a simple simulation model that overcomes this problem. The simulation model connects between the cash flow and the accounting data. It enables the organization to assess its cash flow risk, and to analyze different scenarios that can eliminate the risk.

The model was tested in several nonprofit organizations, and the article presents its implementation in one of them.

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A) Introduction

Cash flow management is one of the most significant challenges that face nonprofit organizations. Methodologically cash flow management is part of the budgetary management of the organization. Guidelines for effective budgetary management in nonprofit organizations were suggested in my previous article². It is argued there that budgetary management is a mean to an end that should serve three major goals:

1. Explicit presentation of the economic dimension of each activity, for the purpose of decision making and prioritization.
2. Risk management.
3. Fundraising and reporting to funders and external stakeholders.

Cash flow management is one components of the second item – risk management. The financial risk that should be addressed by the budgetary management can be divided to two types:

1. Budgetary risk
2. Cash flow risk.

Budgetary risk stems from budgetary assumptions that are too optimistic. The budget of any organization is based on a set of assumptions regarding its expected income. Based on the expected income the organization decides how much it can spend. Many nonprofit organizations face significant uncertainty regarding their income sources. Thus when the assumptions regarding the expected income are too optimistic, the organization will necessarily face a deficit sometime during the planning period. This situation leads eventually to a shortage in cash, but the source of the problem is not cash flow management but rather budgetary management. Once the organization discovers that a "budgetary risk" exists - e.g. that its expected income is going to be lower than its expected expenses – it can solve the problem by decreasing its planned expenses. There is no magic solution here, the response to a lower-than-expected income must be a cut in the budget (and usually also in the programs).

² Malki E., "Guidelines for the preparation of budgets in not-for-profit organizations", SSRN Electronic Journal · January 2010.
https://www.researchgate.net/publication/46445679_Guidelines_for_the_preparation_of_budgets_in_not-for-profit_organizations

Malki E., "A servant of two masters: The dual role of the budget in nonprofits", Journal of International Accounting Auditing and Taxation 1(1):002-007 · August 2014.
https://www.researchgate.net/publication/265272082_A_servant_of_two_masters_The_dual_role_of_the_budget_in_nonprofits

However even if income and expenses are expected to be equal, there can still be a temporary shortage in cash, due to the lack of synchronization between them. The timing of the expenses is mostly stable and predictable, but the timing of the income stream can be very erratic. This situation is typical to the nonprofit sector that relies heavily on donations and grants. As a result it is extremely difficult to predict the timing of the income stream.

Due to the lack of synchronization between the timing of the cash inflows and the cash outflows, a balanced budget (or even a planned surplus) cannot prevent the risk of temporary shortage in cash. Such risk is termed "cash flow risk".

In my previous article I have presented a methodology that can detect the budgetary risk. This methodology, which is termed the "dynamic budget" approach, is based on periodical revisions and updates of the budget according to changes in the planning assumptions. Once the dynamic budget approach is adopted, the budget itself can serve to detect budgetary risk. The periodical revision of the budget implies that a deficit in the budget (e.g. expected income is lower than expected expenses) points to a budgetary risk. The dynamic budget can also show explicitly the necessary steps to eliminate the budgetary risk. Planned expenses must be reduced so that there is no deficit in the budget.

The dynamic budget approach is also helpful for the detection of cash flow risk. If the dynamic budget is balanced then income is expected to equal expenses at the end of the planning period. In such case a temporary deficit during the reporting period (e.g. actual expenses exceed actual income) points to a cash flow risk.

It is clear from the above discussion that the dynamic budget approach is essential for a correct diagnosis of the financial risk. Without such diagnosis it is impossible to decide which measure is adequate. The organization will not benefit from cutting its expenses in order to deal with the lack of synchronization between income and expenses. In the same manner postponing payments will not help when the organization faces an imminent deficit.

Nevertheless the dynamic budget does not contain practical tools for cash flow management. The accounting deficit by itself cannot reveal the size of the cash flow risk, nor can it help to assess the possible measures to eliminate it. The simulation model that is presented in this article addresses these issues explicitly, and by doing so it complements the dynamic budget approach.

The standard solution that is proposed for cash flow management is a detailed forecast of the future cash streams. Such forecast is based on the organization's budget, but adds to it another layer of forecasting: the timing of each income and expense item. For example the salaries budget has to be divided to 12 payments, taking into account that the salary of each month is paid actually in the next month. Similarly the organization has to forecast the timing of all other expense items, and also the timing of its different income sources. Maintaining and updating such forecast is not a simple task, since the accounting data are recorded on accrual basis and not on cash basis. In many cases organizations that try to follow such methodology have to manage two parallel accounting systems: one on cash basis (usually using a spreadsheet) and the other on accrual basis via their accounting software.

However on top of the complication of this method, practical experience shows that in most cases it doesn't benefit the organization. The reason is the inherent uncertainty that characterizes the nonprofit sector, regarding the timing of the income stream. While in the business sector it is possible in many cases to predict the timing of income stream with a reasonable accuracy, this is hardly the case in the nonprofit sector. The reliance of the sector on donations and grants means that the timing of many income items is determined arbitrarily by funders, and thus it is practically unpredictable. Even if the organization succeeds to come up with a reasonable forecast for the timing of its expenses, the inherent difficulty to forecast the timing of the income stream makes the entire forecast useless.

The simulation model that is presented in this article overcomes this problem by connecting the cash flow to the accounting data. In the following section the principles of this connection are explained.

B. Accounting and cash Flow

The connection between the cash flow and the accounting data can be established by looking at a typical balance sheet of a nonprofit organization.

Assets	Liabilities
Current Assets	Current Liabilities
Fixed Assets	Long Term Liabilities
	Unrestricted Net Assets for activities (Operating Reserve)
	Unrestricted Net Assets that were used for fixed assets
	Restricted Net Assets ³

Since the item "Unrestricted assets that were used for fixed assets" in the liabilities side is identical by definition to the item "Fixed assets" in the assets side, they can simultaneously be removed from the balance sheet. By deduction the fixed assets from both side of the balance sheet we can focus only on the financial assets and their sources of funding.

Assets	Liabilities
Current Assets	Current Liabilities
	Long Term Liabilities
	Unrestricted Net Assets for activities (Operating Reserve)
	Restricted Net Assets

The next step introduces the term "Working Capital" which is defined as follows:

$$(1) \text{ Working Capital} = \text{Current Assets} - \text{Current Liabilities}$$

Using the definition in (1) we can present the balance sheet in a different format which will be termed the "simplified balance sheet".

Assets	Liabilities
Working Capital	Long Term Liabilities
	Unrestricted Net Assets for activities (Operating Reserve)
	Restricted Net Assets

³ Restricted Net Assets are divided according to the type of the restriction (permanent or temporary). However for the analysis that follows this division is not important.

Since the cash balances are included in the Current Assets:

$$(2) \text{ Current Assets} = \text{Cash} + \text{Receivables}$$

we can insert definition (2) into definition (1) in order to receive the following definition:

$$(3) \text{ Working Capital} = \text{Cash} + \text{Receivables} - \text{Current Liabilities} \\ = \text{Net Working Capital}$$

The term "Net Working Capital" will be defined as follows:

$$(4) \text{ Net Working Capital} = \text{Receivables} - \text{Payables (Current Liabilities)}$$

The last step is achieved by inserting the definition in (3) into the simplified balance sheet, in order to present the cash balances explicitly.

Assets	Liabilities
Cash	Long Term Liabilities
Net Working Capital (NWC)	Unrestricted Net Assets for activities (Operating Reserve)
	Restricted Net Assets

This simplified balance sheet presents explicitly the financial asset: cash and NWC, and their funding sources: external debt and net savings (restricted and unrestricted).

The simplified balance sheet can also be used to derive the explicit equation for the cash flow:

$$(5) \text{ CF} = \Delta\text{LTL} + \Delta\text{NA} - \Delta\text{NWC}$$

CF – Cash Flow which is defined as the change in the cash balances.

ΔLTL – The change in Long Term Liabilities (external debt).

ΔNA – The combined change in the Operating Reserves and the Restricted Net Assets, which is the change in the net savings.

ΔNWC – The change in Net Working Capital

Equation (5) is instrumental for the preparation of a periodical cash flow report, which will be presented in the next section.

C. Periodical cash flow report

Periodical budgetary reports during the year are based on crude accounting data that are taken from the trial balance. These data do not include estimates that are prepared after the year ends (e.g: depreciation, liabilities for severance payments etc.). In addition to that the distinction between restricted and unrestricted surpluses does not usually appear in the trial balance. Income is recorded regardless of the commitment that is attached to it, and the estimate of unrestricted surpluses is made at a later stage when the financial statements are prepared.

Due to these reasons it is much simpler to derive a periodical cash flow report from the crude accounting data. In order to prepare such report the following steps should be taken:

1. Take all the income for the period (including income for fixed assets).
2. Deduct from it all the operating expenses for the period (including G&M).
3. Deduct in addition all the expenses for fixed assets
4. If applicable deduct also the net change in long term debt.

The result of the above procedure will be defined as the Surplus/Deficit for the period.

The result of the above procedure is a simpler formulation of equation (5).

$$(6) \text{ CF} = \text{Surplus/Deficit} - \Delta\text{NWC}$$

And in parallel to it:

$$(7) \Delta\text{NWC} = \text{Surplus/Deficit} - \text{CF}$$

Using equation (7) we can calculate the change in NWC directly from data that are readily available. The Surplus/Deficit is taken for the trial balance as described in the procedure above. The cash flow can be easily derived from the bank statements (it is the change in cash balances between the beginning and the end of the period).

Table 1 demonstrates the calculation of such periodical cash flow report for a nonprofit organization in the field of community development and empowerment.

Table 1:

(All figures are in New Israeli Shekels – NIS)

Cash Flow Report		June-2015	
Opening Balance	01/01/15	113,372	
Surplus/Deficit		-276,557	
Change in Net Working Capital (NWC)		387,129	Decrease
Receivables		415,246	Decrease
Income for the previous year (+)			415,246
Income that was received after the reporting period (-)			0
Payables - Salaries		10,629	Decrease
Cost of salaries December (-)			-91,315
Cost of salaries that were paid after the reporting period (+)			101,944
Payables - Suppliers		-38,746	Increase
Closing Balance	30/06/15	223,944	
Cash flow		110,572	

The report is for the first half of 2015, e.g. from January 1st until June 30th.

According to the trial balance for June 2015 the organization had an accounting deficit of -276,557 NIS, which was calculated according to the aforementioned procedure.

On the other hand a comparison of the cash balances at the beginning of the period (113,372 NIS) and at the end of the period (223,944 NIS) shows that the cash flow was positive. Cash balances have increased by 110,572 NIS.

Thus we can see that in spite of the deficit that is reflected in the trial balance, cash reserve has increased. This gap between the accounting deficit and the positive cash flow must be due to a decrease in the NWC (see equation (6)).

Using equation (7) we can calculate the decrease in the NWC explicitly: -387,129 NIS.

Equation (6) also demonstrates the negative relation between the change in NWC and the cash flow. Increase in the NWC has a negative effect on the cash flow while decrease in the NWC has a positive effect on the cash flow.

- An increase in the NWC is a result of either an increase in receivables or a decrease in payables. In both cases the effect on the cash flow is negative.
- A decrease in the NWC is a result of either a decrease in receivables or an increase in payables. In both cases the effect on the cash flow is positive.

Table 1 presents the changes in the NWC according to their effect on the cash flow. As a result the decrease in the NWC is presented with a positive sign, while the wording – "Decrease" - describes the direction of the change.

Table 1 also presents an analysis of the factors that affected the change in the NWC. The first item is the change in receivables, which can be the result of two reasons:

- Income that was received for the previous year and thus is not reflected in the accounting records for the current year. Such income decreases the receivables and the NWC and has a positive effect on the cash flow.
- Income for the reporting period that was received after the end of the period. Such income will be included in the accounting data for the period, but will not be reflected in the bank balance for the end of the period. It increases the receivables and the NWC and has a negative effect on the cash flow.

In our example in Table 1 the organization received an income of 415,246 NIS, which was payment for 2014. This income decreased the receivables and the NWC and had a positive effect on the cash flow.

The second item is the change in payables due to salary payments⁴. The change in payables due to salary payments is the difference between the payment for December's salary of the previous year (2014 in our example) and the salary payment for the last month in the reporting period (June 2015 in our example). The salary payment for December 2014 was made in January 2015, but it is recorded in the accounting system as an expense of the previous year (and thus will not appear in the trial balance of the reporting period). This payment decreases the payables, increases the NWC and has a negative effect on the cash flow. On the other hand the salary payment for June 2015 is included in the trial balance for the reporting period, but it is actually paid in July 2015 (and thus is not included in the cash balance for 30/6/2015). This payment increases the payables, decreases the NWC and has a positive effect on the cash flow.

The difference between the payment for December 2014 and the payment for June 2015 was 10,629 NIS, which means that overall payables due to salaries increased in the reporting period. As a result the NWC decreased and the effect on the cash flow was positive.

The third item is the change in payables due to payments to suppliers (including any other non-salary payments). This is computed based on the overall change in the NWC and the changes due to the previous two items. The combined effect on the NWC of the change in receivables and the change in payables due to salary payments (which is a decrease), is larger than the overall decrease in the NWC. Thus the change in payables

⁴ Salary payments include payments to employees, pension funds, social security and taxes.

due to payments to suppliers must contribute a positive change of 38,746 NIS to the NWC. That means that payables to suppliers necessarily decreased by -38,746 NIS. The decrease in payables to suppliers increases the NWC and has a negative effect on the cash flow.

The following table summarizes all the changes in the NWC and their effect on the cash flow.

	Change	Effect on NWC	Effect on cash flow
Receivables	Decrease	-415,246	415,246
Payables – Salaries	Increase	-10,629	10,629
Payables – Suppliers	Decrease	38,746	-38,746
Total		-387,129	387,129

The cash flow report that is presented in Table 1 can be prepared on a monthly basis using data that are readily available. The report provides a clear exposition of the organization's cash flow during the reporting period. In our example we can see that the main reason to the increase in the cash balances, in spite of the accounting deficit, is the income for the previous year that was received at the beginning of the reporting period. This cash inflow made it possible for the organization to operate with a deficit, without a shortage in cash.

The next section demonstrates how the cash flow report can be used to create a simulation of the future cash flow.

D. The simulation model.

The simulation model is based on equation (7) which can be presented also as follows:

$$(8) \text{ CF} + \Delta\text{NWC} = \text{Surplus/Deficit}$$

The following steps are needed in order to prepare the simulation:

1. Determine the required cash balance at the end of the simulation period. Once the end-of-period cash balance is determined the cash flow is also determined.
2. Compute the expected change in NWC, using the change in payables to suppliers as the policy variable.
3. By inserting the results of steps (1) and (2) into equation (8) we can compute the breakeven surplus/deficit. This result is either the maximal deficit or the minimal surplus that is needed in order to maintain the simulation's assumptions.

4. Compare the breakeven surplus/deficit to the expected or actual surplus/deficit.

Table 2 presents an example of the simulation model.

Table 2:

(All figures are in New Israeli Shekels – NIS)

Cash Flow Simulation		December-2015	
Opening Balance	01/01/15	113,372	
Maximal Deficit		-44,303	
Change in Net Working Capital (NWC)		32,931	Decrease
Receivables		61,246	Decrease
Income for the previous year (+)			415,246
Income that was received after the reporting period (-)			-354,000
Payables - Salaries		10,685	Decrease
Cost of salaries December (-)			-91,315
Cost of salaries that were paid after the reporting period (+)			102,000
Payables - Suppliers		-39,000	Increase
Closing Balance		102,000	
Cash flow		-11,372	
Current Surplus/Deficit	-276,557	A	
Planned Surplus/Deficit	0	B	
Maximal Deficit	-44,303	C	
Gap = B - C	44,303		

The simulation was prepared in July 2015 (based on data for the period January to June 2015) and relates to the end of the year 2015.

The first stage is to determine the required cash balance for 31/12/2015. In our example the organization wants to secure the obligation for salary payments for December 2015 (which will be paid at the beginning of January 2016). The closing balance of 102,000 NIS in the simulation is the projected salary payment for December 2015. The implication of this assumption is that the income stream that is projected for January is expected to cover only the non-salary payments of this month.

Once the closing balance for the year is determined, the cash flow for the whole year is also determined to be -11,372 NIS.

In the second stage we want to compute the changes in NWC during the year, based on the three components that were discussed above: change in receivables, change in payables due to salary payments and change in payables due to payments to suppliers.

We already saw that the organization in our example received an amount of 415,246 NIS for the previous year. This amount is part of a multi-year grant that the organization receives from a large foundation that supports its activities. According to the terms of this grant the amount of 354,000 NIS, which is part of the 2015 budget, will be paid only after the

submission of a final report to the foundation. The organization expects that this amount will be received only at the beginning of 2016.

The rest of the organization's income is expected to be received during 2015.

The net effect of the abovementioned factors is a decrease in receivables and in the NWC of -61,246 NIS.

The change in payables due to salary payments is the difference between the salary payment of December 2014 (that was paid in January 2015) and the expected salary payment of December 2015 (that will be paid in January 2016). We have seen already that the expected salary payment for December 2015 is 102,000 NIS (this amount was used to determine the required cash balance for 31/12/2015). Thus we can see that the payables for salary payments increased by 10,685 and respectively decreased the NWC by the same amount.

The third factor that affects the change in NWC is the change in suppliers' credit (payables to suppliers). In practice supplier's credit is the most accessible measure that is at the disposal of nonprofit organizations in order to deal with temporary shortage in cash. Since the organization has a certain degree of flexibility in the management of its suppliers' credit, the change in suppliers' credit can be used as a policy variable in our simulation. The organization can examine different scenarios regarding suppliers' credit and their effect on its cash flow risk.

In the scenario that is presented in Table 2 we assumed that suppliers' credit at the end of December 2015 will remain at the same level as it was at the end of June 2015. We saw already in Table 1 that during the first half of 2015 suppliers' credit went down by 38,746 NIS. Thus if the level of suppliers' credit remains at the same level until the end of the year, the respective reduction should be the same. In the simulation we assumed that the suppliers' credit decreased by 39,000 NIS, which means an identical increase in NWC.

The total change in the NWC due to the three factors is presented in the following table:

	Change	Effect on NWC	Effect on cash flow
Receivables	Decrease	-61,246	61,246
Payables – Salaries	Increase	-10,685	10,685
Payables – Suppliers	Decrease	39,000	-39,000
Total		-32,931	32,931

In the third stage we insert the cash flow and the change in NWC into equation (8) in order to compute the breakeven surplus or deficit which maintains the simulation's assumptions.

Cash flow	-11,372
Change in NWC	-32,931
Maximal allowed deficit	-44,303

We can see that based on the simulation assumptions the organization in the example can end the year with a maximal deficit of -44,303 NIS. As long as the deficit at the end of the year will be not larger than -44,303 NIS the organization will not encounter shortage in cash by the end of the year.

In the fourth and last stage we go back to our budget and look at our expected surplus/deficit. If we follow the principles of the dynamic budget and update our budget regularly based on new information, the expected surplus/deficit will be our best estimate of the accounting results at the end of the year⁵.

In our example the organization uses a dynamic budget and expects that the total income for 2015 will be equal to the total expenses for 2015 (e.g. a balanced budget). Since the simulation shows that the organization can end the year with a deficit of -44,303 NIS and our best estimate is for the budget to be balanced, we can safely assume that the cash flow risk was eliminated.

⁵ Many nonprofit organizations prefer to show a balanced budget all the time. In such case if the dynamic budget reflects a surplus, it should be included in the budget as a reserve for unexpected expenses. If there is no anticipation to use this reserve, it should be used as the expected surplus for the cash flow simulation.

Another factor that needs to be considered is the actual deficit at the end of the reporting period, which in our example is -276,557 NIS. When we manage a dynamic budget the actual surplus/deficit should be proportional to the planned surplus/deficit⁶. Since in our example the planned surplus/deficit is zero, the actual deficit implies a cash flow risk. The simulation model enables us to assess this risk and to determine the quantitative goals that are necessary to eliminate it. This is demonstrated in Table 3 that presents the simulation for the same organization until August 2015 (note that the simulation can be prepared only in July, once the full accounting data for June are available).

Table 3:

(All figures are in New Israeli Shekels – NIS)

Cash Flow Simulation		August-2015	
Opening Balance	01/01/15	113,372	
Maximal Deficit		-398,303	
Change in Net Working Capital (NWC)		386,931	Decrease
Receivables		415,246	Decrease
Income for the previous year (+)			415,246
Income that was received after the reporting period (-)			
Payables - Salaries		10,685	Decrease
Cost of salaries December (-)			-91,315
Cost of salaries that were paid after the reporting period (+)			102,000
Payables - Suppliers		-39,000	Increase
Closing Balance		102,000	
Cash flow		-11,372	
Current Surplus/Deficit	-276,557	A	
Planned Surplus/Deficit	0	B	
Maximal Deficit	-398,303	C	
Gap = A - C	121,746		

Table 3 is identical to Table 2 except for the income that is expected at the beginning of 2016, which does not appear in the receivables section. All the other assumptions that we made for the end-of-year simulation (Table 2) remain unchanged also in the simulation for the end of August 2015 (Table 3).

Using equation (8) we can compute the maximal allowed deficit for the end of August.

Cash flow	-11,372
Change in NWC	-386,931
Maximal allowed deficit	-398,303

⁶ See "Guidelines for the preparation of budgets in not-for-profit organizations", section G for a full explanation.

A comparison of the maximal allowed deficit for the end of August (-398,303 NIS) to the actual deficit at the end of June (-276,557 NIS) reveals that the organization can "absorb" an increase of 121,746 NIS in its deficit, without diverging from the assumptions of the simulation. This result enables the organization to determine a minimal income target for the period of the simulation (July and August 2015 in our example). In order to that the organization needs to project all the expenses for July and August. The income stream that is needed in July and August can be lower than the projected expenses by 121,746 NIS, but not lower than that. As long as the income stream is equal or above this target, the cash flow risk for the period is eliminated. By combining a simulation for the end of the year with a simulation for the coming months, the organization can affectively manage its cash flow and determine quantitative targets to eliminate its cash flow risk.

The simulation model can also be used to analyze different scenarios of cash flow risk. This will be demonstrated by changing the assumptions that were used for the previous end-of-year simulation (Table 2). In the new simulation we will assume that the organization is concerned that no cash income will be received in January 2016. Thus the required cash balance at 31/12/2015 must be raised to 162,000 NIS, in order to cover all the anticipated payments in January (salaries and suppliers). This scenario is presented in Table 4.

Table 4:

(All figures are in New Israeli Shekels – NIS)

Cash Flow Simulation		December-2015	
Opening Balance	01/01/15	113,372	
Minimal Surplus		15,697	
Change in Net Working Capital (NWC)		32,931	Decrease
Receivables		61,246	Decrease
Income for the previous year (+)			415,246
Income that was received after the reporting period (-)			-354,000
Payables - Salaries		10,685	Decrease
Cost of salaries December (-)			-91,315
Cost of salaries that were paid after the reporting period (+)			102,000
Payables - Suppliers		-39,000	Increase
Closing Balance		162,000	
Cash flow		48,628	
Current Surplus/Deficit	-276,557		A
Planned Surplus/Deficit	0		B
Minimal Surplus	15,697		C
Gap = B - C	-15,697		

In the first stage we leave all the other assumptions of the simulation unchanged. The change in the required cash balance for the end of the period is reflected in the cash flow for the period, which is now 48,628 NIS.

Using equation (8) we can compute the new minimal allowed surplus that is derived from the new assumptions.

Cash flow	48,628
Change in NWC	-32,931
Minimal allowed surplus	15,697

Note that the new simulation points to an opposite direction compared to the previous one (table 2). In order to maintain the simulation assumptions the organization must have an accounting surplus. Since the budget is expected to be balanced, the simulation alerts us that a shortage in cash is anticipated by the end of the year.

The immediate measure that can be used to eliminate the anticipated cash flow risk is an increase in suppliers' credit (which means postponing payments). If bank credit is not available, this is the only practical tool that is available to the organization.

In the cash flow report (Table 1) we saw that the organization has decreased the suppliers' credit during the first half of 2015. One can safely assume that the organization can increase the level of its suppliers' credit back to its level at 31/12/2014, without jeopardizing its relationship with its suppliers⁷.

Table 5 presents a simulation for the cash flow until the end of the year under the assumption that the suppliers' credit remains at the same level as it was at the end of the previous year.

⁷ Note that this assumption will not be valid if the level of purchases has changed significantly between 2014 and 2015. In such case a more detailed analysis should be made.

Table 5:

(All figures are in New Israeli Shekels – NIS)

Cash Flow Simulation		December-2015	
Opening Balance	01/01/15	113,372	
Maximal Deficit		-23,303	
Change in Net Working Capital (NWC)		71,931	Decrease
Receivables		61,246	Decrease
Income for the previous year (+)			415,246
Income that was received after the reporting period (-)			-354,000
Payables - Salaries		10,685	Decrease
Cost of salaries December (-)			-91,315
Cost of salaries that were paid after the reporting period (+)			102,000
Payables - Suppliers		0	No Change
Closing Balance		162,000	
Cash flow		48,628	
Current Surplus/Deficit	-276,557		A
Planned Surplus/Deficit	0		B
Maximal Deficit	-23,303		C
Gap = B - C	23,303		

The assumption that suppliers' credit remains unchanged implies that the change in payables due to suppliers' payments is zero. Thus the net change in the NWC is now -71,931 NIS.

Using equation (8) again we can compute the surplus/deficit that is derived from the simulation.

Cash flow	48,628
Change in NWC	-71,931
Maximal allowed deficit	-23,303

The decrease in NWC due to a larger suppliers' credit allows the organization to be in a deficit at the end of the year, as long as it does not exceed -23,303 NIS. Since the organization plans for a balanced budget, the simulation shows that the cash flow risk that we saw in the previous simulation (Table 4) is eliminated.

E. Conclusions

The simulation model that was presented in this article can be used to overcome an inherent difficulty that most nonprofits face: the unpredictable nature of their income stream.

Instead of trying to project the (unpredictable) cash flow, the simulation model uses an alternative approach by connecting the cash flow to the accounting data. The simulation provides quantitative measures of the cash flow risk, and enables the organization to review possible scenarios in order to eliminate the risk.

The simulation model can work only if we adopt the dynamic budget approach, which means that the budget has to be updated periodically in order to reflect changes in the planning assumptions. The dynamic budget approach and the cash flow simulation model are two complementary parts of the same methodology. This methodology can be used to improve the financial management in nonprofit organizations.

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