

HW4 LIQUIDITY BUDGETING

You are in consulting business. You are hired by a small real estate company to help them manage their liquidity budgeting (or in other words to figure out the best timing of their expenses to minimize the extra cash needed). They want you to build for them a liquidity budgeting tool (an Excel model) that they will use to analyze and manage their working capital. The tool must contain enough flexibility to enable the future users to play with the model and conduct different analyses. Among others, the company requests a user-friendly and sophisticated input part where a manager can change not only the amount of money for a particular expense, but also the timing of this expense, e.g. in which month to fix something, they also want to have sensitivity analysis, scenario tool and automatic breakeven analysis, so it can be easily repeated for different scenarios. Overall, the model must be able to help analyzing the liquidity, see how much extra money is required, what happens if something goes not as planned, whether it makes sense to delay some costs etc.

Your contract includes building the model and performing the detailed liquidity analysis for the next year.

1. CASE DETAILS

The real estate company operates three rental apartments:

APARTMENT 1. One tenant has been living there and expected to live the whole next year. Revenues: rent per month 345€/month + water 20€/person/month + electricity paid by the tenant. The costs include the following. Condominium (vastike) 122€/month (fixed monthly expense regardless of whether an apartment is rented or not). Apartment house company loan repayment (rahoitusvastike) 43€/month. Water payment 20€/person/month. Expected a change of refrigerator to a new one in March, cost 700€.

APARTMENT 2. Unrented, expected to be rented in the third month from the start of the year to a young couple at 440€/month including water. Condominium 202€ per month. Water 20€/month/person.

APARTMENT 3. (for three tenants) Under renovation. The renovation is expected to take four months more with overall cost 4000€ evenly distributed. After that, it can be rented for 600€/month + water 17€/person/month. Condominium 121€/month. Water payment 17€/person/month. Apartment house company loan repayment 44€/month.

In addition to the apartments, the company has the following costs. Banking costs approx. 10€/ month, office miscellaneous costs approx. 55€/month, book-keeping cost payable in March 300€, previous years taxes payable in October 440€. Miscellaneous costs at the end of every quarter are estimated at 100€. Insurance payment in October 200€.

And, belated pay-back of old rents from an old tenant (270€) is expected in June.

By the end of the current year, the company balance is 2300€ (the balance at the start of the planning or starting liquidity).

2. LIQUIDITY BUDGETING TOOL

The main goal is to calculate how much the company owners must insert money into the company (they will insert money in full 1000 euros, meaning 1000, 2000, 3000 etc....) so that the liquidity always stays positive. The tool must include liquidity budgeting for one year (12 months) starting from January and running until December.

The model is created for the company so that its managers will use it. Therefore, it should be user-friendly. Make sure that all inputs (information described in the case) can be changed (both values and months) and it will be reflected in the calculation.

➡ for the month inputs create a **drop-down lists (use Excel tool Data Validation)** with all months spelled with letters (January, February...), so the user does not need to type it every time. In this case, however, the calculation becomes a bit tricky. IF function will definitely be useful. You also might want to create a table that associates months titles with their numbers and then to use lookup functions, this will be handy to accommodate durations and delays specified in a number of months.

➡ make sure you enable the user to specify the total amount and the number of months for the renovation of the apartment 3, and make your calculation automatically reflecting the changes in those inputs. We will need that later for the scenario analysis.

➡ for miscellaneous costs (every quarter) the function MOD might be useful to automatically reflect user's input in the calculation.

Build graphics that would display (i) liquidity before inserting money, (ii) inserted money, (iii) resulted liquidity (check that it is above zero all the time).

Design and organize the output part of the model. Include also insights from the next section. Make a printable report (might be separate from the output part if it is placed near the inputs) with a button that saves it to the pdf on the desktop.

➡ use best practices for your model.

TT? (a) How many months in a row the enterprise has a negative balance and unable to pay the bills without extra money? How many months in a row its liquidity must be financed in order to avoid the problem?

3. ANALYSIS

BREAKEVEN ANALYSIS

Perform break-even analysis to figure out what % increase in rent of all three apartments at once will result in no extra money needed.

➡ you will need to have another input - % of rent increase - that would be 0% by default. Make sure to update the calculation properly and keep the rent amount inputs available for entering new values.

Create a macro that would refresh the breakeven even analysis results in case inputs are changed and make a button for it.

➡ make sure that the macro saves the desired breakeven even value elsewhere in the model and returns the original default value of the rent increase back to the input part. This way it is much nicer to work with the model, for instance checking breakeven values for different scenarios. And will be especially handy when/if you make several breakeven analyses in a row.

Try the analysis several times with different initial values (e.g. 0%, 50%, 100%). Does it yield same result? Check whether the problem stays if rounding to 1000s is canceled (e.g. we can borrow as much as we need precisely to cents). Don't forget to return the rounding back.

TT? (b) What conclusion can you make about Excel's goal seek? When it makes sense to use it and when one should be careful?

SENSITIVITY ANALYSIS

Create sensitivity analysis with Data Tables for two variables simultaneously: rent increase % (0-150% with 10% step) and Month of refrigerator change (all 12 months). Apply conditional formatting to make it easily readable.


 (c) After which month delaying refrigerator change would not make any difference?

SCENARIO ANALYSIS


Perform scenario analysis with Excel Scenario Manager. Make a minimum of three scenarios with changes of three or more chosen input variables. Create a scenario summary on a separate sheet and leave there your short conclusion.


Create manually a scenario tool that would allow you to check the combination of how long the renovation lasts (4, 3, or 2 months – total cost is still evenly distributed) and how soon after it is lucky to be rented (next month (no delay), 1-month delay, or 2-month delay).


➔ *some extra research will be required here to make it happen* 

 (d) If renovation duration stays 4 months, does changing delay in rent affect the overall extra money needed?

 (e) Assuming no delay in renting, how does renovation duration affect the overall extra money needed? Are three months better or worse than four months? Are two months better or worse than three months?

 (f) How does the picture changes if 2 months delay is assumed?

 (g) What renovation duration you would choose as a manager having a possibility of delay in renting afterward. Why?

PLEASE DO NOT PROTECT THE SHEETS OR RANGES TO ENABLE CHECKING YOUR HOMEWORK. *But do use it for modeling in the future* 

BEFORE SUBMITTING RETURN THE INPUTS INTO ORIGINAL STATE TO AVOID MISEVALUATION

WARNING syntax of some functions that work on some versions of Excel might not necessarily work on other, this happened previously e.g. with MONTH function. Try to avoid using it or check that your calculation works on school computers as well.

Grading and self-check	Total points: 10
The model setup. Cash flows appear when they are supposed to be in the calculation, for example, belated pay-back of old rents is in June and June only. Renovation costs appear in time and automatically change in the calculation if the inputs are changed.	1
A user enters months in every case from a drop-down list and changes are reflected correctly in the calculation – check that corresponding costs or revenues actually move.	1
Calculation of extra money is done, correct and works automatically (changes if inputs are changed). Minor deviations in the result are forgivable (slightly higher or lower amount of inserted money or a month shift in time), what is important is the	1

main logic.	
Breakeven analysis is implemented	1
The macro to refresh the breakeven analysis is created, the button is there, it updates the results if inputs are changed, and it returns the original input value back	1
Sensitivity analysis with data tables is done correctly for both month of refrigerator change and rent increase simultaneously. Conditional formatting is applied.	1
The scenario summary is on a separate sheet that contains three scenarios with three or more changed variables and a comment with the conclusion.	1
Manual 'double' scenario tool is implemented and allows to change the duration of renovation and delay in renting. All is correspondingly reflected in the calculation and resulting extra money.	1
The report can be saved into PDF with a button, it is correctly displayed (it fits the page and nothing gets cut), it contains a combo-chart with liquidity before and after extra money.	1
All questions (a-g) are shortly answered and correspond to the way the model behaves.	1