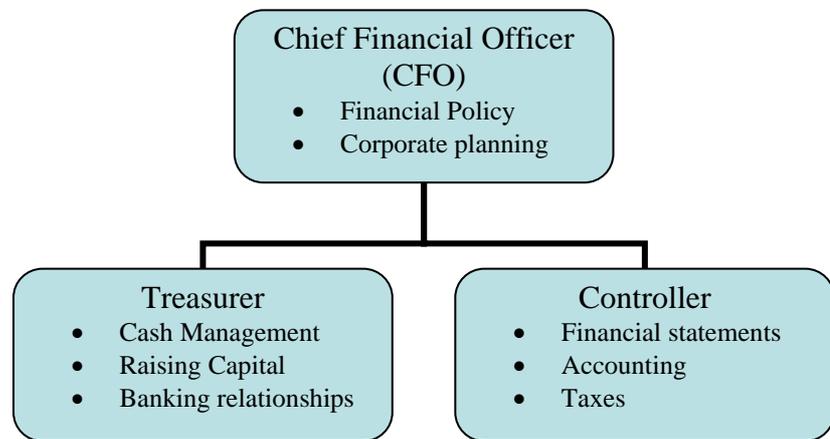


# Liquidity planning, funding and portfolio monitoring

Leiv Synnes, 2008-10-02

## Organisation for financial managers<sup>1</sup>

In larger companies there are many managers who make financial decisions. Some of them specialise in finance. For example, the treasurer specialises in cash management, raising capital and monitoring financial risks. The work is usually described in the financial policy.



*Figure 1. Senior financial managers in large corporations*

## Cash management in a large company

The operations of a large group of companies create many different flows of cash. The cash flows can be in different countries, companies and currencies. These flows have to be monitored and dealt with in an efficient way.

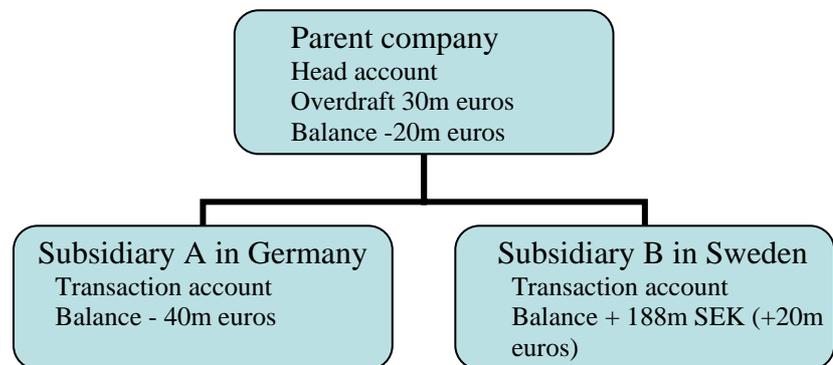
The goal is to minimize transaction costs, risks, money used, and interest. In order to do that you need to centralise the information about the current liquidity and future changes in the liquidity in all companies. The treasurer could then allocate the available cash to the companies who need them.

The treasurer will take idle money from some companies and transfer it to other companies in the group. It is a good idea for the treasurer to collect money from all subsidiaries even if all of

<sup>1</sup> Brealey et al, 2008, p 6-7

them have a surplus of cash. on the capital market large volumes tend to get a better price. For example, subsidiaries A and B both have 1 million euros to invest for three months and the bank offers 4.0 percent interest to each of them. If the parent company collects the money from the subsidiaries, it has two million to invest. The bank now offers 4.25 percent interest.

In order to minimize the cost of transactions between the different accounts, a central account system can be established. The system calculates the net position with the bank for the group of companies and provides the treasurer with constant information on liquidity. The ongoing information about liquidity also gives the treasurer the possibility to monitor all transactions and detect any unauthorised withdrawals.



**Figure 2. Central account system (multi-currency)**

Example 1. Subsidiary A needs to borrow 40 million (m) euros and subsidiary B has 20m euros in excess. Suppose that the different subsidiaries in a group can borrow money at 5 percent and invest money at an interest of 4 percent from a bank. Assume that the parent company has the possibility to raise capital at an interest of 4.75 percent and because of this, subsidiaries A and B can borrow or lend money with the parent company at an interest of 4.75 percent. A would rather borrow money from the parent company at 4.75 percent than borrow money from a bank at 5 percent, and B would prefer to lend money to the parent company at 4.75 percent rather than receiving 4 percent from a bank. So the parent company lends 40m euros to A and borrows 20m euros from B at 4.75 %. The parent company receives a net position on -20m euros. As we can see in figure 2, the parent company has an overdraft of 30m euros and because of this it has no need to raise any further capital. In this example, the group earns an annual profit of 0.25m euros ( $20 \times 0.75$  percent +  $40 \times 0.25$  percent) when they centralise the cash management.

The treasurer not only has to monitor current liquidity, he/she also has to monitor the future changes in liquidity. Assume that we have a situation as in Figure 3. On Tuesday the net position for the group is 125m euros and according to the forecast, the surplus of cash will continue until Friday, when Subsidiary A has a large outflow of cash. If the group has no debt, the correct action is to deposit the money until Friday to the bank with the best offer. The same action will take place on Wednesday and Thursday. On Friday the treasurer will need to raise at least 85m euros.

|                  | 2008-07-28 | 2008-07-29 | 2008-07-30 | 2008-07-31 | 2008-08-01  |
|------------------|------------|------------|------------|------------|-------------|
| Subsidiary       | Monday     | Tuesday    | Wednesday  | Thursday   | Friday      |
| A                | -20        | -25        | 15         | 25         | -400        |
| B                | -5         | -15        | 20         | 30         | 30          |
| C                | 25         | 200        | 230        | 240        | 235         |
| E                | 30         | 25         | 40         | 45         | 40          |
| F                | -15        | -25        | -15        | -10        | -10         |
| G                | -30        | -35        | -30        | -25        | -30         |
| <b>Total</b>     | <b>-15</b> | <b>125</b> | <b>260</b> | <b>305</b> | <b>-135</b> |
| <b>Overdraft</b> | <b>50</b>  | <b>50</b>  | <b>50</b>  | <b>50</b>  | <b>50</b>   |
| <b>Liquidity</b> | <b>35</b>  | <b>175</b> | <b>310</b> | <b>355</b> | <b>-85</b>  |

*Figure 3. Liquidity planning for one week*

### **Managing short term liquidity changes**

As we could see from the last chapter, it is important for a treasurer to sum up the cash in the different subsidiaries and obtain a net position for the group. Then the treasurer could easily deposit or borrow the net position.

As you may understand, you should not run into a situation where your company has issued five year bonds and has a surplus on its account. So if the company has a net debt, there should also be a deficit on the central account.

But if your company has no debt and has a surplus of cash you could deposit it with the bank who offers the best interest, given that you can accept that bank's risk. You could choose to make a deposit for the number of days that you prefer.

If you know that you will have a surplus for a longer period, you could buy commercial paper. Commercial paper is debt with maturity of up to one year and it is issued by large companies. As the investment period is longer you will receive a better yield and lower administration cost (as a percentage of the yield).

| Company    | Rating | Offer | Maturity |
|------------|--------|-------|----------|
| First Bank | Aa2    | 5,20% | 1 month  |
| PropCo     | Aa3    | 5,40% | 1 month  |

*Figure 4. Offers of commercial papers*

Borrowing short term money works the same way. You could, as long as you are credit worthy, borrow money from one day to another from a bank. You could also borrow for one month. If your company has access to the capital market, you could also issue a commercial paper where the pricing is based on the creditworthiness of your company.

Example 2. Suppose that you are treasurer of PropCo and you need to borrow for one month. First Bank can fund themselves on an interest of 5.20 percent, as we can see from Figure 4. They need to charge a margin of 0.30 percent for covering their costs, which is mainly the cost for capital requirement. So First Bank offers you a loan for one month at 5.50 percent. But PropCo has direct access to the capital market and can, based on its own rating, issue commercial paper with the interest at 5.40 percent.

If you are the treasurer of a multinational company you face the problems of dealing with many different currencies. You should avoid having surplus in one currency and a deficit in another currency. Using a multi-currency overdraft, as in Figure 2, is helpful. If you expect that the unbalance will persist for a long time, you should try to do a foreign exchange. If the positions will be offset by transactions in the future you could use a currency swap until that time. A swap is an agreement between two parties to exchange a given commodity one day for another commodity and, after a specified period of time, to give back the original swapped commodity<sup>2</sup>.

### **Raising capital**

Before you start raising money you need to study what kind of capital your company needs. So you need to learn the credit risk of the company, because the higher the creditworthiness a company has, the wider range of financial products available. The current financial standing of your firm could be so poor that the only way to raise money is to issue equity.

Start the analysis by figuring out the probability that the financial obligations will not be honoured as promised. Investigate the current profitability and the risk for getting poorer results in the future. Then you must analyse the firm's possibility for dealing with losses. Firms with good liquidity and

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<sup>2</sup> Synnes et al, 1995, p 52-54

low debt ratio have a high chance of navigating through rough times.

But a creditor does not only have to figure out the potential borrower's probability of default, he/she must also understand how large the losses will be in case of default. Companies with assets which can be sold in case of default are less risky to give loans to. Another way to limit the risk is to set financial covenants on the loan agreement. This will limit the company's possibility to increase the risk at a later stage.

Example 3. A bank lends 100m euros to a real estate company with an agreement that the equity ratio must exceed 30 percent. After a while the real estate company gets into trouble and reports an equity ratio of 10 percent. The bank demands their money back since the loan agreement is broken. The company has to sell the property and repay the loan. The bank makes no losses.

Example 4. A bank lends 100m euros to an IT company with goodwill as a major item in the balance sheet. The company gets into financial problems and the bank gets worried but has no possibility to react. Eventually the IT company defaults and since the company has no major assets that can be sold, the bank takes a large loss.

Moody's is one of the largest firms who analyses the credit risks of companies and their grades go from Aaa, which is the best rating, to C. The grades down to Baa3 are usually called investment grades and poorer grades are called speculative grades.

#### **Investment grades**

|                  |                                    |
|------------------|------------------------------------|
| Aaa              | highest quality, minimal risk      |
| Aa1, Aa2, Aa3    | high quality, very low credit risk |
| A1, A2, A3       | low credit risk                    |
| Baa1, Baa2, Baa3 | moderate credit risk               |

#### **Speculative grade** (Also known as High Yield or 'Junk')

|                  |                                      |
|------------------|--------------------------------------|
| Ba1, Ba2, Ba3    | speculative, substantial credit risk |
| B1, B2, B3       | high credit risk                     |
| Caa1, Caa2, Caa3 | very high credit risk                |
| Ca               | very near default                    |
| C                | in default                           |

*Figure 5. Credit ratings by Moody's<sup>3</sup>*

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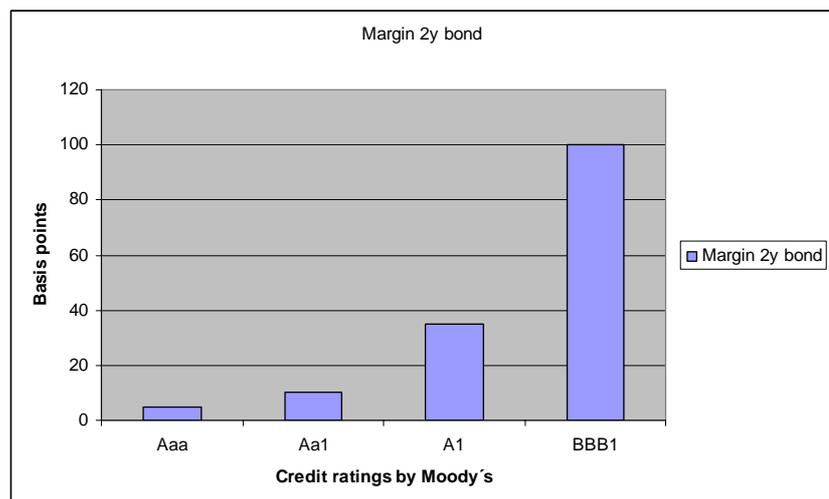
<sup>3</sup> Moody's homepage, 2008

All companies with investment grade have a good chance of issuing debt with good terms. Firms with poorer grades should consider raising equity instead. An alternative for those firms is to issue convertible bonds or equity/credits. The convertible is a package of a normal bond and a call option on equity. The price of the option is used to lower the interest of the bond, and because of that the convertible bond can, for example, be useful for firms who have a hard time to pay interest according to their credit risk. Equity/credit is debt which is created to be as similar as equity as possible. For example: the equity/credit is subordinated to other debt, has longer maturity, weaker covenant and the interest may only be paid out given certain criteria. One advantage with debt over equity is that the interest is deductible and gives the investors a higher net income after tax<sup>4</sup>.

But not only weak companies issue equity in order to raise capital. Some strong companies would, for example, like to maintain or improve their rating. A bank with an Aaa rating who has made credit losses and has the chance of being down rated to Aa1 (which is also a very good rating) may, for example, issue equity in order to maintain the Aaa rating.

### Cost of Debt

The next step is to learn the cost of capital. As you may have guessed, the firm's credit rating has a very strong influence on the funding cost for a company. In Figure 5 we can see the spreads given certain ratings.



**Figure 6. Credit margins given ratings**

But the credit risk is not the only thing you must consider when you estimate the pricing of a bond issue. The liquidity is another factor. If you are a small issuer and can't offer a secondary

<sup>4</sup> The tax advantage for debt over equity is described in appendix 1.

market for your bond, the investor will surely demand a premium versus liquid bonds.

The demanded interest,  $R$ , of a bond can be expressed with the following equation:

$$R = R_f + R_p + L_p$$

Where  $R_f$  is the risk free interest,  $R_p$  is the risk premium and  $L_p$  is the liquidity premium.

It may also be the case that investors prefer different risks better than other. If, for example, there is an under supply of A1 rated bonds from Sweden, the investors might demand a lower margin for those bonds versus equally rated bonds from Spain with a high supply. The reason is that investors usually like to diversify their investment by buying both bonds and thus lower the risk for their portfolio<sup>5</sup>.

Further, it is costly and takes time to set up a bond program. You must also continuously give information to the market. When entering the capital market the firm must show their business plan and then act according to it. If the company changes the business plan too often, the investors might put a higher risk premium on the company or stop investing altogether. So when you consider all these factors you might find it better to borrow from a bank instead. You could also try to issue bonds to one investor, i.e. a private placement. If you want to change your business in the future you have only one investor to negotiate with.

A difference between banks and investors in the capital market is that banks need to allocate some of their equity when they lend money. Therefore it might be cheaper for big companies with good ratings to lend directly on the capital market.

Example 5. Microsoft has a rating of Aaa and can borrow money for one year with a spread of 10 BPS (one hundredth of one percent). To run the program and to issue the bond, Microsoft gets additional costs of 3 BPS, such that the total cost will be 13 BPS.

If Bank A must allocate 2 percent of its equity, due to government regulations, when they lend money to Microsoft and if Bank A wants a return of equity of at least 15 percent, they must charge the company a minimum

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<sup>5</sup>For further information on this topic read Brealey et al, 2008, p 186-189

margin of 30 BPS over its own funding cost<sup>6</sup>. So as far as pricing is concerned, Microsoft should issue bonds instead of using bank loans.

### **Decisions when raising debt**

There are many factors that you must consider when you issue bonds on the market. For example, it is important to know the current pricing of risk and try to estimate what the future pricing will be. If you anticipate higher prices you should try to issue long bonds. Knowledge of your company and the business plan of your company are important, too. If you know that the owner intends to consolidate the business and reduce the risk of the company, you could expect a better credit rating in the future and thus lower funding cost.

You must also try to learn the pricing of different maturities. Normally it is more expensive to issue long debt than raising short debt. You must decide if the cheaper price for a short debt is better given the fact that the funding risk of your debt portfolio will increase.

You must also decide in which currency you should issue bonds. Even if you want to raise euros it is not certain that you should issue euro-denominated bonds. The main investors may, for example, prefer bonds in dollars (US). It may also be the case that the dollar market is bigger and has more liquidity. Further, the bonds could have fixed or floating interest and you have to decide which. Usually you should issue the bond in the currency and interest type that give you the lowest overall cost.

Example 6: Many Swedes want to borrow Swedish kronor (SEK) with floating interest from SBAB, a Swedish mortgage bank. Because of this, SBAB needs to fund itself with floating SEK in order to minimize their risks. But it might want to issue bonds in euros with fixed interest if the current pricing and liquidity is better than in SEK. To get floating SEK and match its exposure, SBAB needs to swap the fixed interest against floating interest and swap the euros against SEK.

In addition, you need to decide if the bonds should be backed by collateral. If you offer the investors security through a pledge of good assets, you will probably reduce the cost of capital. You could also pledge some of your assets into a special entity which will issue bonds in its turn. The goal is to structure the entity so that it receives higher creditworthiness than the parent company.

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<sup>6</sup> For further information visit [http://en.wikipedia.org/wiki/Capital\\_requirement](http://en.wikipedia.org/wiki/Capital_requirement)

Finally, you need to decide if the debt should be senior or junior to other kinds of debts. In the event of default, the senior creditors get their money first and after that the junior debt holders might receive their money in return. You could also issue different tranches at the same time and allocate the different tranches to different investors.

Example 7. Company Beta has a BB rating and wants to buy a property portfolio worth 1000m euros. The company has 200m euros in cash and wants to issue debt on 800m euros in order to be able to buy the properties. Issuing debt on the company's B1 rating will cost them a margin of 2 percent. In order to receive a better price they try raising money based on the security. First, they ask a commercial bank for a loan and the bank indicates a margin of 1 percent if they receive collateral in the property. Then they ask a mortgage bank for a loan. The mortgage bank is able to issue Aaa-rated bonds with properties as collateral. However, the maximum loan to value is 70 percent. The offer from the mortgage bank is therefore on 700m euros and the margin is 0.68 percent. The company likes the offer from the mortgage bank, but they still need to raise an additional 100m euros. One solution for the company is to issue a bond based on the company's rating and receive a margin of 2 percent. But they approach an investor who has a preference for junior debt. They offer him a loan on 100m euros based on the company's rating and with collateral in the property between 70 and 80 percent (the pledge is subordinated to the mortgage bank). The investor offers them a margin on 1.80 percent which the company accepts. The average cost for the funding is then 0.82 percent  $((70*0.68 \text{ percent} + 10*1.8)/80)$ .

### **Monitoring a debt portfolio**

As a treasurer, you have the responsibility to shape the debt portfolio according to the company's financial goal(s). The most important financial goal is to ensure the company has enough liquidity to carry out its business. You also have to monitor the maturity of the capital. When a loan matures you face the risk of not receiving a new loan or receiving a new loan with bad terms. To minimize the funding risk you could:

- Diversify the funding sources
- Have counterparties with a good rating
- Keep a good rating
- Maintain a good brand name on the capital market
- Not allow too much short debt
- Have different maturities on the debt
- Have unused credit facilities with banks

If you have loans with one bank only you might get into trouble if that bank suddenly does not want to lend you money, or if the bank wants to increase the margins. To minimize the risk, you could try to use many banks. Further, you could try to use banks from different regions or banks with different funding sources. Finally, you could diversify the funding through issuing bonds on the capital market.

Having access to many funding sources will not only give the company a lower refinancing risk, it opens up the possibility to have the company always funded where terms are best.

Example 8. Prop AB is a real estate company with two major creditors: a mortgage bank and a savings bank, which both have a good credit rating. A high rated mortgage bank funds itself on the capital market and in normal situations its funding is cheap. Because of this, it can offer real estate firms good terms. A savings bank relies on many clients who have their savings in the bank and has good funding due to this. Suddenly the investors on the capital market change their appetite for bonds issued by mortgage banks, due to a financial crisis in the property sector, and the mortgage banks lose their funding. The mortgage bank notices the Prop AB and says that it wants its money back when the loan matures. The savings bank is not in trouble and is willing to issue a new loan to Prop AB. Since the company has been active in creating good possibilities with different funding sources, it avoids getting into financial hot water.

Another thing that might save you some future funding problems is to choose banks with a good risk profile, diversified funding and a good rating. These banks have a lesser chance of being hit by financial problems and if they are hit, their problems will be less serious.

Marketing your brand name on the capital market and keeping a stable or improving rating will be very helpful in order to always retain access to funding from the capital market. Over time this will get you better funding than your competitors.

Another way to reduce the funding risk is to have different maturities on your debt. You should, for example, avoid too much short debt. If you are active on the capital market, you could repurchase short debt and issue long term debt instead. If you borrow from banks, you could try to prolong the maturity of the agreement before it gets too short.

Finally you should try to have unused credit facilities with banks in order to be able to raise money if necessary. Try to have unused credit lines that are equal or greater than the short debt.

## **Managing a portfolio of interest bearing assets**

From time to time your company may have a surplus of cash. It is your job as a treasurer, within the framework of the financial policy, to invest the money as wisely as possible.

Running a portfolio of interest bearing assets is similar to handling a debt portfolio in a way. You have to know the pricing on the market and how to analyse companies. You have to understand how the risk premium changes over time and have a thorough awareness of current interest and interest expectations.

It is important to allocate the money so that the money gets the best return given the desired level of risk. An assets manager has more possibilities to diversify the portfolio than a debt manager. So the asset manager must know how diversification works and how to set up an efficient portfolio<sup>7</sup>.

The portfolio must also meet desired liquidity and flexibility. Investments should mature when you expect the money will be needed. No matter how well you plan liquidity you cannot foresee everything that will occur in the future. This means that a certain degree of the assets must be tradable on an efficient market, so they may be sold if you suddenly need more money than anticipated.

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<sup>7</sup> For further information on this topic read Brealey et al, 2008, p 186-189

## References

[www.wikipedia.com](http://www.wikipedia.com), September 2008

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## Appendix 1

### The tax advantage for debt over equity

Let's suppose that you own a company called Comex and you need to try to figure out the correct capital structure for the company in order to maximize your profit.

Comex has assets of 100m euros and are only financed through equity. The annual profit is 10m euros before tax. Since the company has to pay 30 percent tax on its profits, the net result after taxes will be 7m euros. The company then pays out the profit to its owner.

Let's assume that you alter the capital structure such that the assets of 100m euros are financed through 50m euros in equity and 50m euros of debt. Presume that you are the creditor and that you charge an interest of 10 percent on the loan.

The company result will be lowered by the interest of 5m euros, so that the result - before tax - is reduced to 5m euros. The net result after tax will then be 3.5m euros. Then the company pays out the net profit to its owner. Table 1 sums up the net profit for the investor before and after the possible alteration to the capital structure.

|                        | Amount of equity |      |
|------------------------|------------------|------|
|                        | 100%             | 50%  |
| Operating profit       | 10               | 10   |
| Financial costs        | 0                | -5   |
| Tax                    | -3               | -1,5 |
| Owners dividend        | 7                | 3,5  |
| Owners interest        | 0                | 5    |
| Total income for owner | 7                | 8,5  |

#### *Figure 1. Example of total income for different capital structures*

As we can see from this example, the net income for the owner is increased when increasing the company's leverage. Should we then try to minimize the company's equity?

But minimizing the equity will also give the company higher risks. Banks and other counterparties may stop doing business with you or charge an extra risk premium. This is called cost for financial stress. How high should the leverage be in order to maximize your profit?

Optimal leverage is when the tax savings for additional leverage equals the increase in costs for financial stress with additional leverage<sup>8</sup>.

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<sup>8</sup> For further reading on this topic, see Brealey, Myers, Allen, 2008, page 496-528