Full book:

Valuation and M&A by Kersten CF

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2023 Uden/ The Netherlands

kersten
corporate finance

Content

Introduction Kersten Corporate Finance

Kersten Corporate Finance is an independent M&A consulting firm in The Netherlands.

Deal segment: Middle sized and SME companies. So companies with an Enterprise Value (EV) of in between 2 million euro and 100 million euro @ The Netherlands and Benelux.

Activities:

1. Selling companies;
2. Buying companies;
3. Business Valuation & Financial Modelling;
4. Financing of acquisitions with bank loans and/ or private equity firms;
5. Buy & Build strategies for strategic buyers and private equity;
6. Searching & selecting acquisition targets;
7. Finding multiples for precedent M&A transactions in a certain field.

Website M&A consulting: **www.kerstencf.nl**

Website M&A training: **www.joriskersten.nl**

M&A training:

Business Valuation & Deal Structuring – 6 day training – Spring of every year (this year (2023): 15 until 21 March 2023) – Location: Hotel van der Valk Uden/ The Netherlands – Also online available on live stream. 29 PE points for Registered Valuators (RV) from NIRV;

In addition, Joris provides valuation training all over the globe on (bulge bracket) investment banks and universities in: New York, London, Hong Kong, Singapore, Dubai, Saudi Arabia, Kuwait, Mongolia, Surinam and Peru.

130 references on M&A training: **https://www.joriskersten.nl/nl/reviews**

You can book me for keynotes, training sessions & presentations on M&A and Valuation all over the globe.

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Introduction Joris Kersten

J.J.P. (Joris) Kersten MSc BSc RAB (1980) is owner of "Kersten Corporate Finance" in The Netherlands, and this is an independent M&A boutique (Mergers & Acquisitions) in consulting on M&As and valuations of medium sized companies.

Joris performs business valuations, prepares pitch books, searches and selects candidate buyers and/ or sellers, organises financing for takeovers and negotiates M&A transactions in a LOI and later in a share purchase agreement (in cooperation with (tax) lawyers).

Moreover, Joris is associated to 'AMT Training London' for which he provides training in Corporate Finance & Financial Modelling at leading ("bulge bracket") investment banks in New York, London and Hong Kong.

And Joris is associated to the 'Leoron Institute Dubai' for which he provides finance training at leading investment banks and institutions in the Arab States of the Gulf. This for example at Al Jazira Capital in Saudi Arabia and TAQA in Saudi Arabia.

In addition, Joris provides lecturing in Corporate Finance & Accounting at leading Universities like: Nyenrode University Breukelen, TIAS Business School Utrecht, the Maastricht School of Management (MSM), the Luxembourg School of Business and SP Jain School of Global Management in Sydney.

Moreover, he provides lecturing at partner Universities of MSM in: Peru, Surinam, Mongolia and Kuwait. And at partner Universities of SP Jain in Dubai, Mumbai and Singapore.

Joris graduated in MSc Strategic Management and BSc Business Studies, both from Tilburg University. In addition, he is (cum laude) graduated as "Registered Advisor Business Acquisitions" (RAB), a 1-year study in the legal and tax aspects of M&A's.

Currently Joris is following the "Executive Master of Business Valuation" to obtain his title as "Registered Valuator" (RV) given out by the "Netherlands Institute for Registered Valuators" (NIRV). This title will enable Joris to give out business valuation judgements in for example court cases.

Website M&A consulting:

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https://www.linkedin.com/in/joriskersten?lipi=urn%3Ali%3Apage%3Ad_flagship3_profile_view_base_contact_details%3BFPkOC2ThRdutX4L54vM0vg%3D%3D

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Value Creation

Working Capital & Equity Value

Introduction

An important component of business valuation is the working capital, or "net working capital", of a company.

And in this perspective it is important to study the so called "cash cycle".

Here we mean the process of "cash in" that results out of a "cash out" first.

Think for example of that businesses need to buy long term assets (like machines, buildings etc) which are earned back over multiple years, bit by bit.

Investments in "net working capital" (NWC) are sort of the same, but the cash cycle is just shorter.

And with working capital the most common components are for example:

Inventory, work in progress, accounts receivable and accounts payable.

But also more hidden components are part of this, like:

Time in between delivery of goods and sending invoices, clear agreements with suppliers which could prevent (large) inventories etc.

Within this perspective the owners of companies can ask themselves the following questions:

- When are products/ materials to buy in ordered ?
- When are invoices paid ?
- What is the average inventory turnover period ?
- How long do projects take ?
- What is paid in advance on these projects ?
- When is turnover invoiced ?
- When are turnover invoices paid ?

(P. Schuitmaker, 2017)

Analyzing working capital: Inventory

When analyzing working capital you can start for example with assessing "net working capital" (NWC).

And in an ideal world this is average NWC.

When you then divide COGS (cost of goods sold) by the average NWC you have calculated the inventory turnover.

And when you divide "365 days" with the inventory turnover, then you calculated the inventory turnover period, let's say for example 90 days.

Let's park this "inventory turnover period" for now, and I will get back on this later in this article.

(P. Schuitmaker, 2017)

Analyzing working capital: Accounts receivable

When studying the accounts receivable of a company, sometimes the policy is not too strict.

Remember that I am active in M&A consulting of medium sized (private) companies which are less strict than corporates.

For example when the agreed days sales outstanding (DSO) is 30 days, but when average DSO is 45 days, then at least we can conclude that the policy is not strict.

Let's now take a look at the effect of those two examples; inventory turnover period & DSO, on company valuation !!

(P. Schuitmaker, 2017)

Working Capital & Company Valuation

When we assume that inventory levels can be brought down, and that average DSO can be brought down as well, we know that this will not be realized 'out of the blue'.

This will take a company active administrative work, so it will bring in extra costs.

And as you might remember:

Extra costs = lower free cash flows = lower EV (enterprise value).

But this is not a problem, as long as average NWC can be reduced significantly.

Because you might also remember that:

Equity value =

EV + cash & cash like items – debt & debt like items.

And lower average NWC clearly realizes a higher "cash like item" in the form of "excess cash" at the date of the transaction.

This because less of the cash available on the balance sheet is part of the NWC.*

*Or lower average NWC will result in at least a lower "debt like item" in the form of too low NWC at the date of the transaction. When you find the term "cash like" and "debt like" items confusing, then check my former blogs on these topics on LinkedIn. I really wrote a lot on these important concepts in M&A and valuation.

Let's now make a deeper analysis on what actually happens from a valuation perspective.

(P. Schuitmaker, 2017)

ROIC versus WACC

When you have studied valuation you might remember that "goodwill" is created when the ROIC (return on invested capital) of a company is higher than the WACC (weighted average cost of capital) of a company.

It simply means that a company then makes more return on its assets (left side) than the capital a company uses costs (right side).

ROIC is calculated as:

NOPAT (net operating profit after tax/ EBIT – tax)/ (long term assets + NWC).

And the WACC is the cost of equity + cost of debt, calculated pro rate on a target capital structure.

(check my previous blogs on valuation when you are not familiar with WACC, wrote really a lot on WACC)

(P. Schuitmaker, 2017)

Increasing (equity) value

So equity value of a company increases with lower NWC, because then there is:

- More excess cash (so a higher cash like item) at the date of the acquisition;
- Or at least, there is a lower "debt like item" in the form of too low NCW at the date of the acquisition. (this is still positive for the equity value)

This since in the end, a lower NWC has an effect on ROIC:

- Because NWC gets lower, ROIC gets higher (less assets needed to realize a certain NOPAT);
- And yes NOPAT might go down a little, since reducing NWC will cost effort (and money), but most likely still ROIC will go up in the end.

And when ROIC goes up in relation to WACC, a company creates value!

(P. Schuitmaker, 2017)

Source used – book: Werken aan waardestuwers, Peter Schuitmaker 2017, BBO&F Breda.

Valuation & Investment Policy (CAPEX)

Introduction

The investment policy of a company, or capital expenditures (CAPEX), is crucial for the continuity of any business.

But you need to be careful with CAPEX, because in valuation, as we know, is has a negative effect on "free cash flow", so also on the EV (enterprise value).

In order to check whether CAPEX make sense it is important to check the "occupancy rate" of the investment.

For example, a production company can have different machines for for example 1) preparation of raw materials, 2) adjustments to semi-finished products, 3) finishing products, 4) transportation and 5) office inventory assets.

So with a certain investment plan in the above assets it is important to asses to what extend (percentages) money is invested in the different asset classes.

And even more important, it is crucial to check what the "occupancy rate" is for the investments in the different asset classes.

This means: How much time is a machine/ asset relatively (so with a percentage) used ?

When the "occupancy rate" of a machine is relatively low then its returns are generally low.

So the "cash out" from the investment then generally leads to a relatively low "cash in".

This because the machine is then earned back over a relatively long time period.

(P. Schuitmaker, 2017)

Analysis of occupancy rates

So with a certain investment policy, or investment plan, you first take the total amount of money that is planned to be invested into account.

Secondly, you then divide the money over the different asset classes like for example machines for 1) preparation of raw materials, 2) adjustments to semi-

finished products, 3) finishing products, 4) transportation and 5) office inventory assets.

Thirdly, you then check the relative amounts invested with the "occupancy rate" per asset class.

And after that you make adjustments based on your analysis.

Let's now take a look at these adjustment in a revised investment plan.

(P. Schuitmaker, 2017)

Revised investment plan: Savings

Let's assume that you conclude that 40% of the money invested with the investment plan is used for machines for "preparation of raw materials".

On top of that, let's assume that you conclude that these machines will have an occupancy rate of only 20%.

You then get a clear signal that some savings can be made here.

For example, maybe you can outsource this "preparation work" by ordering the prepared products straight away.

This instead of doing this preparation work yourself.

On top of that, maybe you can invest in just some machine "revisions" in order to lengthen their life span.

This instead of buying new ones, because the occupancy rate is so low.

And maybe you can "tackle" some of the investments to meet "environmental-standards" by outsourcing some more of the work. Work like for example coating/ painting your product.

(P. Schuitmaker, 2017)

Revised investment plan: Additional CAPEX

On the other hand, maybe you find out by analyzing the "occupancy rate" per asset class, that some machines are heavily used.

And this might mean that because of this "throughput time" increases, which leads to efficiency losses.

For these asset classes it might be wise to use (part of) the savings.

This in order to invest more heavily in these 'high-occupancy-rate' asset classes to increase efficiency.

And in the end, total CAPEX can potentially still be reduced due to the savings.

(P. Schuitmaker, 2017)

Pros & cons of savings in CAPEX: Cons

The 'con' of savings in CAPEX is increased vulnerability of the operational business.

Reason is that savings decrease 'error margins'.

Moreover, with savings in CAPEX companies often "outsource". And this means that they become more dependent on outside parties.

So management needs to carefully assess whether the CAPEX savings will NOT hurt:

1. Quality, and,
2. Efficiency.

(P. Schuitmaker, 2017)

Pros & cons of savings in CAPEX: Pros

Increased costs due to additional "handling" and "quality control" of outsourced activities (which lower CAPEX) apparently look as a 'con'.

This is true, but as long as quality and efficiency is still good, it can still have a positive effect on a business !

Let me explain that from a valuation perspective:

From our valuation theory, you might remember that firms create value when:

· ROIC > WACC, so when ROIC is higher than the WACC.

This because when a company makes more return on its assets (ROIC), than what the capital costs (WACC), the company creates value !

ROIC = Return on invested capital, and,

WACC = Weighted average cost of capital.

ROIC is calculated as:

NOPAT (net operating profit after tax/ EBIT – tax)/ (long term assets + NWC).

And the WACC is the cost of equity + cost of debt, calculated pro rata on a target capital structure.

Conclusion:

With a very strict investment plan based on "occupancy rates" long term assets are decreased.

NOPAT might go down a little due to increased "handling & quality control" costs, but it will also go up again due to less deprecation (due to less CAPEX).

With a higher, or similar, NOPAT and decreased assets ROIC will go up !

And the higher the ROIC the more value created, or with a ROIC below WACC, the least value destroyed. 😉

(P. Schuitmaker, 2017)

Source used – book: Werken aan waardestuwers, Peter Schuitmaker 2017, BBO&F Breda.

Financial Statement Analysis

Accounting Tricks: Recording revenue before completing obligations

Internet driven bull market in the '90s

One of the stars in the internet market in the late nineties was the Virginia based software seller MicroStrategy (MSTR).

In less than two years after going IPO it reached a market value of 25 billion USD.

Only later turned out that a key driver of its growth was a practice of recording sales to parties that MicroStrategy had recently invested in.

The company went public in 1998 with a market value of about 200 million USD.

But at the end of 1999 the share price rose from 20 USD to 100 USD, and shortly after to about 330 USD.

And the net worth of the founder; Michael Saylor, reached almost 14 billion USD.

(H.M. Schilit, J. Perler & Y. Engelhart 2018)

Material accounting irregularities

In March 2000 MicroStrategy (MSTR) disclosed to investors that its financial reports contained "material accounting irregularities".

Financial reports of 1997-1999 had to be restated and this resulted in massive losses instead of the reported profits.

Investors were shocked and started dumping their shares, share price decreased from about 220 USD per share to about 85 USD per share in 1 day.

But this was not the end because 12 months later the stock was worth less than 2 USD per share.

(H.M. Schilit, J. Perler & Y. Engelhart 2018)

What happened at the company MicroStrategy ?

Forbes magazine came up with a story, in early March 2000, that raised questions about MSTR's "revenue recognition" practices.

And this was just after the accountant; PricewaterhouseCoopers (PWC), had blessed MSTR's 1999 financial reports. And this contained a prospectus for a proposed stock offering.

After the article of Forbes PWC conducted an internal investigation and concluded that MSTR's financial reports were indeed false and misleading.

And this change of mind of the auditors of the company caused the stock price of MSTR to fall down.

(H.M. Schilit, J. Perler & Y. Engelhart 2018)

Warning sign: "Boomerang Transactions"

With the case of MSTR there were some warning signs.

In October 1999 MSTR announced a press release that it had signed a deal with "NCR Corporation".

MSTR described an over 50 million USD licencing agreement and partnership with this NCR Corporation.

MSTR invested in the NCR partnership, and NCR returned the favor and purchase MSTR products.

But when money flows in both directions, from seller (MSTR) to customer (NCR), and then from customer to seller, they are called "Boomerang Transactions".

(H.M. Schilit, J. Perler & Y. Engelhart 2018)

Key lessons for investors

From the MicroStrategy story we can learn two lessons.

Lesson 1:

Funds flowing back and forth between a customer and seller should raise suspicions about the legitimacy of both transactions.

Lesson 2:

Suspicious timing of press releases that announce new sales just after a period ended, should raise questions about whether revenue has been recognized to early.

(H.M. Schilit, J. Perler & Y. Engelhart 2018)

Playing with dates

The company "Computer Associates" (CA) used a "revenue inflation trick" by regularly stretching out its months to 35 days.

This in order to capture sales booked after the conventional month end.

The scheme worked well for a while, until the company was caught, and the CEO Sanjay Kumar went to jail.

The company "Sunbeam" did sort of the same in the mid-90s and changed the company's quarter end from March 29th to March 31st to deal with a revenue shortfall.

This enabled Sunbeam to recognize another 5 million USD from its core operations.

And another 15 million USD from it's recently acquired company "Coleman Corporation".

(H.M. Schilit, J. Perler & Y. Engelhart 2018)

Changing "accounting policies" to keep up growth

The coffee seller "Keurig Green Mountain" KGM tried to hide its slowing revenue growth from investors.

The company basically changed its decision rules on when "revenue recognition" begins, and where "large-quantity-rebates" get categorized in the P&L (profit & loss statement).

After very fast growth from 2005-2008 it could not keep the pace.

After that they could have let the stakeholders of the company know that growth slowed down.

Or they could "keep up" the growth for the public.

They did the latter with 2 accounting policy changes in 2008 that inflated revenues.

First:

KGM began to recognize some revenue earlier in the sales process, at the point of shipment, instead of at the delivery.

Second:

KGM started to treat incentives (large-quantity-rebates) to customers as an "operating expense" rather that a "reduction of revenue".

(H.M. Schilit, J. Perler & Y. Engelhart 2018)

Source used – book: Financial Shenanigans – How to detect accounting gimmicks and fraud in financial reports – 4th edition (2018). Howard M. Schilit, Jeremy Perler and Yoni Engelhart. McGraw-Hill New York.

Percentage of Completion Accounting – Bookkeeping Tricks

Changing revenue recognition policy to record revenue sooner

In this blog I will discuss "revenue recognition" when the seller has started to deliver on the contract obligation.

However, sometimes management records revenue in far greater amount than actually is warranted.

When we take a look at an example of the Japanese manufacturer "Ulvac" we can see that when the business struggled, they "solved" the problem by changing an accounting policy.

The sales of the company decreased with 7% from 2009 on 2008.

And the operating profit decreased with 62% from 2009 on 2008.

But then 2010 looked relatively good again since sales only decreased with 1 % from 2010 on 2009.

And operating profit increased again with 38% from 2010 on 2009.

But the company "Ulvac" just changed its "revenue recognition policy" to so called POC ("percentage of completion").

And with this approach it recognised sales much earlier than it did with its traditional approach.

(H.M. Schilit, J. Perler & Y. Engelhart 2018)

Comparison 'before & after' for company "Ulvac"

With change to the POC method the results looked quite OK for "Ulvac".

This since turnover sort of stabilised and costs were managed well, with a big increase in operating profit as a result.

But when "Ulvac" would have reported without the revenue recognition policy change, the results would have been chocking.

Sales would have further decrease from 2010 over 2009 with 21%.

And operating profit would have dropped from (at least) positive to far in negative numbers.

But changing the revenue recognition method was inexplicably approved by the auditors, and this covered the problems back then to the investors of the company.

(H.M. Schilit, J. Perler & Y. Engelhart 2018)

Background on POC method

"Percentage of completion" (POC) revenue recognition allows companies to report revenue even before a project has been completed.

It was introduced so that companies could report "business activities" in each period, even if a product was not delivered to the customer.

Thinks of long term construction type contracts.

Within this method companies are asked to estimate the proportion of the project that has been completed.

And then 'pro rata' the part of the project's revenue, expenses and profits can be recognised.

So you need to be careful here, since when you analyse a company with POC accounting, you need to be aware that the numbers are based on estimates of the company itself.

This on how far they think they are with certain long term projects.

(H.M. Schilit, J. Perler & Y. Engelhart 2018)

Another example with POC

The case of Ulvac shows us that we need to be careful with this POC method, specifically when companies switch from 'standard revenue recognition' practices to POC.

Another issue is that when companies use POC, than their revenue can be inflated with changes in key estimates or assumptions.

Let's take a look at an example.

Solar energy leader "First Solar" (FSLR) was building some of the largest solar power plants in the US in 2014.

Obviously these were long term construction projects.

FSLR applied POC accounting and it determined the percentage of completion on each contract by:

· Calculating the 'costs incurred on the project' as a percentage of the 'total expected costs'.

But under this method any changes in the company's estimate for "total project costs" had an immediate impact on the reported revenue.

This since it increased, or decreased, the estimated percentage of completion of the project.

So when the company updated its estimates for 'total project costs' in 2014, management immediately recognised an additional 40 million of revenue.

And because no additional costs were associated with this increase in revenue, it worked all the way down to 'gross profit' and 'operating income'.

(H.M. Schilit, J. Perler & Y. Engelhart 2018)

Source used – book: Financial Shenanigans – How to detect accounting gimmicks and fraud in financial reports – 4th edition (2018). Howard M. Schilit, Jeremy Perler and Yoni Engelhart. McGraw-Hill New York.

Asset Deals/ Share deals + Financing Transactions

M&A Transactions: Share Deals, Asset Deals and Legal Mergers and Divisions

Share deals: An introduction

Before I will look at "asset deals" and "legal mergers and divisions", I will look at "share deals".

In M&A the most used structure is a share deal.

Actually when we are talking about acquisitions, it is almost normal to assume that we talk about a share deal.

Although a share deal actually is not really a "logical" choice from the basis.

This in a sense that with this type of transaction the "enterprise" is actually not bought.

This because the "assets & liabilities" just stay in ownership of the "legal entity".

And only the shares in this "legal entity" are bought.

So in the meantime, the assets & liabilities stay where they are, so they just stay inside the bought legal entity.

And the "assets & liabilities" (the enterprise) is bought "indirectly" with the shares.

(Source used: T.M. Stevens & S.B. Garcia Nelen, 2017)

Share deals: Continued

Advantages of Share Deals

Concerning acquisition structure, a share deal is most used because of its (relative) simplicity.

This since transferring all the assets and liabilities separately is a lot of work (like in asset deals).

And the execution of doing an asset deal carries risks, like for example risks with "taking over contracts".

This since with an asset deal contracts can only be taken over when the counterparty agrees.

A share deal also provides flexibility in order to decide at what moment the company is "economically" transferred to the buyer.

This because the "enterprise" will stay in ownership of the "legal entity", as mentioned before.

So the profits of the enterprise will flow in first instance just in to the legal entity. And then buyer and seller can decide (contractually) who is entitled to this profit.

In addition, because the enterprise does not change ownership (since it just stays within the same legal entity), no re-valuation of assets is needed (in principal).

Although in the end, in practise this does not work like this.

Since due to the book keeping rules (e.g. IFRS) we need to put the assets for a "fair value" on our balance sheets (purchase price allocation).

From a fiscal perspective structuring an acquisition is still an issue.

Since in an asset deal "paid goodwill" can be amortised, which results in tax benefits for the buyer.

And seller needs to pay corporate tax on the "profits of the net assets" (goodwill) and this is a disadvantage again (this is the situation in The Netherlands, where I am from).

In principle this is not the case with a "share deal" due to so called "participation exemption" (in The Netherlands).

(Source used: T.M. Stevens & S.B. Garcia Nelen, 2017)

Share deal: Disadvantages

The disadvantage of share deals is that buyer actually buys something different than what he/ she really wants.

He/ she wants to buy the "enterprise" (activities + assets + liabilities), but he/ she buys "shares" in the legal entity which holds this "enterprise".

And because this "legal entity" is bought the buyer gets all the "rights and obligations" on this entity, no matter what they are.

Obviously he/ she can protect them-self for the risks associated with this in negotiated warranties and safeguards in the acquisition contracts.

(Source used: T.M. Stevens & S.B. Garcia Nelen, 2017)

Asset deals

An "enterprise" can also be "really" transferred.

This in a sense that another legal entity gets ownership of this enterprise (assets + liabilities + activities).

And with this type of deal all the assets and liabilities need to be transferred separately.

Advantage

The big advantage of an asset deal is "cherry picking".

The buyer can just buy the assets and liabilities that he/she really wants (obviously there need to be legal consent).

So one of the most important reasons for an asset deal is the fear of a buyer for a later claim, or legal liability, when they buy a (part of a) "legal entity" with shares.

And this can not be the case with an asset deal, because every part of the deal is separately considered and transferred. In other word, you exactly know what you bought.

Moreover, another advantage of an asset deal is that it can take place in stages, because all assets are transferred separately.

Disadvantage

As mentioned before, asset deals are a lot of work since all components need to be transferred separately.

And this also makes the transaction costs relatively high.

(Source used: T.M. Stevens & S.B. Garcia Nelen, 2017)

Legal merger and division

With a legal merger (in The Netherlands) all assets and liabilities of one legal entity go over to another legal entity.

With a legal division the same thing happens, but then for certain assets and liabilities.

But in both situations the "purchase price" contains out of "shares". The possibility to pay the "purchase price" in money is (about) impossible.

(Source used: T.M. Stevens & S.B. Garcia Nelen, 2017)

Source - Book: Fusies & Overnames in Nederland (2017). Authors: T.M. Stevens & S.B. Garcia Nelen. Ars Aequi Libri Nijmegen.

Financing a M&A transaction: An introduction

Financing a M&A transaction: Introduction

This blog is an introduction on how to finance acquisitions.

Acquisitions are financed with different finance instruments and different financing structures.

Concerning financing of companies there are actually only two types of financing:

1. Uncommitted financing;
2. Committed financing.

Uncommitted financing can be seen a revolving credit facility ("revolver") or financing of working capital.

In theory this type of financing can be cancelled by the bank every day.

And committed financing is there for a fixed pre-determined period of time.

(Goedkoop & Veken, 2011)

Types of financing

In large acquisitions multiple types of financing are used, ranging from senior debt to junior debt.

Senior debt

Financing forms with the best secured positions are called "senior debt". The instruments are usually issued by banks.

"Second lien" is a relative new product and is less used in The Netherlands (where I am from and based). Concerning level of security, issuers of second linen instruments are lower in ranking than senior debt issuers.

Second lien instruments are issued by banks and institutional investors.

Junior debt

Junior debt, or subordinated debt, are loans with the least level of security.

A form of junior debt that is used a lot is "mezzanine financing". Concerning level of security, it lies in between senior debt and equity, because mezzanine means "in the middle".

Another form of financing is PIK loans ("payment in kind"). Withing these type of loans interest is not paid in cash but added to the face value of the loan, and paid in the end.

(Goedkoop & Veken, 2011)

Buying assets or shares

When you buy the assets/ liabilities of a company the goodwill that is paid can be amortized by the buyer. And the results of the target and the buyer are automatically consolidated.

The costs (consultants) of the acquisition are in general deductible for tax, direct or on the longer term.

Because of the amortization of goodwill by the buyer, the "book profit" (goodwill for buyer) is taxed for the seller.

So it could be the case that the price of an acquisition is higher with an asset/ liabilities deal. This because of tax payment of the seller, on the profits made on the book value of the assets.

With a share deal goodwill can not be amortized for tax purposes by the buyer. And the costs (consultants) of the takeover are not deductible for tax purposes either.

(Goedkoop & Veken, 2011)

Private equity vs. a strategic buyer

In case of a strategic buyer, the bank will not only look at the possibilities to finance the target. They will then obviously also look that financing capacity and structure of the buyer.

Corporate finance consultant (or investment bankers) assess this by building a so called "M&A model" in excel.

And when a corporate finance consultant (or investment banker) assesses the possibilities for a financial investor to finance a deal they build a so called "LBO model" in excel.

These financial investors, also called financial sponsors (private equity), are used to do deals with high levels of debt. This in comparison with strategic parties who are in general more reluctant for this.

When a company takes on high levels of debt this has big influence in how to run the company afterwards.

The large levels of interest and principal that need to be paid requires a very careful monitoring of the returns and liquidity of a company.

This is why strategic parties are often more reluctant than private equity parties to take on very high levels of debt (even when this increases the return on equity a lot, the good old "leverage").

And private equity parties are far less reluctant with this because they are (relatively) masters in this game.

Buyout structure & debt pushdown

In a typical buyout; when a private equity party buys a company, often a new company is set up. These are called "Newco" which stands for "new company".

This newco takes over the shares in the company (target) and often the management also gets shares in the newco.

With respect to structuring of the financing of the acquisition, we need to look at the newco and to the operating company (this is the company bought).

And these "operating companies" are often called "opcos".

As you can imagine a bank prefers to finance a takeover at the opco level. This since these opcos actually possess the assets for production, accounts receivables, inventories and other assets.

In other words, the money is, and is made, in the opcos! So in case of a bankruptcy, the bank can sell the assets of the opcos in order to make (some of) their money back.

Because banks want to finance the money in the opcos, in most buyouts a "debt push down" is used.

This means that a part of the financing need in the newco (to pay for the acquisition) is pushed down to the opcos.

And then from here the money is paid back up to the newco through a dividend pay-out (in order to be able to pay for the acquisition).

When we look at the total financing needs in the newco, to pay for the acquisition, this consists out of three components:

- The price for the shares (market value of equity of the target);
- The level of the debt that needs to be re-financed (this is together with the equity value the: enterprise value);
- Transaction costs (e.g. investment bankers, corporate finance consultants, credit bank, lawyers, tax tawyers, accountants etc. etc.).

And this financing need is then further spread over the newco and opco(s).

(Goedkoop & Veken, 2011)

Covenants

When a bank issues "committed financing", like discussed above, than they can not call back the debt whenever they want.

But the banks still want to be able to take control when for example financial performance gets bad. And for that "covenants" are taken up in the credit agreements.

The credit agreements (LMAs) mention in this perspective covenants as "positive undertakings" and "negative undertakings".

Positive undertaking are circumstances that the taker of the debt should live up to, like certain legal rules.

And negative undertakings are circumstance that the taker of the debt should prevent to happen, like for example selling important assets of the company.

Example 1, three of the most used financial ratio covenants with acquisition finance are:

Leverage ratio:

This ratio looks at the relation of debt over EBITDA, and this number needs to be smaller than a certain number set in the credit documentation.

E.g. 6 times EBITDA with a US LBO, 5 times EBITDA with a UK LBO and about 3 to 3.5 times EBITDA with financing in The Netherlands where I live.

Interest coverage ratio:

This ratio tells something on how many times a company can pay the interest out of EBIT(DA).

Debt service capacity ratio (DSCR)

This ratio tells something on how many times a company can pay the interest + principle out of EBIT(DA).

Example 2, a few restriction-covenants that are used a lot are:

No further debt

No additional (bank) financing can be attracted without consent of the current issuing bank(s).

Negative pledge

No security-rights of assets can be given to other third parties.

Positive pledge

Security-rights of assets need to be given to the bank (the bank who issued current debt) when they request this, and when they do not have the security-rights yet.

Cross default

Banks can call back the debt immediately when the company does not pay interest and/ or principle or violates the covenants.

Dividend restriction

No dividend can be paid out to the shareholders when the company for example did not achieve certain ratio's yet.

(Goedkoop & Veken, 2011)

Source - Book: Bedrijf te koop – Handboek voor koop, verkoop en buyout van bedrijven. Arthur Goedkoop & Ad Veken. Publisher: Business Contact. March 2011.

Cash & Debt Free

Introduction to Net Debt

Profit & Loss Statement (P&L): Turnover

In valuation in general we start with analyzing the P&L of a company.

And this P&L starts with turnover.

When we look at turnover, we look at the five main elements:

1. Organic growth, also called "like for like growth" (LFL);
2. Growth through acquisitions;
3. Changes in group consolidation;
4. Exchange rate effects, and,
5. Bookkeeping changes.

Only organic growth and growth through acquisitions can increase value since the other elements are just driven by bookkeeping or incidental events.

For valuation it is especially important to analyse the "organic growth".

And we analyse "organic growth" in depth on the following 8 aspects:

1. The business model.

You need to find out whether the company makes money with sales of products, subscriptions or contracts, or renting or interest income.

2. Price/ volume effects

It is critical to understand the classical P * Q (price times quantity) for every product/ service group.

3. Product market combinations (PMCs)

Another classic is finding out what the PMCs are. So you really need to figure out which current and new products/ services are sold on which current and new markets.

4. Market growth and drivers for market growth

You also want to find out how much the company grew in relation to the market. And we want to know what the drivers for growth in the market(s) of the company are, including the past and recent trends.

5. Estimated turnover growth in future years

You want to find out whether the growth comes from the market or stealing market share. And do not forget to take into account that "low hanging fruit opportunities" are most likely taken already ...

6. Quality of turnover

Find out issues like: % repetitive turnover, revenue recognition policies, customer concentration, product/ service cycle, sector & country risks, turnover to related parties etc.

7. Order book

To check the order book is a no brainer. And you can compare this to the books of competitors and to the ones of the company itself in prior years.

8. Produced turnover

Production and building companies also create operating value with unsold production. You will see this back on their balance sheets as finished products and work in progress.

So for these companies we can adjust the P&L for produced turnover: Net sales + 'delta' finished good + 'delta' work in progress. Over longer periods produced turnover should not be lots higher or lower than turnover sold.

(Taco Rietveld, 2017)

P&L: EBITDA

Earnings before interest, tax, depreciation & amortization (EBITDA) is the operating profit before interest, tax, depreciation and amortization as the abbreviation tells us.

The EBITDA is very popular because it is the operating profit before the chosen way of depreciation, the tax regime and the capital structure (interest).

The downside is that the EBITDA is driven out of CAPEX (capital expenditures) from the past, and depreciation on these is not taken into account.

Moreover, we need to "clean" these EBITDAs for so called "nonrecurring items" in order to give a fair representation.

(Taco Rietveld, 2017)

P&L: Cleaning EBITDA

With extraordinary gains and losses in the EBITDA we mean gains and losses that most likely only take place once.

And we also call these gains and losses: "one-offs".

Here we also mean non-operating gains and losses.

Quite common "one-offs" are:

1. Re-organisation costs;
2. Transaction costs of acquisitions;
3. Costs for consultants;
4. Profits on selling assets;
5. Impairments on assets;
6. Goodwill impairments;
7. Exchange rate profits or losses;
8. Profits out of discontinued operations;
9. One off changes in operating provisions.

And quite common non-operating gains or losses are for example:

1. Subsidies;
2. Changes in operating provisions;
3. Pension costs (with exemption of service costs);
4. Costs of employee options.

All these extraordinary profits or losses need to be cleaned out the EBITDA.

(Taco Rietveld, 2017)

Balance sheet: Introduction

On the balance sheet we find assets that we can classify as:

- Operating assets;
- Non-operating assets (excess cash + cash like items).

And on the equity & liability side we can find:

- Equity;
- Operating liabilities:
- Non-operating liabilities (debt like items);
- Financial liabilities.

When I discuss "net debt" further in the subsequent blogs over the upcoming weeks, I will get back in much more detail on the balance sheet.

(Taco Rietveld, 2017)

Cash flow statement: An introduction

Cash flows are in general classified in four elements in a valuation setting:

1. Cash flow from operations (EBITDA and taking 'deltas' in working capital into account);

2. Investment cash flows (CAPEX);

3. Cash flow from non-operating activities (example is interest income from cash);

4. Financing cash flow from financing activities.

It is very important to understand the cash flow statement with "cash in" and "cash out" in relation to the P&L with "revenues" and "costs".

Since "revenues" are not always a "cash in", and "costs" not always a "cash out", we get (temporary) assets and liabilities on the balance sheet.

And we need to assess these assets and liabilities when evaluating "net debt" in the next blogs.

(Taco Rietveld, 2017)

Source used - Book: "Investeren & Financieren: 2nd edition" of Taco Rietveld (2017). Publisher: Vakmedianet.

Net Debt – Cash & Debt Free

Introduction

As you can read in my subsequent blogs on valuation, valuators calculate the EV (enterprise value) of companies.

And we calculate this EV with for example the technique: "discounted cash flow valuation".

But now we need to get from EV to the value of the normal shares. And the question is how to do this ?

Well, we do this by taking "net debt" into account and also the "cash like" and "debt like" items.

First the question is what we consider as "net debt" ?

And here for we need to know first what we consider just "debt".

Well, just "debt" consists out of the following components:

1) Interest bearing debt;

2) Interest & currency derivatives;
3) Third party stakes in the company (non-controlling interest);
4) Preference shares;
5) Interest to pay;
6) Dividend to pay;
7) Operating lease & rent.

Let's now take a look at these components in more detail.

(Rietveld, 2017)

Interest bearing debt (item 1)

The interest bearing debt consists out of:

- Bank loans;
- Bonds;
- Subordinated debt;
- Convertible debt;
- Financial lease;
- Intercompany debt;
- Revolving debt facility (revolver).

So these are the relative obvious ones. Now let's take a look at the more tricky ones.

(Rietveld, 2017)

Interest & currency derivatives (item 2)

Interest & currency derivatives are financial instruments in order to hedge risks concerning interest and foreign currencies.

The positive or negative market values of these derivatives are taken up in the calculation of "net debt".

A negative value contributes to "debt" and a positive value lowers "debt".

(Rietveld, 2017)

Third party stakes in the company (item 3)

When a company has a majority stake (but not 100% of the shares) in a subsidiary company, the full subsidiary is consolidated in the numbers (balance sheet, P&L and CFS).

So basically our numbers then show too much: EBITDA and free cash flow.

And this results in an EV that is too high.

For this the accountants nicely put the "third party stake in the company" on the balance sheet as a "non-controlling interest" under the liabilities.

But one should not make the mistake of taking this book value of the "non-controlling interest", and add this amount up to the debt.

Since we really need to use the "market value" of the "non-controlling interest" in the subsidiary company.

And here fore we need to make a DCF calculation of the subsidiary. Or we can build a LBO model for this subsidiary. Alternatively we can use "multiples" for the valuation.

In the end, the market value of the "non-controlling interest" is added to debt.

(Rietveld, 2017)

Preference shares (item 4)

Preference shares are in general not listed, so we do not have a market value of them.

So we also need to value the preference shares and in order to do this we use their:

- Cash flows to the holders;
- Specific subordination;
- Specific voting power;
- Limited liquidity;
- Tax & legal issues.

The above can make it complex to come up with a value for preference shares.

And this, now and then, gets an issue in M&A deals.

In a separate blog I will address these issues, and I will then specifically write about the valuation of preference shares.

(Rietveld, 2017)

Interest to pay (item 5)

Interest to pay can be found on balance sheets under the "current liabilities".

This line item simply is the result of accounting and book keeping rules.

According to the "matching principle" in accounting, the 12 month interest is taken up in the P&L as a cost.

But if not all interest is paid yet, it is temporary put on the balance sheet as a liability.

Just think of this line item as a short term debt to the bank.

So it needs to be added to debt !!

And due to the above I will take out "interest to pay" out of the working capital. Later on, when I will discuss "adjusted net debt" I will take a look at "working capital" in more detail.

(Rietveld, 2017)

Dividend to pay (item 6)

Dividend to pay is actually a short term debt to the shareholders of the company.

It sits under the current liabilities on the balance sheet, and actually is part of the working capital (according to the balance sheet).

But since "dividend to pay" is not really a working capital item, we will exclude it from working capital. More on this later on in the subsequent blogs on "cash like" and "debt like" items.

Concerning dividend to pay, the question is whether the investors are already shareholder, or not, when the dividend will be paid out.

When the investors receive the dividend, it is not a debt item!

But when the investors do not receive the dividend, then we need to consider it as "debt"!

(Rietveld, 2017)

Operating lease & rent (item 7)

The (book keeping) rules concerning "operating lease" have changed recently.

I will write a blog on lease and valuation separately later on.

In this subsequent blog I will also address the current situation for SME companies in The Netherlands under the Dutch GAAP book keeping rules.

Excess cash & net debt

So far we have talked about "debt", but there can also be "excess cash" in a company.

"Excess cash" is the free cash available in a company that could be used to pay off debt (so cash that is NOT part of the working capital).

What actually the "excess cash" amount is will be discussed in the subsequent blogs on "cash like" and "debt like" items. Because here for we need to study the "working capital" over a period of time.

But for now we can conclude that "net debt" is:

o Net debt = Total debt – excess cash.

(Rietveld, 2017)

Source used - Book: "Investeren & Financieren: 2nd edition" of Taco Rietveld (2017). Publisher: Vakmedianet.

Adjusted Net Debt – Cash Like Items

Intro: Cash like & Debt like items

Cash like items are assets which the company does not use for its operating activities.

So these non-operating assets do NOT generate any EBITDA or (operating) Free Cash Flow. But they do generate a positive (non-operating) free cash flow.

An example of a cash like item is an unused piece of machinery.

These cash like items actually represent a value, so we subtract them from net debt.

Debt like items are liabilities also separated from the operating activities of a company.

And these non-operating liabilities can lead to negative (non-operating) free cash flows.

And these are not shown in the EBITDA or (operating) free cash flows.

And the value of debt-like items need to be added to net debt.

So adjusted net debt adjusts "net debt" for "cash like" and "debt like" items.

The formula is:

· Adjusted net debt = net debt + debt like items – cash like items

And after that we get to the "equity value" as follows:

- Equity value = Enterprise value – adjusted net debt.

(Taco Rietveld, 2017)

Adjusted "net working capital"

The net working capital on the balance sheet (current assets/ current liabilities) is in practice seldom "clean & clear".

This means that it contains: cash like items, debt like items, debt and one offs.

Examples of cash like items withing working capital are:

- Receivables from claims;
- Receivables from insurance payments;
- Too high provisions on accounts receivables;
- Too high provisions on inventories;
- Receivables of interest;
- Receivables of dividends;
- Prepaid expenses (voluntary);
- Receivables of corporate tax.

And examples of debt like items within working capital are:

- Payables from claims;
- Accounts payables from capex;
- Too low provisions on accounts receivables;
- Too low provisions on inventories;
- Too high built up "vacation days" of employees;
- Management fees to shareholders;
- Payables of corporate tax.

And just "regular debt" within the working capital is (as discussed in the last blog):

- Payables of interest;
- Payables of dividends.

And now the question is what to do with these findings.

Well, we address them in the financial due diligence!

(Taco Rietveld, 2017)

Financial due diligence: Cleaning working capital

So working capital needs to be cleaned for:

1. Debt;
2. Cash like items;
3. Debt like items;
4. "one offs".

And the calculation of this adjusted working capital is part of the "financial due diligence".

This alongside with three other main elements of financial due diligence in M&A transactions.

In summary, the four main pillars of the financial due diligence in M&A transactions are:

1. Calculating adjusted (clean) working capital items;
2. Calculating the adjusted EBITDAs;
3. Calculating the adjusted net debt;
4. Calculating a "normal/ realistic" working capital.

(Taco Rietveld, 2017)

Cash like items

Now let's take a look at the additional "cash like items" we can find on the balance sheet:

1. Future exceptional income;
2. Excess investments;
3. Excess net working capital;
4. Tax receivable;
5. Deferred tax assets;
6. Financial fixed assets;
7. Unused assets;
8. Discontinued operations;
9. Pension plan assets;
10. Goodwill from asset transactions in the past.

And now let's take a look at these items in more detail.

(Taco Rietveld, 2017)

Future exceptional income (item 1) & Excess investments (item 2)

A company can receive income in the future out of, for example, claims against third parties or from insurance companies.

This is a cash like item (one needs to estimate chance, size, and timing do).

And concerning Excess investments: When a company owns brand new, and up to date, fixed assets, this will result in less CAPEX in the future.

A valuation method like DCF or LBO analysis will take this into account. But when one purely values based on multiples this is not taken into account. And we can then add a cash like item for this.

(Taco Rietveld, 2017)

Excess net working capital (item 3)

When we sell a company it should contain a normal level of working capital.

But what is a normal level of working capital ? Here for we look at the last three years.

We first "clean" the net working capital for:

- Cash like an debt like items in working capital, as mentioned earlier in this blog;
- Debt items, as mentioned earlier in this blog;
- And "one offs", as mentioned earlier in this blog.

After that we calculate the average working capital over the last twelve months (LTM).

Due to seasonal impact working capital fluctuates around the average working capital.

So when you sell a company with balance sheet date 31st December, and working capital is higher than the average, than we have another "cash like item" in the deal.

And obviously, when working capital at 31st December is lower than the average, than we have another "debt like item" in the deal.

(Taco Rietveld, 2017)

Tax receivable (item 4) & Deferred tax assets (DTAs) (item 5)

A receivable of corporate tax is generally seen as a cash like item.

So in other words, it belongs to the seller, cause it is an effect of the past (pre take over).

DTAs are tax advantages that can be received in the future.

We need to estimate when we expect these receivables, and we need to discount them with a discount rate ideally higher than the WACC (cause DTAs are uncertain). And then it is a cash like item.

(Taco Rietveld, 2017)

Financial fixed assets (item 6)

Financial fixed assets consist out of:

- Securities (e.g. stocks & bonds);
- Minority share holdings;
- Interest bearing loans (issued);
- Claims on third parties.

All these financial instruments are cash like items, since they are not needed to realise the operating EBTIDA or free cash flow.

Do not forget to value these instruments by market value, like for example the minority share holdings (use multiples, DCF, LBO analysis etc.).

(Taco Rietveld, 2017)

Unused assets (item 7) & Discontinued operations (item 8) & Pension plan assets (item 9)

Unused assets do not contribute to the EBITDA or free cash flows, so should be valued separately.

Discontinued operations (assets & activities) should be valued separately as well.

Pension assets are also separate from the EBTIDA or free cash flows, so these also should be valued separately.

In other words, they can all be cash like items.

(Taco Rietveld, 2017)

Goodwill from asset transactions in the past (item 10)

When a company did takeovers in the past, they could have bought "shares" or "assets & activities".

When they bought assets, most of the time the price was higher than the book value (tax value). And this results in goodwill on the balance sheet.

Goodwill on asset deals from the past can be amortised, which has an effect on corporate tax payable (cash effect).

And the present value of this tax effect is a cash like item as well.

(Taco Rietveld, 2017)

Source used - Book: "Investeren & Financieren: 2nd edition" of Taco Rietveld (2017). Publisher: Vakmedianet.

Adjusted Net Debt – Debt Like Items

Adjusted net debt - Debt like items: Introduction

Before I will jump into the "debt like items" of the "adjusted net debt" in detail, let's first review what the following concepts mean:

1. Cash like items;
2. Debt like items;
3. Adjusted net debt.

I have given this introduction already in the previous blog on this topic (blog 3). But it is important that everybody understands the basics.

So let's take a look at these basics shortly:

Cash like items are assets which the company does not use for its operating activities.

So these non-operating assets do NOT generate any EBITDA or (operating) Free Cash Flow. But they do generate a positive (non-operating) free cash flow.

An example of a cash like item is an unused piece of machinery.

These cash like items actually represent a value, so we subtract them from net debt.

Debt like items are liabilities also separated from the operating activities of a company.

And these non-operating liabilities can lead to negative (non-operating) free cash flows.

And these are not shown in the EBITDA or (operating) free cash flows.

And the value of debt-like items need to be added to net debt.

So adjusted net debt adjusts "net debt" for "cash like" and "debt like" items.

The formula is:

· Adjusted net debt = net debt + debt like items – cash like items

And after that we get to the "equity value" as follows:

· Equity value = Enterprise value – adjusted net debt.

(Taco Rietveld, 2017)

Debt like items

I have looked at "cash like items" already in detail in blog 3.

And in this 4th blog I will look at the "debt like items" in detail.

Let's first sum up the "debt like items" and let's then take a look at them in more detail:

1. Future exceptional expenses;
2. Overdue investments;
3. Inadequate net working capital;
4. Deferred revenues;
5. Tax payable;
6. Deferred tax liabilities;
7. Pension liabilities;
8. Non-operating provisions;
9. Off balance liabilities.

(Taco Rietveld, 2017)

Future exceptional expenses (item 1) & Overdue investments (item 2)

A company can have future exceptional expenses coming forth out for example claims of third parties against the company.

This is a debt like item (one needs to estimate chance, size, and timing do).

And concerning overdue investments: When a company has overdue investments in fixed or intangible assets (or marketing or R&D), then this will result in more CAPEX in the future.

A valuation method like DCF or LBO analysis will take this into account.

But when one purely values based on multiples this is not taken into account. And we can then add a debt like item for this.

(Taco Rietveld, 2017)

Inadequate net working capital (item 3)

When we sell a company it should contain a normal level of working capital.

But what is a normal level of working capital ?

Here for we look at the last three years. But we first "clean" the net working capital for:

1. Cash like an debt like items in working capital, as mentioned in the previous blog (article 3*) in this sequence;
2. Debt items, as mentioned in the previous blog (article 3*) in this sequence;
3. And "one offs", as mentioned in the previous blog (article 3*) in this sequence;

After that we calculate the average working capital over the last twelve months (LTM).

Due to seasonal impact working capital fluctuates around the average working capital.

So when you sell a company with balance sheet date 31st December, and working capital is higher than the average, than we have another "cash like item" in the deal.

And obviously, when working capital at 31st December is lower than the average, than we have another "debt like item" in the deal.

(Taco Rietveld, 2017)

*Article 3: Valuation: Adjusted net debt – Cash like items

https://www.linkedin.com/pulse/valuation-adjusted-net-debt-cash-like-items-kersten-msc-bsc-rab/

Deferred revenues (item 4)

Deferred revenues are revenues from goods or services that are paid already, but still need to be delivered to the client.

Some professional argue this is a debt like item, and some professionals argue it should be modeled in the operating working capital. Therefore it should be assessed case by case, so M&A deal by M&A deal. This depending on the business model of the specific company.

When the deferred revenues are qualified as a debt like item, technically the debt like item consists only out of the COGS (costs of goods sold) and OPEX (operating expenses).

(Taco Rietveld, 2017)

Tax payable (item 5) & Deferred tax liabilities (item 6)

A payable of corporate tax is generally seen as a debt like item.

So in other words, it belongs to the seller, cause it is an effect of the past (pre take over).

And DTLs (deferred tax liabilities) are tax liabilities that likely need to be paid in the future.

We need to estimate when we expect to pay these liabilities. And we need to discount them with a discount rate (e.g. WACC). And then it is a debt like item.

(Taco Rietveld, 2017)

Pension liabilities (item 7) & Non-operating provisions (item 8) & Off balance liabilities (item 9)

Pension liabilities are non-operating provisions. So they are separated from EBITDA or free cash flow.

This is why we need to value them separately, and then they can be seen as debt like items.

The same goes for other non-operating provisions.

Remember that just "operating provisions" are already taken into account in the "free cash flow" calculations of a "discounted cash flow valuation".

But for "non-operating provisions" this is not the case. So they should be valued separately as a debt like item.

Off balance liabilities like "earn outs" and "guarantees" should be valued separately as well as debt like items. Obviously, one needs to estimate chance, size, and timing of the expected payments of these liabilities.

(Taco Rietveld, 2017)

Source used - Book: "Investeren & Financieren: 2nd edition" of Taco Rietveld (2017). Publisher: Vakmedianet.

M&A Closing Mechanisms – Locked Box & Completion Accounts

Closing a M&A transaction

In a buy side M&A process, so when you try to buy a company, you place a first bid on a company based on "enterprise value" (EV).

And then later after the "due diligence" (DD) the "adjusted net debt" (*) is deducted from EV. This in order to get to the price of the shares or equity value.

When final agreement is reached about the terms and conditions of a M&A transaction, then lawyers can draft the share purchase agreement (SPA).

Concerning the SPA there can be two different flavors for the "closing mechanisms":

1. "Signing date" is the "effective date";
2. "Closing date" is the "effective date".

Let's now take a look at these two options in more detail.

(Loek Radix, 2016)

*I have describe "adjusted net debt" very detailed in 4 blogs, you can find them all 4 at the end of this one.

"Signing date" is the "effective date" (Locked box)

In this type of contract, the signing date of the contract is the fictitious date of the M&A transaction.

A "final" price is then determined and the business is then exploited (economically) on account of the buyer.

From then on no more cash is added to, or subtracted out of, the business, and this is the "locked box".

The problem with this "closing mechanism" is that the business is already (economically) exploited by the buyer, but (legally) he/ she is not the owner yet. Technically he/ she is only the 'economic' owner.

And the buyer only gets true 'control' at the date of the 'legal' delivery of the shares. At this date, the legal closing date, the final purchase price can be determined.

But this can cause some confusion.

Let's imagine that in the SPA a price of 100 million euro is agreed on for the shares. And let's imagine that the company has 20 million euro in net debt. The enterprise value is than obviously 120 million euro.

But what if the company has generated 5 million in cash in between the signing date and closing date. Technically then net debt is reduced, which makes the EV 115 million euro.

And what if 10 million is invested in this in between time? Then EV would become 125 million euro.

This implies that in a locked box mechanism reservations should be made concerning the price (in terms of EV) at signing date. Since the EV at closing date forms the input for the PPA ('purchase price allocation') of buyer.

(Loek Radix, 2016)

"Closing date" is the "effective date" (completion accounts)

With this technique of agreement the price is temporarily set at the signing date.

And afterward the business is also formally (legally & economically) exploited by the buyer.

But the risk is that the seller misuses the company until this closing date, they can for example:

- Don't invest in necessary assets anymore;
- Don't do any maintenance on the buildings;
- Don't pay of the suppliers;
- Collect the money from accounts receivables dis-proportionally;
- Etc.

So with "completion accounts" these risks need to be addressed in the contracts.

Basically actions/ activities that lower the value of the business need to be taken up in the contracts, like:

- Taking out cash;

- Building down net working capital;
- Maintenance under a certain minimum;
- Not paying taxes;
- Taking up loans;
- Losing key personal;
- Etc.

Although, most of these risks are "automatically" addressed with using the concept "adjusted net debt". I will get back to this when I summarize this method (completion accounts) later on in this article.

(Loek Radix, 2016)

Summarized: Locked box & completion accounts

So we have concluded that the price for the shares of companies are generally based on:

1. A fixed enterprise value (EV);
2. An effective date;
3. (Adjusted) net debt.

From the "effective date" on the business is exploited on behalf of the buyer (economically). At this moment in time he/ she is not the 'legal' owner yet, but he/ she is the 'economic' owner.

The (adjusted) net debt is taken from the balance sheet 1 day before the "effective date".

So until this "effective date" the seller is the 'economic' owner.

When the "effective date" is BEFORE the date of the legal delivery of the shares, then the buyer takes over the company economically backwards.

(he/ she becomes economic owner first, and subsequently he/ she becomes the legal owner)

Otherwise the "effective date" is 1 day after the legal delivery date of the shares and balance sheet date.

And obviously: Price = EV – (adjusted) net debt at date of the acquisition balance sheet.

Let's now summarize the two closing mechanisms:

1) Locked box and 2) completion accounts.

(Loek Radix, 2016) (Taco Rietveld, 2017)

Summarized: Locked box

With a "locked box" the price of the shares is fixed, because of an available balance sheet for the acquisition.

The 'legal' delivery date of the shares is AFTER the "effective date" (this is the "locked box date").

The effective date is 1 day after the balance sheet date. Often the balance sheet date is 31st December and the effective date is often January 1st.

So from the effective date the buyer gets the cash flows (he/ she is the economic owner). But buyer possibly pays an interest for the time in between effective date and legal delivery date.

From the 1st of January (effective date) the buyer does NOT have control yet, he/ she will only gets this at the legal delivery date.

This "problem" of (no) control is taken care of with prohibitions for "value leakage" in the contracts until the legal delivery date.

(Loek Radix, 2016) (Taco Rietveld, 2017)

Summarized: Completion accounts

And with this method the seller will deliver the shares at the legal delivery date for a provisional price.

This provisional price is based on an "adjusted net debt" of for example the last annual report, or it is based on an estimated acquisition balance sheet.

At least here the effective date is 1 day after the legal delivery date.

Within weeks after the legal delivery date a final balance sheet is put together with unchanged valuation principles for the line items in the balance sheet.

These valuation principles are written down very detailed in the contracts (e.g. the principles to calculate adjusted net debt).

So due adjustment in the final price it does not make any sense for a seller to for example pay out a dividend, or to build down net working capital, before the legal delivery date.

This because the enterprise value is fixed already! And the rest will just be settled anyway with "adjusted net debt".

So after the legal delivery date, and after the acquisition balance sheet is constructed, buyer pays (or gets) euro-for-euro when the "adjusted net debt" is decreased (or increased).

(Loek Radix, 2016) (Taco Rietveld, 2017)

Sources used:

- Book 1: Winstbegoocheling – Handboek voor de kritische controller (2016). Loek Radix. Publisher: Eburon.
- Book 2: "Investeren & Financieren: 2nd edition" of Taco Rietveld (2017). Publisher: Vakmedianet.

Consolidation of M&A targets and Purchase Price Allocation (PPA)

Introduction of this article on M&A consolidation

In this article I will talk about M&A target consolidation, purchase price allocation (PPA) and asset write ups.

I am NOT an accountant or lawyer, I am a corporate finance consultant involved in M&As, business valuation and financial modelling.

In order to be able to build financial models for valuation, or M&A, you need to have a basic understanding of for example PPA.

Think of for example "Leveraged Buyout (LBO) Analysis", here you need to estimate the asset write ups and deferred tax liabilities (DTL's) after the deal.

Also when you build a M&A model to calculate whether the deal is "accretive" or "dilutive", you need to make these assumptions.

The assumptions you make in a M&A model; this is a model in which you assess the target + buyer in combination), concerning PPA influence the "accretion" or "dilution" in a deal.

In case you want to refresh you knowledge on the M&A model first, please read my previous blog on the link below:

Article: M&A Analysis – Accretion/ Dilution:

https://www.linkedin.com/pulse/ma-model-accretion-dilution-joris-kersten-msc-bsc-rab/

I only have a basic understanding of PPA, so I am a valuator/ financial modeller, and I work here with input that I get from accountants, lawyers and PPA specialists. I obviously advise you to do the same, this article can help you a little do to understand the basics.

I am not informed with all up to date info since "M&A consolidation" is NOT part of the job of a valuation/ corporate finance consultant. A CPA (certified public accountant) can inform you about all the very latest insights. You probably know one! 😊

M&A consolidation: An introduction

How to consolidate a target company when you have bought it is very complex from a bookkeeping/ accounting perspective.

An important question is at what moment in time you can consolidate a target company. The rules are here that it should be done like with "normal" consolidation, so when you have "control" in the target.

But with M&A there in general is a large gap between the closing date of the deal an the first agreement on the acquisition.

And even when you own the company already from an "economic perspective", this is not a criteria for consolidation.

The criterium here is still "control", so the earnings that are for the buyer (before you have legal control) need to be deducted from the purchase price of the acquisition.

Read more on "economic" and "legal" ownership in my previous blog on "closing mechanisms" in M&A (locked box vs. completion accounts), the link can be found here:

M&A closing mechanisms: Locked Box & Completion Accounts

https://www.linkedin.com/pulse/ma-closing-mechanisms-locked-box-completion-accounts-joris/

(Loek Radix, 2016)

The opening balance sheet

Back in the old days you could just take the book values of the acquisition target in your own balance sheet.

And then deduct the goodwill (difference acquisition price and book values) from your equity.

Later on goodwill was put on the balance sheet and amortized. But still goodwill was the difference between the purchase price and the book value of the assets.

Nowadays (with IFRS) you need to look at the purchase price, and you need to allocate this price to the bought assets first. What is then left in the end in called "goodwill".

But here fore you need to re-value all the assets of the bought company to the actual value.

This including "assets" that are NOT on the balance sheet YET (pre deal), so intangible assets.

Let's now take a look at the most important assets that we come across.

(Loek Radix, 2016)

Inventories

The inventory of finished products need to be valued on market value minus the costs that still need to be made to sell those inventories.

The idea is that for the profit inside the inventory of finished products is paid already in the acquisition price.

And with a FIFO system ("first in first out" administrated in the "costs of goods sold") these inventories are sold first post-acquisition. Which means no profits in the first period after the acquisition.

(Loek Radix, 2016)

Fixed assets

All fixed assets need to be re-valued to real value. Often for this external (asset) valuators need to be consulted.

A higher value of the assets basically means more depreciation and a lower profit.

So for an inhouse controller it is very important to check, and understand, the asset valuation reports carefully since it will impact the P&L.

(Loek Radix, 2016)

Intangible assets

Basically here one (IFRS law makers) believes that the profit earning capacity of a company is the result of two factors.

One, there are "hard" variables like the fixed assets, but also intangible assets like:

· technological knowhow, software, patents, brand-names, licenses, recipes, customer lists etc.

On the other side there are variables that are really immaterial like:

· the quality of people, accumulated knowledge and experience, business culture etc.

After an acquisition there are many categories of intangible assets that need to be identified:

1. Marketing related (e.g. brand names, logos);
2. Customer related (e.g. customer lists, customer contracts);

3. Contract related (e.g. licences);
4. Technology related (e.g. patents, recipes).

The valuation of these intangible assets after an acquisition is work of specialists. And this is often done by external specialists.

We as M&A consultants, valuators and financial modellers make assumptions here.

But be careful, because as mentioned, your assumptions have an effect on for example the "accretion/ dilution" in a M&A model.

So get advise from accountants, lawyers and PPA specialists here when you are building you financial valuation model!

Although, for the specific valuation of the bought assets, future cash flows are isolated and allocated to these specific assets (so called "asset write ups").

After that you get intangible assets of a certain amount, and amortization takes place on this amount.

(Loek Radix, 2016)

Goodwill

When after the re-valuation of the assets is something left (real value of the assets minus purchase price), then we can speak of "goodwill" on your balance sheet post deal.

Goodwill does not have to be amortized. But yearly a company needs to conduct an impairment test on this goodwill.

This is a sort of yearly valuation of the company/ business unit (think of a DCF valuation). And this in order to check whether the goodwill is still appropriate and legitimate.

(Loek Radix, 2016)

Deferred tax liabilities (DTL's)

Post-acquisition new assets (or asset write ups) are realized, like intangible assets (or write ups) and fixed assets (or write ups).

And over the new assets or "write ups" a DTL is formed on the balance sheet.

From a bookkeeping perspective the asset write ups are depreciated and amortised. And the tax effect of this is yearly subtracted from the DTL until it's gone from the balance sheet.

I have described this in detail in my earlier article on the M&A model, the link can be found below:

Article: M&A Analysis – Accretion/ Dilution:

https://www.linkedin.com/pulse/ma-model-accretion-dilution-joris-kersten-msc-bsc-rab/

(Loek Radix, 2016)

Source used - Book: Winstbegoocheling – Handboek voor de kritische controller (2016). Loek Radix. Publisher: Eburon.

Valuation: How to adjust for "Operating Lease" (under Dutch GAAP)

Operating lease and valuation: An introduction

As mentioned, I am from the Netherlands. And under Dutch GAAP (the Dutch bookkeeping/ accounting rules) we can still put "operating lease" as an expense in the P&L.

And we can keep the debt involved with the operating lease "off balance" for non-listed firms.

This in contrast to the IFRS (the European bookkeeping/ accounting rules for "listed" firms), since IFRS 16 tells us to show the debt involved with lease on the balance sheet.

In the Netherlands I still get questions from professionals on how to treat "operating lease" in valuations. And this specific for non-listed firms with annual reports under Dutch GAAP.

So I have decided to write this blog about it.

The source used for this blog is the classic article of "Aswath Damodaran":

· Dealing with operating leases in valuation (1999). Aswath Damodaran. Stern School of Business New York.

In case you have not read the article, it is highly recommended!

Operating lease in the P&L

Leasing is an alternative of borrowing money and buying the assets.

This also means that lease payments are financial expenses and not operating expenses.

And this obviously will have an impact on income, debt and overall profitability.

So let's take a look at how we need to adjust "operating lease" since we can still find this expense in annual reports under Dutch GAAP (in contrast to IFRS).

(Aswath Damodaran, 1999)

Operating lease capital adjustment

When operating lease is considered a financing expense, then the present value of the future lease payments has to be treated like "debt".

To convert operating lease commitments into an equivalent debt amount we need to discount them back to the present. And here fore we use the pre-tax cost of debt of the company.

The book value of equity of the company is unaffected by this!

So the adjusted book value of capital = Book value of capital + present value of future (operating) lease payments.

(Aswath Damodaran, 1999)

Operating lease income adjustment

If operating lease expenses represent fixed commitments for the future, then they have to be treated as financing expenses and not operating expenses.

This will have a big impact on operating income since current "operating lease" expenses all sit in the operating expenses.

So taking operating lease out will increase the operating income!

Let's take a look at the formula on how to calculate this:

· Adjusted pre-tax operating income = EBIT + imputed interest expenses on capitalized lease.

But moving all "operating lease" costs to below EBITDA should have no effect on "net income".

This since we change the operating lease amount to:

1. Interest;
2. Depreciation.

And both items are "above" net income (so no effect in the end).

The only thing that can happen is that there are "timing effects" with the net income earlier in the years being lower, and later in the years being higher as a result of the re-categorization.

So the net income after the adjustments for operating lease with look as follows:

· Net income = net income + operating lease expenses – imputed interest expense on capitalized lease – depreciation on capitalized lease asset.

(Aswath Damodaran, 1999)

Operating lease free cash flow (FCF) adjustment

When operating lease expenses are treated as financing expenses not only operating income is affected but also the "net capital expenditures" (capex).

So to be consistent with the treatment of operating lease as financing expenses, also specific capital expenditures need to be taken into account.

We do this by looking at the present value of lease expenses over time.

And then we take the yearly "delta" of the present value of the lease expenses as a capex.

Let's show this with a formula:

Net capex (t) = present value operating lease (t) – present value operating lease (t – 1).

(Aswath Damodaran, 1999)

The effect of "cleaning operating lease" on discounted cash flow value

Firms with increasing operating lease expenses over time will have net capital expenditures reflecting this growth.

The final effect on free cash flow (to firm) of treating operating lease expenses as financing expenses will depend on two factors:

1. The reclassification of "operating expense" to "finance expenses" will increase the free cash flow to the firm;

2. Any increase in the present value of operating lease expense over time will have a negative effect on cash flow because it will be treated as an additional capex.

And in the end there is no effect on free cash flow (to equity) with this reclassification (operating lease expense to financing expenses).

This because the increase in "capital expenditures" (created by the change in present value of operating lease expenses) will be exactly offset by the increase in "net debt" created by this reclassification.

Converting operating lease expenses into financing expenses affects the firm by changing:

1. Operating income;

2. Net capital expenditures (capex);

3. Level of debt (and the "cost of capital"/ WACC).

Concerning valuation, we look at the "enterprise value" (EV).

We calculate this EV with the modified inputs and then we take out the "net debt".

And obviously net debt includes the debt associated with "operating lease" as well!

And now we can conclude that changing operating lease into a financing expense has no impact on the equity value.

When we value with "multiples" then this is another story, so let's now look at that situation!

(Aswath Damodaran, 1999)

Operating lease adjustments to multiples

Many of the same issues as we have discussed before also apply to "valuation multiples".

"Multiples" are used all over the world to value companies relatively easy.

If the multiple is an "equity multiple" (e.g. price/ earnings or price/ book value) then there should be no effect from re-categorizing operating lease.

But if the multiple is on firm value, in other words on EV, than you really need to be careful!

We all know the multiple: Enterprise value/ EBTIDA.

When we have re-categorized operating lease this would look as follows:

· Enterprise value/ EBITDA = (Market value equity + Market value Debt + Present value operating lease payments) / (EBITDA + operating lease payments expenses)

Whether the EV/ EBITDA multiple will increase, or decrease, depends on whether the "un-adjusted" EV/ EBITDA multiple is greater than, or lesser than, the ratio of the "present value of operating lease expenses" to the "annual operating lease expense".

The implications for analysis where firm value multiples are compared across companies can be profound in any of the following scenarios:

1. When some firms lease assets and other firms buy their assets;

2. When some firms treat leases as capital leases while other firms qualify for operating leases.

In both situations converting (adjusting) operating leases to equivalent debt will make EV multiples comparable!

So the rule with "financial statement analysis" and "valuation" is to always adjust for operating lease!

Especially with multiples it is important to adjust for "operating lease" first! 😊

This is not an issue anymore with IFRS (because of IFRS 16), but for Dutch companies under Dutch GAAP this still needs to be done, as mentioned at the start from this article! 😊

(Aswath Damodaran, 1999)

Source used – Article: Dealing with operating leases in valuation (1999). Aswath Damodaran. Stern School of Business New York.

Net Debt

Mergers & Acquisitions done on a "Cash & Debt Free" basis !

Intro to cash & debt free

Companies are generally valued at some measure of earnings or some expectation about future earnings.

And this represents the earnings of the underlying business you are buying.

So earnings from the actual operations of that business.

And not the earnings of things that do not necessarily belong to, or represent, those operations, like its capital structure !

(Kevin Tomossonie, 2020)

Capital structure

The capital structure of a company is the amount of cash, short term investments, debt and equity, a company has on its balance sheet.

But this basically represents the result of all the past financial decisions that were made in that business.

So when there are things like gains or losses from short term investments, or interest expenses related to debt, this has nothing to do with the operations of that business.

This is why we separate the business' operations from the capital structure in business valuation.

So we value businesses based on its operations, and this separated from whatever funding and financing decisions were made in the past.

And this is what is meant with valuation "cash & debt free", so free from capital structure from the past owners.

(Kevin Tomossonie, 2020)

Deal cash & debt free

Valuation cash & debt free means valuating a company like is has no cash or debt in it.

Here fore we start valuating the business purely on its operations.

And generally this is called the "headline price" of a M&A deal.

Also quite often this is called the "enterprise value" (EV).

So in general a buyer wants to pay a certain headline price (enterprise value) for a company, based on the value of its operations.

And then the seller will be responsible for paying off any debt that the business has.

When there is any cash left after paying back the debt, the seller will then get paid for that on a "euro for a euro basis".

But if there is not enough cash in the company to pay back the debt, then it will need to come out of the seller's earnings from the deal.

So in that case, paying back the debt is deducted from the headline price (enterprise value).

(Kevin Tomossonie, 2020)

The benefits of deals cash & debt free

These type of deals are very practical from a seller's perspective.

This because when there are many bidders on one deal, it is easy to compare the bids, since you can judge/ compare the "headline price" (enterprise value) they offer.

But it also benefits the buyer !

This since it will take a lot of time to:

- Agree on a price for a M&A deal;
- Negotiate a letter of intent (LOI);
- Perform the due diligence (DD);
- Negotiate final terms in a SPA or APA.

And in the mean time, the amount of cash and debt is most likely going to change.

Potentially it could change a lot, but this does not matter with a "cash & debt free" deal.

This because the headline price (enterprise value) stays the same.

And the "net debt adjustment" provides us with a mechanism that settles the level of cash & debt in the business at the time of closing the deal.

(Kevin Tomossonie, 2020)

Source used - book: Crushing it as a corporate buyer in the middle market (2020). Kevin Tomossonie. Rock Center Financial Partners, New York.

Mergers & Acquisitions and the "Net Debt Adjustment" !

Net debt adjustment

Net debt adjustments are commonly used and accepted in M&As in The Netherlands (where I am from) and all over the globe.

But things get a little complicated on how a buyer and seller choose to define what should be included in "debt".

This since there is a "grey area" on what "debt" and "debt like items" are.

And anything that the buyer sees as debt will be subtracted from the "headline price" (enterprise value).

But this also reduces what the seller gets in the end.

So here you see the potential problem!

(Kevin Tomossonie, 2020)

Defining debt

When it comes to defining debt in an M&A transaction, some line items from the balance sheet are (almost) always included.

Think of:

- Interest bearing loans;
- Bonds;
- Notes payable;
- Other long-term debt like obligations.

Unpaid dividends are also treated as debt in M&A.

Just so that a seller does not declare a lot of dividends that need to be paid by the buyer after the transaction is closed.

So most M&A lawyers have a standard list of debt items in M&A transactions.

And here it is very important for you as a Corporate Finance advisor to cooperate with the lawyers, this in order to give the financial economic input in the agreements !!

But sometimes there are special items that can also be treated as debt in an M&A deal.

These type of debt items generally fall within three buckets:

1. There could be obligations that were created but what really were finance decisions by the seller;

2. There could be "legacy liabilities" from things that happened a long time ago but still haven't been paid;

3. There could be things that a buyer is just not willing to pay.

Examples of these debt items are:

- Accrued interest;
- Financial lease obligations (also operating lease obligations, still there under Dutch GAAP, as I am from The Netherlands);
- Liabilities related to hedging activities/ financial instruments;
- Unfunded pension obligations;
- Unpaid employee severance;
- Restructuring liabilities;
- Past due payables to suppliers (stretched beyond normal terms);
- Payables to related parties;
- Income tax liabilities.

And at the end, these debt items are finally addressed in the due diligence.

(Kevin Tomossonie, 2020)

Debt versus operating liabilities

Debt items should not be confused with normal operating items.

Examples of normal operating items are:

- Payables to suppliers (that aren't yet due);
- Accrued payroll;
- Accrued rent;
- And all other operating expense type items that are normally incurred in businesses (and aren't due yet).

Concerning these working capital items, these are separately covered in the share purchase agreement (SPA).

I will talk about how to deal with working capital adjustments in M&A in the next blog.

(Kevin Tomossonie, 2020)

Negotiating debt and debt-like items

Now we have concluded that it is not always clear what debt and debt like items are in M&A.

That's why I advise you as a buyer to be very clear about debt items.

For example, when you place a bid on a certain target company, then for example place the bid on:

1. A certain times (cleaned) EBITDA;
2. Cash & debt free;
3. AND define what you mean with debt !!

By defining "debt" in the bidding phase already, and later in even more detail in the letter of intent (LOI), there will be less confusion when determining "adjusted net debt" when closing the deal.

When you do not address the definition of debt early in the deal, then you might get the feeling of re-negotiating the deal over and over again in the M&A process.

(Kevin Tomossonie, 2020)

Source used - book: Crushing it as a corporate buyer in the middle market (2020). Kevin Tomossonie. Rock Center Financial Partners, New York.

The "Working Capital Adjustment" in Mergers & Acquisitions !

Working capital

Working capital is a combination of short term assets and liabilities that a business creates as it does its day to day business.

Short term assets are assets like for example:

- Accounts receivables from customers;
- Inventories;
- Prepaid expenses for things like rent and software licences;

And short term liabilities are for example:

- Accounts payables to suppliers;
- Accrued payroll;
- And other accrued (operational) expenses that eventually need to get paid.

And this working capital is there every day and cannot be ignored, so it is just part of a business.

(Kevin Tomossonie, 2020)

Working capital in M&A

In M&A the working capital is normally calculated by taking current assets (excluding cash) minus current liabilities (excluding debt).

And the net of the two is the "net working capital".

When for example a business has a normal net working capital level of around 5 million euro, it is expected that net working capital will be around 5 million euro around closing an M&A deal.

(Kevin Tomossonie, 2020)

Working capital adjustment

But as we know, working capital can fluctuate.

So buyer and seller in an M&A deal agree that the purchase price of a company (enterprise value/ EV) will be adjusted by a "normal level of working capital" to get to equity value (the price of the shares).

And this normal level of working capital is called the "working capital target" of a deal, and this number is used for the involved calculation.

For example, when the target working capital is 5 million euro, and when the real working capital level at closing is 6 million euro, then the purchase price will be INCREASED with 1 million (6 – 5 = 1 million "too much" working capital at closing).

And when the real level of working capital would be 4 million at closing, then the working capital at closing would be 1 million "too low" (4 in realtime – 5 on average = -1), so the purchase price will then be DECREASED with 1 million.

(Kevin Tomossonie, 2020)

Issues with working capital in M&A

Working capital adjustments in M&A serve two purposes:

1. It protects the buyer that a seller will squeeze out cash from the business by decreasing its working capital (since this will be adjusted anyway with the purchase price);

2. It realises that the seller will continue to invest in working capital in the business, even when they are selling, since adjustments for working capital on the purchase price will be made anyway.

The only problem is: How to set a "target working capital" ?!

Well, this needs to be set by analysis, judgement and negotiations.

And this will be the topic of my next blog: Setting working capital targets !

And in the blog after that I will talk about how deals are actually technically done.

And here in The Netherlands this is mostly done with a "locked box" mechanism. So there is more to come, stay tuned!

(Kevin Tomossonie, 2020)

Source used - book: Crushing it as a corporate buyer in the middle market (2020). Kevin Tomossonie. Rock Center Financial Partners, New York.

M&A Target Working Capital !

The working capital analysis

A well built working capital analysis does three things:

- It helps to define which assets and liabilities should be included in the adjustment;
- It helps to set a normal level of net working capital;
- It helps the buyer and the seller to set a "target net working capital".

Ideally the analysis is done every month, but when data is not available then on a quarterly basis.

And this for a period of at least the past two years, and forward to whatever forecast is available.

Usually for M&A deal purposes there are three things that you want to keep out the net working capital analysis:

- Cash, debt and incomes taxes in order to not "double count" them;
- Non-operating assets;
- Non-operating liabilities.

Let's look at these three things in more detail.

(Kevin Tomossonie, 2020)

Avoiding double counting

When items like cash, debt and income taxes are left in the working capital to calculate average/ target working capital, then they should NOT be taken up in the "equity bridge".

In other words, they should then NOT be seen as cash, cash like, debt or debt like items in the equity bridge.

So use items once (!!), so only in the target working capital calculations, or only in the equity bridge.

(Kevin Tomossonie, 2020)

Excluding non-operating assets

Examples of non-operating assets are:

- Loans receivables from shareholders;
- Risky short term investments;
- Personal assets like a prepaid golf club membership.

These assets are NOT part of (operating) working capital, but (potentially) "cash like items" in the deal.

So threat them separate from the (operating) working capital adjustment.

(Kevin Tomossonie, 2020)

Excluding non-operating liabilities

Examples of non-operating liabilities are:

- Short term loans;
- Bank borrowings;
- Financial lease obligations.

These items are debt (or "debt like" items), so they should be defined as debt in the deal.

So they are not forgotten because they are taken up in the "net debt" calculation in the "equity bridge".

But be careful, there can be a few tricky "cash like" and "debt like" items in the working capital like:

- Overdue payables to suppliers;
- Payables to related parties;
- Deferred revenue.

On the other hand, these items are sometimes seen as part of the working capital, and sometimes seen not as part of the working capital.

Generally depends on which side the corporate finance advisor sits. 😉

By the way, when "deferred revenue" is considered a "debt like item", then only for the amount of OPEX and COGS, think about that ! 😊

In my next blog I will talk about how to do the deal technically with a so called "locked box" mechanism !

(Kevin Tomossonie, 2020)

Source used - book: Crushing it as a corporate buyer in the middle market (2020). Kevin Tomossonie. Rock Center Financial Partners, New York.

Building Leveraged Buyouts in Excel !

Source blog: Leveraged Buyouts: A practical introductory guide to LBOs (2012). Author: David Pilger. Publisher: Harriman House Great Britain.

Leveraged Buyouts: Key mechanics

A Leveraged Buyout (LBO) is basically one company buying another company with using a lot of "debt" in the process.

The debt used in the acquisition is often secured by the assets of the target.

So the target company needs to have enough available "collateral". And this in the form of "assets" to allow the buyer to attract the debt capital for the acquisition.

Concerning the debt of the LBO, this can be done with "bonds" and "bank loans".

(Source used: David Pilger, 2012)

Bonds and bank loans in LBOs

In the case of "bonds" this means that the debt is issued and sold to investors in the "capital markets".

The buyers pay on the bonds a "fixed coupon" rate (interest) to the creditors.

Bonds in LBOs are often rated below "investment grade" ("junk bonds"), because of the high levels of debt in LBOs and corresponding large risk.

In the case of bank loans, financing comes directly from banks, rather than from investors in the capital markets.

The interest expense on the bank loans is often at a "variable rate".

And here it is common for banks to charge the borrower an interest rate of LIBOR + an additional amount.

This additional amount is called "spread", and it corresponds to the risk involved, and the level of "seniority" of the loan in case of a "default" (bankruptcy).

LIBOR is the "London Inter Bank Offered Rate", and this is the daily rate that banks charge to borrow unsecured funds from each other for a given period of time.

(Source used: David Pilger, 2012)

Loan syndication

Concerning the bank loans in LBOs, these are often "syndicated" amongst different banks.

So here banks share the risk of borrowing money for an LBO.

In general bank loans are more complicated than bonds, for example because of the syndication.

But there are also a lot of different bank loans like: Term loans, revolving credit facilities and payment in kind (PIK) loans for example.

The interest rates with banks are "floating", so variable. But with bonds, the interest rates (coupon) is fixed and these are sold in the capital markets. I have mentioned this before.

More on the topic "debt" will follow in later blogs since we need to take a look at this in great detail.

But now let's first take a look at the goals of LBOs.

(Source used: David Pilger, 2012)

Goals of LBOs

The goal of an LBO transaction is to achieve relative high returns on the initial equity investment.

For example, when you buy a company for 100 million euro, and when you then sell it one year later for 110 million euro, then you make 10 million euro in a year.

This is a 10% return when it is financed with all equity (10/ 100 = 10%).

But when you buy the company with 10 million euro equity and 90 million euro debt, then you make a higher return.

Let's assume you pay on average 7% interest on the debt, this is then:

- 6.3 million euro interest (0.07 * 90 million).

When you sell the company also in 1 year you make again 10 million (110 – 100).

And after the interest this then is: 10 profit – 6.3 interest = 3.7 million euro profit.

But then the return on your equity is: 37% (3.7 profit/ 10 initial equity outlay).

So here the returns are much higher since you use debt which is (relatively) cheap!!

In other words, the company makes more returns than you need to pay the debt holders.

And this increases the return on equity (the famous "LEVERAGE")!

(Source used: David Pilger, 2012)

Advantages of LBOs

With a smaller initial equity investment you can buy a relative big company with an LBO due to the large debt component.

In the extreme, and simple, example above you buy a 100 million euro company with only 10 million in equity.

This is the first advantage.

The second advantage is that the potential loss (of equity put in yourself) is limited and relative small.

This again due to the little initial equity outlay. So you basically you use other's people's money for the LBO (money of the debt holders).

Although no need to feel sorry for the debt holders (bond investors and banks), these people are professionals and they know how to research an LBO deal upfront. 😊

A third advantage is that the interest payment on the debt involved in LBOs is tax deductible (in many countries), or at least for a part of the interest.

This saves money on the tax bill.

(Source used: David Pilger, 2012)

Disadvantage of LBOs

As there are quite some advantages, there is one big disadvantage:

- The high leverage in the capital structure of LBOs brings along risk!

And the main risk is default risk.

In times of trouble, when the company is not making profits, leverage can kill the company.

This since in times of trouble still interest (and in LBOs, this is a lot) needs to be paid.

When they can not pay the interest anymore, so in case of a bankruptcy, the creditors will stand in line (ahead of the equity partners) in order to get their money back.

And very (very very very) likely in the end nothing will be left for the equity holders.

(Source used: David Pilger, 2012)

Intro to LBOs: Wrapped up

So in this first blog on LBOs I have explained what an LBO is, and what the goal is.

Concerning the bid price for an LBO, an investor will look at:

1. The market prices for similar companies as an EBITDA multiple;

2. Purchase prices in previous transactions of similar companies as an EBITDA multiple;

3. Discounted cash flow valuation.

Herewith the LBO investor will get an idea of current market prices for specific companies.

After that they "model" the LBO.

This is basically to check whether they can make a certain return when they buy the company for a certain price.

I will get in to this process of "LBO modelling" in way more detail in subsequent blogs.

But after the deal is done, the game that is played, is about:

- Focusing on "operating efficiency" to increase EBITDA;
- Identifying additional revenue generating opportunities to increase EBITDA;
- Paying back the debt;
- (making the company more "special" in the holding period to increase the EBITDA multiplier at the moment of the exit).

So when the company is sold again in 5 years, this is called the "exit".

When the company was bought for 8 times EBITDA, then even when it's sold for (only) 8 times EBITDA, then the "enterprise value" gets higher when the EBITDA was increased.

On top of that the debt is reduced, so the final equity received is a lot higher than the initial equity outlay.

And this most likely will result in a good return, also called "internal rate of return" (IRR) with LBOs.

This blog was just to give you an impression on what LBOs are.

In the next ones I will look (and explain) all the concepts in detail.

(Source used: David Pilger, 2012)

LBO Investors

An LBO always starts with the investors.

The investor is the individual or "Private Equity" (PE) party that starts with the LBO process.

In this case they need to start searching for takeover targets with:

- Small amounts of debt;
- Strong and stable cash flows;
- Assets free to use as collateral;
- Room for cutting costs in the operations.

The investor analyses the above situation with use of financial models (in Microsoft Excel).

Moreover, they think about the suggested capital structure with (lots of) debt.

But obviously here they are also dependent on whether parties are willing to provide the debt.

An ideal LBO has theoretically the following characteristics, it has the:

- Greatest amount of debt possible without that it bankrupts the company;
- Ability to pay down the debt;
- Ability to increase the earnings (EBITDA);
- Ability to improve the company (to increase the exit multiple of EBITDA in the end).

(Source used: David Pilger, 2012)

Lenders/ banks: Senior Bank Debt

Banks are one of the major lenders in an LBO.

In general banks provide the loans that are "senior", and "secured" by the assets of the company that is acquired.

Banks typically act as "syndicated lenders", so they "share" the bank debt amongst multiple banks to reduce the risk.

An investment bank usually arranges the "syndication", and commercial banks become part of the different lenders, along with investment banks.

(Source used: David Pilger, 2012)

High yield debt investors

Debt investors are often the "unsecured" creditors in a leveraged deal.

And because of this they demand a higher fixed rate of interest. And this is referred to as "high yield".

So the interest is relatively high because:

· As mentioned the debt is not "secured";

· It is "junior debt" so they are "junior" in relation to the "senior debt" in the pecking order.

These investors buy this debt through buying "high yield bonds".

And these "high yield bonds" are issued, and underwritten, by investment banks.

(Source used: David Pilger, 2012)

Existing creditors

Most likely the existing creditors (before the LBO) are traditional lenders.

This such as commercial banks specialising in making traditional commercial loans.

These existing lenders do not play a major role in the LBO, they just receive the loan principle back plus any interest due.

On top of that they will likely get a "pre-payment fee" which is a "fine" for paying back the debt early.

The pre-payment fee usually lies between 1% and 1.5% of the loan.

Sometimes though, the existing creditors are willing to participate in the LBO. This when the lender is large enough and has a certain risk appetite.

(Source used: David Pilger, 2012)

Modelling an LBO: An introduction

In order to "model" an LBO we need to have an overview of the "financial statements" of the target.

Here fore we make "pro forma" financial statements.

So basically these are financial statements that we have estimated for after the deal is done!

We do this by looking at historical trends, and with making reasonable assumptions on how a company will perform in the future.

When we look at the (pro forma) balance sheet of a company after the LBO, you see a large shift in the amount of debt in relation to equity.

The assets will not change a lot immediately after the deal.

This since an LBO is primarily a matter of changing the capital structure of a company! This is an important issue to notice!

The (pro forma) income statement is important since we want to assess whether the company can generate earnings over time.

And the income statement also gives us an idea about the development of the EBITDA.

This is very important since it give us an idea about the "enterprise value" at the "exit moment" in for example 5 to 7 years.

The (pro forma) cash flow statement is even more important since is helps us to judge whether the company can pay back the debt.

So the "cash flow available to pay down debt" is critical to analyse closely in any LBO!

(Source used: David Pilger, 2012)

Debt sweep

At last, every LBO model has a "debt sweep".

You cannot find a debt sweep on an accounting balance sheet, but you can find a "debt sweep" in a financial model of an LBO (in Microsoft Excel).

When we actively use ("switch on") this "debt sweep" then:

1. Excess cash is used to pay down debt;
2. This reduces debt on the pro forma balance sheets;
3. And this again reduces interest paid in the pro forma P&Ls and cash flow statements.

Concerning the debt sweep, you might take a "pre-payment fee" on (certain) debt into account (1%-1.5% on loan).

I will talk about the debt sweep in much more detail in the upcoming blogs, since it is a crucial component in any LBO model!

(Source used: David Pilger, 2012)

Financial statements

The analysis of financial statements in LBOs can be broken down in two parts:

1. Historical financial statements;
2. Forecasted financial statements.

The historical part of the financial statements comes from the current, and historical, annual or quarterly financial statements of a company.

This information can be found in the annual or quarterly financial statements of a company.

And for example in the US these reports are filed with the SEC (Securities & Exchange Commission) and are called 10-K and 10-Q.

(Source used: David Pilger, 2012)

Income statements

When building an LBO-model we first focus on the income statement, also called P&L (profit & loss statement).

In general we base ourselves on the historical income statements and then we make forecasts.

And with the forecasts we start with "revenue" and then we look at the "expenses", also called "operating costs".

In general cost assumptions are made as a percentage of revenue. This also enables us to make multiple "operating scenarios" in excel.

Concerning the forecasts, the forecasts of "revenues" are the most important ones.

Since if revenues decrease, the company can only cut costs.

However, these costs can only be reduced to a certain point.

Therefore when building an LBO model, close attention needs to be paid to estimating revenues of a potential buy-out target.

Since only revenues can lead to a strong and steady cash flow!!

This is very important in an LBO due the large amounts of debt involved, and corresponding mandatory interest and principal payments.

In addition, good analysis of the "operating costs" is also very important. Because potential uncovered reductions can increase the value of the company at the exit.

Since here you might remember that the value of a company is often calculated as a "multiple on EBTIDA", so revenues minus operating costs.

In other words, every dollar saved in the costs, will result in 8 dollars "enterprise value" (e.g. EBITDA factor 8).

So this is good for the IRR (internal rate of return) of the LBO.

(Source used: David Pilger, 2012)

Balance sheets

A balance sheet (BS) is only a snapshot of a company's financial position.

Within an LBO, the major lines from the BS on the left hand side are "cash" and other "current assets".

On the right hand side, the major lines are the "current liabilities", "interest bearing liabilities" and also "equity".

Especially the "liability side" of the BS gets a lot of attention in an LBO model.

This because an analyst needs to assess the suggested "capital structure" closely.

Moreover, the "interest" in the P&L is an effect again of the debt on the balance sheet.

And "interest" is modelled from the "beginning balance" of the debt on the balance sheet.

You can also model "interest" from the "average yearly debt" or "debt at the end of the year". But then you have to deal with so called "circularities" in your model.

You can do this, but you significantly increase the complexity of your model with "circularities".

I have written about these "circular references" in "financial modelling" before. In case you like to read this previous article, I will give you the link:

Article: Financial Modelling in Excel: Circular references, interest calculations and iterations

https://www.linkedin.com/pulse/financial-modelling-excel-circular-references-kersten-msc-bsc-rab/

(Source used: David Pilger, 2012)

Cash flow statement

The cash flow statement strips out any non-cash expenses such as depreciation and amortisation.

And it includes money spend on "capital expenditures" and changes in "net working capital".

This cash flow is also extremely important in an LBO model, because this "cash" is used to service the debt of an LBO with:

1. Interest payments;
2. Paying down principle on the debt.

So the cash flows from the company's operations are estimated from the estimations made on the:

1. Future P&Ls, and,
2. Future balance sheets.

And again, these "cash outcomes" are so important, because it enables us to determine what the amount of cash available is, to pay down the debt.

(Source used: David Pilger, 2012)

Debt sweep

In an LBO model the "debt sweep" is used in combination with the cash flow statement.

Since we like to take a look at the "debt schedule" in relation to "available cash".

Cash available to pay down "existing debt" is calculated based on:

1. Net income;
2. After adding back non-cash charges;
3. And after adjustments for "capital expenditures";
4. And after adjustments for "net working capital".

The resulting number of cash is used within a "dept sweep" to pay back debt to the maximum.

So basically with a "debt sweep" switched on your model "throws" all the cash available back to the debt holders based on "seniority" (e.g. revolver, term loan A, term loan B etc).

Obviously, the debt sweep on your "revolver" (revolving credit facility) can also "pull" more debt in case of "negative cash" from you cash flow statements.

So in general, with an LBO model/ analysis we "switch on" the debt sweep.

As mentioned, herewith debt is paid back to the maximum.

And this has an effect again on the debt on your balance sheet.

Which affects interest payments in your P&Ls and cash flow statements.

Which affects debt levels again, and so on and so on!

(Source used: David Pilger, 2012)

Ratio analysis

When your LBO model in excel is working well then we want to measure performance and the financial health of the company.

With an LBO model ratios that are very important are:

1. Return on assets and return on equity to assess the leverage effect;

2. Capital structure and leverage (debt to equity) in order to check "reasonable" debt levels over the years;

3. Credit statistics like "EBITDA/ interest expenses" and "EBITDA/ total debt" in order to check "reasonable" debt levels over the years.

Basically within an LBO the trick is to have a good return (IRR) with realistic "credit statistics" (EBITDA/ total debt) over the years.

(Source used: David Pilger, 2012)

Source blog: Leveraged Buyouts: A practical introductory guide to LBOs (2012). Author: David Pilger. Publisher: Harriman House Great Britain.

The story of Global Debt, Leverage & Private Equity

Source blog - Book: De Schuldenberg: Hoe de wereldwijde schuldenlast ons allemaal gaat raken (2011). Author: Jaap van Duijn. Publisher: De Bezige Bij/ Netherlands.

Ratio "debt/ GDP" in the US, The Netherlands, Germany and Japan

Debt

In theory, an economy could function without banks, but in practise this would be very inconvenient.

This since then every party that has money, should go out, to find people who need money. And vice versa.

Moreover, would it be possible for companies to function without debt (of banks)?

Well, they then need to constantly possess enough cash (at the bank or in paper/ coin money) to exploit their activities.

And this is quite unlikely, because simply saving money first before you start a (capital intensive) company would take too long.

So when businesses would not borrow money, there could only exist numerous small scale, labor intensive (opposed to "capital intensive") companies, that do not use many large assets like: Machines, office spaces, production halls etc.

And they could only exploit new opportunities when there are enough "retained earnings", because (only) these could be used for investments in assets.

This would create a world with low economic growth and little innovation.

Since the prosperity we now have comes due to high labor productivity, and this is the result of a "capital intensive" way of production. And borrowing, so getting debt, is needed for that.

(Jaap van Duijn, 2011)

Gross Domestic Product (GDP)

In a growing economy the amount of debt will grow in "absolute" numbers.

This because in a growing economy one invests, and these investors will not always have saved this money upfront. So then money needs to be borrowed!

It makes sense to look at the debt of a country in relation to their "gross domestic product" (GDP). This since GDP measures what has been produced in an economy over a year, and the revenues that came along with this.

So the GDP measures the volume of an economy. And because of part of the production is financed with debt, the relation between GDP and debt is interesting.

The US is one of the few countries of which we have info on (total) debt available.

When looking at the GDP in relation to total debt in the US, we find that in between 1945-1980 this ratio was in between 125% and 150%. So roughly 1¼ to 1½ times GDP was the total debt of the US.

And who bought this debt? Well, 4 parties:

- Households, companies, banks and governments.

I will talk about these 4 parties later on again in way more depth.

(Jaap van Duijn, 2011)

Debt in the US

The US came out of world war 2 with a large amount of government debt, but this was build down again after the war.

Then after 1980 the debt/ GDP ratio goes up significantly again. This roughly goes from 1.5 times GDP in 1980 to 3.5 times GDP in 2010.

And this debt/ GDP ratio was around the year 2000 already the same level as with the big recession of the 1930s (about 2.6 times GDP).

In the 1930s the source of the high debt/ GDP ratio was the decreasing economy. Debt stayed the same with a decreasing economy. As mention, the ratio is "relative".

And the big recession learned us how dangerous "deflation" is for parties who borrowed money.

With deflation there is a decrease of prices in general. Concerning debt, the "nominal" debt amount does not change.

But the relative debt amount becomes bigger and bigger. So parties who have borrowed money benefit from "inflation", not "deflation".

And concerning the situation after 1980 in the US, the increasing debt of the federal government only increased moderately. The big increase came from the private sector: Households, companies and the financial sector.

(Jaap van Duijn, 2011)

Debt in the Netherlands

Overviews of total debt in relation to GDP do not exist in The Netherlands (where I am from).

But with help of the Dutch agency for statistics we can put together (sort of) similar overviews of total debt in relation to GDP from 1989-2009.

And here again, total debt is debt of: Households, companies, banks and government all together.

When we take a look at the situation in The Netherlands, the level of debt is even higher than in the US.

In 2008 this is in the US: about 350% of GDP. But in The Netherlands even about 650% of GDP.

Moreover, the increase of debt/ GDP was higher from 1989 on. (*)

When we look at the details, we can find that this increase of debt in The Netherlands sits at the banks. Their debt/ GDP was 177% in 1989 grew to 372% in 2009.

Debt of companies relatively changed not much over 1989-2009 (about 119% - 120% debt/ GDP).

And government debt did not change much either over 1989-2009 (about 61% - 62% debt/ GDP).

Another big driver for the increase in debt is the households. Their debt explodes from 46% in 1989 to 130% in 2009. Most of this debt of households comes from the "mortgages" on houses.

I will look at all these components in lot more detail in this sequence of blogs on "debt".

(*) side note:

Debt ratio's between the US and The Netherlands are difficult to compare 1 on 1 due to different definitions and ways of measurement.

Although we can conclude that in both countries, debt/ GDP rose very hard. And this from about 1980 on in the US. And from about 1990 on in The Netherlands.

Also this observation will come back in lots more detail later on in this sequence of blogs on "debt".

(Jaap van Duijn, 2011)

Debt in Germany & Japan

In both the example of the US and The Netherlands, we saw that government debt just had a moderate role in the increase of the debt/ GDP ratio.

That effect changed after 2008 since then governments took over "burdens" from the private sector (households, companies and banks). Also less tax payment came in due to the decrease of the economy (credit crunch).

But for some countries this process of rising "government debt" in relation to GDP started much earlier already, like for example in Germany and Japan.

When we first look at government debt of Germany, this was during 1950-1975 about 20% of GDP.

This because a strong economic growth enabled that both government income and expenses could increase.

But after 1975 government debt of Germany goes up in 5 steps due to the:

1. Recession after the 1973 oil crisis;
2. Recession in the beginning of the 80s;
3. Reunion of the both Germanies in 1989, and the costs associated with this reunion;
4. Recession in the beginning of the 21st century;
5. Credit crunch of 2008.

So Germany was able to keep its government debt low for a quarter of a century, but then it jumped up in 5 steps to about 80% of their GDP in 2010.

(Jaap van Duijn, 2011)

Debt in Japan

Japan is comparable to Germany on a few important aspects:

- Both countries were the aggressors of the second world war and lost;
- Their industrial and institutional structure was destroyed during the war, this enabled them to develop a new industrial basis after 1945 with the newest technological knowledge;
- Until 1975 their economic growth belonged to the highest growth in the world;
- Both countries have a strong industry focused on export;
- They have an ageing population that is declining, with low economic growth as a result.

With this similar economic profile you would expect Japan to have a similar development of government debt.

Well, as in Germany, government debt is low until 1975. It then is about 10% of GDP.

But it jumps up from 1975 to 1985 due to two crises. And then it jumps up dramatically after 1991.

What happened is that after 1991 the economic growth only was about 1% a year on average.

And the several incentives to positively influence the economy only had a little effect, But this increased the government debt a lot to about 200% in 2010.

Now the special issue about Japan is that since medio 90s there was a period of "deflation", so lowering prices. In other words, the "opposite of inflation".

Due to this GDP can even decrease, but the government debt on itself does not decrease obviously. So the ratio "government debt/ GDP" grows because of deflation.

Another special issue about Japan is that 95% of the government debt is bought by domestic parties (private citizens, banks, pension funds).

And this debt only pays 1,5% (even with the high leverage) on 10 year government bonds. And the Japanese investors are willing to lend for this percentage, because "deflation" actually increases the returns.

(Jaap van Duijn, 2011)

Why global debt increased over the last 100 years

Economic and other setbacks (1);

Historically "wars" are the most important reason that government debt went up significantly.

When we look at the US, and the influence of wars on government debt, then again we look at government debt in relation to GDP.

In between 1916 and 1919 government debt in de US went up from 7% of GDP to 35% of GDP.

And from 1941 on to 1946, government debt in the US went up from about 50% of GDP to about 120% of GDP.

After the big depression in the 1930s the government debt also went up significantly from under 20% to above 40%. This increase is similar to the increase of the first world war.

Remarkable is that the Vietnam war is not visible in the numbers, and also the oil crises (1973-1974) only had a limited effect on the position of government debt in relation to GDP.

But the Vietnam war took place in a period with economic growth and increasing inflation. So because the government had more tax income, and they could finance the war in Vietnam.

The growth of US government debt after 1980 is not because of wars or economic decline. So I will get back to this later on!

A nuance to the increase of debt during war is the following:

With an economic crisis everybody encounters the negative consequences: Households, companies, banks and government.

So "total debt" jumps up lots higher, than only "government debt", in crisis years.

Also households, companies and banks feel lots of "pain". And with a war situation ironically also lots of money is made due to a "war industry".

Well, this does not promise a lot of good for the current crisis situation we are in with the "corona virus".

So I will be studying the aftermath cornering the economy closely (now 23 April 2020).

(Jaap van Duijn, 2011)

Economic growth (2)

When an economy is growing, a lot needs to be financed in assets or order to facilitate this growth.

After the second world war infrastructure needed to be put back in place, and companies needed to invest to growth.

At the "government debt level", we do not see these effects back in the debt. This because the tax income also increased (due to corresponding growth of the economy).

The debt ratios of Dutch companies after the expansion period after the second world war (1950s and 1960s) are not know.

But very likely these debt ratios were high in the beginning, since assets needed to be bought. And most likely they later "de-leveraged" because due to returns debt paybacks could be made.

(Jaap van Duijn, 2011)

Poverty (3)

Poor people often have debt, and this also counts for poor countries. Internationally the "debt problem" is the biggest for developing countries.

The reasons for this are for example:

- Wrong use of assets bought with loans;
- Low returns on investments in assets;
- Fraud;
- Corruption;
- Mismanagement, etc.

The inability of countries to put borrowed money in assets that increase productivity (in order to pay back the debt and to make a return), is one of the reasons why poor countries stay poor.

And this also makes them not able (in general) to pay back their debts.

Another issue is that poor countries are "weak" debtors (borrowers), and that is why they also pay more interest than a "strong" debtor.

This makes the cost of borrowing for the poor much higher than for the rich. So chances that the poor cannot pay back their principle and interest becomes much higher. And paying back principle and interest with another loan only increases debt.

Of course the above is put very simplistic, and real life is much more complicated. I only mentioned the basic mechanics here.

(Jaap van Duijn, 2011)

Wealth (4)

The rich and rich countries can borrow more easy than the poor and poor countries.

Wealth means for example that you can give "collateral" when borrowing money.

And a combination of "collateral" and high income, is "double interesting" for parties that borrow out money like banks.

In my own country The Netherlands within many couples both partners work, which brings in a relatively large amount of income.

And this is one of the reasons that the amount of "housing mortgages" increased so much in The Netherlands.

So the house itself can be given as a collateral (the mortgage). And with the high income (two incomes) the costs (interest + principle) can be paid relatively easy.

Also the tax treatment of the interest payment of the "mortgage" is very interesting here (interest can be deducted for income tax).

This also counts for countries: Rich countries can borrow much more easy then poor countries.

This because assets available, and ability to pay back interest and principle, is much more easy for rich countries compared to poor countries.

(Jaap van Duijn, 2011)

High interest rates (5)

High interest rates can result in high debt when for example a household, company or government can not make any income due to the high interest payments.

So more money needs to be borrowed again to finance the losses.

High interest rates are often the result of high inflation. But also "after inflation" the interest rates could be high, and this depends on the risk of the debtor.

So when for example Germany and Greece have the same level of inflation, then still Germany will be able to borrow money at a lower interest rate than Greece because of the risk level of the countries.

In my own country The Netherlands you could earn in 1981 on a government bond a "coupon-interest" (interest that bonds pay) of an all-time high of 12.75%.

Here the "real" interest payment was 5.5% because the inflation was 7.25% (5.5% real interest + 7.25 inflation = 12.75 coupon interest).

So here our government needed a lot of their income to pay back the coupon-interest. At the time, the Dutch government spent about 10% of its budget on paying interest.

This can potentially lead to even more debt when your income is decreasing in the short- or long term. You then need to borrow extra funds. And you can get into a vicious circle of borrowing more and more debt against a higher and higher price.

So high interest rates should actually reduce the demand for debt, as we have learned in high-school and university, this in order to slow down the economy.

But in quite many times companies or governments are not able to reduce their "debt demand" (immediately) with high interest rates. So high interest rate do decrease the demand for debt, but this with a delay.

(Jaap van Duijn, 2011)

Low interest rates (6)

In the Netherlands the interest on government debt lowered from 12.75% in 1981 to about 3% in 2005.

And after an increase to about 5% in June 2008 with the credit crunch, it lowered again to a little over 2% in 2010.

When we look at an overview, we notice a growing interest rate on government debt until 1981 and then overall it goes down again (with some swings obviously).

The interest rate went down since 1981 because of:

1. Decreasing inflation in the western world;
2. Decreasing risk aversion amongst lenders.

So the "inflation-component" in the interest became smaller and investors were prepared to take lower returns.

And this structural decrease of interest since the 1980s is the most important economical reason that western countries increased their debt positions.

So since the 1980s we see debt going up and savings going down.

Because with these lower interest rates it was far more quick interesting to invest. The reason is that with a lower "cost of capital" investments become profitable much more quick.

Also central banks have contributed to the increase of debt with their "interest policies".

The long term interest is the result of supply and demand in the capital markets. But the short term interest (for example the "3 months Euribor interest"), so the interest of loans until 1 year, is set by central banks.

And this short term interest has been low since half way the 1990s. Since about 1995-2010 is was on average 3.1% with an average inflation of 2.2%.

At last, the broad monetary policy of central banks (bringing lots of money in the system), has also contributed to the increase in debt positions.

(Jaap van Duijn, 2011)

Tax treatment of debt in relation to equity (7)

A last reason for the increasing levels of debt globally, is the tax deductibility of interest on debt in many countries. In The Netherlands this both counts for households and companies.

The households do this with their mortgages, and companies with taking debt on their balance sheets.

Concerning the companies, the "private equity" (PE) parties for example use debt to buy companies. So they use the "interest deductibility" to the maximum.

And they obviously use the low cost of debt to increase the return on their equity. I will get back to PE later on in this sequence of blogs on "debt".

But when you like to read in the meantime about PE parties and their "leveraged buyouts" (LBOs) already, then please check out my previous blog on this subject:

Leveraged Buyout (LBO) Analysis:

https://www.linkedin.com/pulse/leveraged-buyouts-lbos-joris-kersten-msc-bsc-rab/

(Jaap van Duijn, 2011)

Debt of companies: Leverage, Private Equity, Solvency and Bankruptcy

Corporate finance

Companies invest in assets and undertake Mergers & Acquisitions (M&As).

And for this money needs to be borrowed.

The behavior of companies in relation to borrowing depends on the following factors:

- Cost of debt, so the level of the interest rates;
- The tax treatment of debt;
- Pressure of shareholders for "creating shareholder value" (leverage);
- Development stage of the company;
- Level of sensitivity to business cycles;
- Vision of the management on capital structure;
- Vision of science and society on capital structure.

The decreasing interest levels since 1981 are the most important factor for the increasing (total) debt levels globally, like discussed in the first two blogs of this sequence.

For companies the additional interesting factor of low interest rates is the "tax deductibility" of interest.

And this low interest, that is even deductible for tax, is an explanation for the big growth of the so called "private equity industry".

Let's take a look at this industry in a little more detail.

(Jaap van Duijn, 2011)

Private equity

Private equity (PE) firms buy companies with stable cash flows by taking big loans for the acquisition.

Due to lots of debt the PE firms can make a high returns on their equity.

This because in general the cost of debt is lower than the return on the assets. So this increases the return on equity (traditional leverage).

The type of deals PE firms undertake are called "Leveraged Buyouts" because of the large amounts of debt involved.

And the growth of the PE market in the beginning of the 21st century comes through "institutional investors" (insurance companies, pension funds, credit unions, hedge funds, mutual funds etc.).

This since after the bursting of the "tech bubble" (dot.com crisis) in the beginning of the 21st century, institutional investors wanted more investment opportunities in a market of decreasing stock prices.

And they found this in PE funds.

In 2006 investments in PE were about 112 billion euro in Europe, about four times as much as in 1999.

However, in 2009 the flow of money decreased to 16 billion euro due to the credit crunch. This because banks were reluctant to provide PE with loans for the buyouts.

Also the participation-companies (the companies they invested in) of the PE firms were not doing good. So the PE firms needed to commit extra equity, which eroded the returns right after the credit crunch.

Now that we know that PE uses aggressive capital structures with their LBOs, let's now take a look at average capital structures over the years in a little more detail. This because what PE does is not "average" but quite extreem.

Since the question of this blog is whether "companies" significantly contribute to the increase of total debt globally …

At last, when you want to know more about PE, then please check my older blog on "leveraged buyouts" and financial modelling:

· Leveraged Buyout (LBO) Analysis:

https://www.linkedin.com/pulse/leveraged-buyouts-lbos-joris-kersten-msc-bsc-rab/

(Jaap van Duijn, 2011)

Capital structure

With capital structure, this is in general dependent upon the industry in which a company is active.

I have written a detailed blog on "capital structure" already, in case you find it interesting, I will give you the link:

Article: Valuation & Capital Structure (WACC)

https://www.linkedin.com/pulse/valuation-capital-structure-wacc-joris-kersten-msc-bsc-rab/

In this blog I want to continue with the capital structure of companies in general.

And here fore we first take a look at the "solvency" of American companies since 1926.

Solvency looks at the book value of equity in relation to the book value of assets.

When we look at the solvency of all American companies over 80 years (1926-2006), we look at both financial and non-financial companies.

This is an important note, because financial companies (like banks) in general have less equity on their balance sheets. I will discuss the "banks and their capital structure" in the next blog in this sequence on debt.

When we now take a look at the solvency of American companies we see it is going down from 1930 until 1980. And solvency here roughly goes down from a little over 45% to a little over 25%.

After 1980 it goes up until 2000, from a little over 25% to a little over 40%.

And after 2000 until 2006 it goes down again from a little over 40% to a little over 35%.

Solvency

So when looking at solvency of American companies it goes down from the crisis in the 1930s until the second world war.

After the second world war it increases a little but then it goes down again from 1950 on.

This until the bottom; a little over 25% solvency, is reached at the mid/ end 1970s.

The 1970s were years of high inflation, high interest rates and lots of debt on balance sheets.

This brought the solvency of companies down in a vicious circle.

Since lots of debt with a high interest rate results in lots of interest. And lots of interest presses profits down to potential losses, and losses decrease solvency.

After solvency going down (on average) for 50 years (from about 1930-1980), one started to realise that this low solvency made companies vulnerable.

This was not seen yet in the 1950s and 1960s since then solvency only worsened.

But in the 1980s and 1990s solvency of US companies significantly increased.

And at the end of the tech bubble (1995-2000) solvency decreased again.

Since companies were doing "acquisitions". They paid too much, and needed to write them off from equity again, resulting in lower solvency.

The negative effects of Mergers & Acquisitions (M&As) and solvency can also be seen at the two other crises at around 1930 and 1970.

Since M&A intensity goes up at the end of a period of growth. The reason is that then "organic growth" is very difficult. So the 'only' thing you can do for growth is buying another company.

But for M&As companies need to borrow and this lowers solvency.

Also a significant amount of M&As fail, and this results in writing off goodwill from equity (also lowering solvency).

(Jaap van Duijn, 2011)

Solvency in The Netherlands

Unfortunately solvency data for 1926 until 2006 is not available in The Netherlands.

But there is some info available through the Dutch agency of statistics:

1. Solvency of Dutch listed firms (including financial companies) from 1966-2001;
2. Solvency of large non-financial companies(*) from 1978-2010;
3. Solvency of all non-financial companies from 1987-2010.

(*) In 2009 this were 1.850 companies with 1.4 million employees in total, and over 600 billion euro turnover in total.

In The Netherlands solvency goes down until 1980 like in the US. And the economic forces were the same: High inflation, high interest rates and decreasing profitability.

In 2010 large non-financial companies have a solvency again of around 45% on average. This is better than it has ever been.

And this also implies that the increase of "total debt" in The Netherlands does NOT come from the companies.

Actually Dutch large non-financial companies got more conservative after the 1980s, and again, after bursting of the "tech bubble" in the beginning of the 21st century.

So the increasing "total debt" needs to come from the other parties in the market: Households and/ or financial institutions and/ or the government.

I will explore the other three parties further in the upcoming blogs in this sequence on "debt".

(Jaap van Duijn, 2011)

Bankruptcy

Before I finish, let's take a little look at bankruptcies in relation to the discussed solvency.

Concerning bankruptcies in The Netherlands between 1935 and 2010 you can notice that these peak in:

1. Beginning 1980s;
2. Beginning 1990s;
3. Beginning 2000s;
4. 2009.

So it perfectly makes sense that in these time periods also the "solvency" drops.

This because losses affect solvency. And when you keep on making losses, sooner or later, you will go bankrupt.

Since when losses continue to take place, sooner or later, you will not be able to find anybody who wants to provide you with cash.

(Jaap van Duijn, 2011)

Source blog - Book: De Schuldenberg: Hoe de wereldwijde schuldenlast ons allemaal gaat raken (2011). Author: Jaap van Duijn. Publisher: De Bezige Bij/ Netherlands.

Building Valuation Models in Excel !

Source blog: Using Excel for Business and Financial Modelling: A practical guide – 3rd edition (2019). Author: Danielle Stein Fairhurst. Wiley.

Topic 1: Financial Modelling in Excel: Circular references, interest calculations and iterations

Circular references: An introduction

When you are an active user of Microsoft excel you have come across "circular references".

This basically means that within a formula, the formula is referencing to itself.

A very easy example is when a sum range in excel includes the sum itself.

When you (accidentally) do this you will find in the status bar at the bottom of excel that there is a "circular reference". And it also shows you where it is in your model.

Well, at least when you are on the correct "tab" in excel, you will find at the bottom in what cell the "circular reference" sits. But when you are not on the right tab you can not see the wrong cell.

Here for you can use the "auditing tool" in excel to find the circular reference.

And here fore go to: Formulas, error checking, circular references.

(Danielle Stein Fairhurst, 2019)

As a better alternative you can also use the "excel shortcut": ALT, M, K, C. This in order to get to the "auditing tool" very fast.

More info on how to use for example "ALT shortcuts" can be found in my previous article on excel shortcuts and business valuation, the link is:

Excel Shortcuts & Business Valuation:

https://www.linkedin.com/pulse/excel-shortcuts-business-valuation-joris-kersten-msc-bsc-rab

Circular references in "Interest Calculations"

There are a few instances in which you actually like "circular references" in your financial model in excel.

A very common reason for this is when you are calculating the interest payment in a P&L (profit & loss statement) in your model.

The "circularity" in your model is there because of the following:

1. In your P&L you want to model interest payments, because they are an expense so they influence the profit;

2. But how many profit you will have will eventually impact the cash a company will have. And this has an impact on the level of funding again;

3. And "funding required" is how much debt the company has, and this has an impact on the interest expense again.

So basically here you see the "circle" from which you cannot get out.

(Danielle Stein Fairhurst, 2019)

A practical situation where this comes back is when you build a Leveraged Buyout (LBO) Model for your client (private equity).

Since here you build the P&Ls in excel, but you also build the debt schedule. More info on LBO modelling can be found in my earlier blog, the link can be found below:

Leveraged Buyout (LBO) Analysis:

https://www.linkedin.com/pulse/leveraged-buyouts-lbos-joris-kersten-msc-bsc-rab/

Circular reference with the "interest expense": How to avoid (or fix) them

When modelling P&L's and balance sheets you can avoid circular references as follows:

1. Hardcode the interest amount, but obviously this is crazy, since it will not make your model "dynamic" at all;

2. Calculate the interest amount based on the closing balance of debt of the previous year (so the beginning balance of debt). This is not perfectly accurate, but used a lot, because then at least you get rid of the circularities;

3. Maybe a more elegant way is to use "iterative calculations" in your model in excel. I will discuss how to do this next.

(Danielle Stein Fairhurst, 2019)

Putting "iterative calculations" on

So as mentioned, an elegant way to get rid of circular references is with "putting iterations on".

And when doing this you can base your interest payment on "ending balances of debt" instead of less accurate "beginning balances of debt".

When you put on iterations, you must decide how many times the formula should "recalculate" to find the right number (in our case the "interest expense" in relation to the "ending balance of debt").

When you put on iterations without changing any of the defaults, then excel stops calculating after 100 iterations or after a change less than 0,001.

(Danielle Stein Fairhurst, 2019)

To put on iterations, you need to go to: File, options, formulas, iterations.

But please make sure you know what you are doing before you put them on.

By the way, the "excel shortcut" to get to iterations is: ALT, F, T, F (and then "jump in" with TAB).

Topic 2: Excel basics for Finance: SUM, MAX, MIN, AVERAGE, IF, cell referencing, named ranges

Functions in excel: An introduction

Within financial modelling the most useful functions fall into the categories:

1) logical, 2) aggregation, 3) lookup and 4) financial.

Let's take a look at them in a little more detail:

1. Logical functions (e.g. IF, AND) are used when you need to evaluate a condition;

2. Aggregation functions (e.g. SUMIFS, COUNTIFS) are helpful when there is a lot of data arranged either horizontally or vertically that need to be added together;

3. Lookup functions (e.g. HLOOKUP, VLOOKUP) are used when you need to look up a value to return a single amount;

4. Financial functions (e.g. NPV, IRR, PMT) are used to calculate net present values, interest payments or depreciation amounts.

Let's now look in this blog at Excel's basic functions first.

(Danielle Stein Fairhurst, 2019)

Excel shortcuts

In this sequence of blogs I will talk about how to use excel for financial modelling. And then these models can be used for business valuation (DCF, LBOs, M&A analysis).

In today's blog I will talk about the basics like "cell referencing" and "naming cells". And I will discuss some basic functions like: SUM, MAX, MIN, AVERAGE and IF.

But before I can start with these topics I need to discuss the "excel shortcuts".

When we build models in excel we really like to use the "keyboard" and NOT the "computer mouse". Since this just works more efficient and it is faster! (and more fun)

So any command that is shown in the excel ribbon can be activated by clicking the icon using the mouse. But they can also be activated with the keyboard! 😊

Here for you need to press for example ALT first, and then a combination of letters.

Example: To get into "options" in excel, you can click "file" and then "options".

But you can also use the following "keyboard shortcut": ALT, F, T.

(Danielle Stein Fairhurst, 2019)

Last year, in August 2019, I have written a blog already on "excel shortcuts".

In case you are not familiar with the "excel shortcuts" it would make sense to read it before you continue.

You can find the blog here:

Article: Excel Shortcuts & Business Valuation:

https://www.linkedin.com/pulse/excel-shortcuts-business-valuation-joris-kersten-msc-bsc-rab

A little note with the "excel shortcuts":

Many of you are using a laptop, and then often you need to hold the "Fn" button to reach the "function keys" (F1-F12) on top of your keyboard. Don't forget this, otherwise it will not work.

Cell referencing: Relative & absolute referencing

In order to have consistent formulas across and down a block of data, you need to understand cell referencing as a modeller.

And here for we use the "$" in excel, as you probably have seen already in many excel models.

When there is a $-sign in front of a row number or column letter, then the row or column does not change when you copy it. And when there is no $-sign, it will change.

The quick excel function to "dollarize" is the "F4 function", so you press F4 (or Fn F4 at many laptops) when you are in the cell that you want to "dollarize".

Cell references are relative by default. This just means that when you copy the cell, it will change.

But when you want to "anchor" the cell when copying, you need absolute referencing (with pressing F4 in the cell).

(Danielle Stein Fairhurst, 2019)

Named ranges

In excel you can select a singe cell, or range of cells, and then give it a name. You can then for example include them in a formula.

Naming cells is relatively easy, you just go to the name box in the upper left corner and you just type over the cell reference. But take into account that your name can not contain any spaces or special characters.

By clicking on the drop down arrow next to the cell name, you can find all named cells. And clicking on the name will bring you directly to the named cell, on whatever sheet it is.

When you want to edit or delete a named range, you need to go to the formulas tab. And then click on "name manager".

But you better use the excel shortcut, type in: ALT, M, N.

(Danielle Stein Fairhurst, 2019)

Basic excel functions: SUM, MAX, MIN, AVERAGE

With financial modelling there are some common basic functions that are used a lot.

Thinks of the functions: SUM, MAX, MIN, COUNT and AVERAGE.

SUM

With the SUM function you can obviously sum up a series of numbers.

You can add individual cells here, but you need to separate them with commas. And you can also specify a range of cells.

As a professional modeller, please do NOT use the mouse here either. So, you can type in =sum(and then you select the range you want to sum.

Here fore go the first cell, then hold the shift button, and then select the whole range, and end with ") " at the end.

You can also go to the cell at the end of a series of numbers, and then use the shortcut: ALT + =.

This is the famous "alt equals" that is used a lot.

Actually it is "alt equals enter".

And when you are an excel super nerd 😊, you use ALT + = + =.

So "alt equals equals", and this way you do not need to press enter, which saves a micro second. 😊

MAX

With this function you can identify a maximum value.

And here you can also enter a range of cells, individual cells separated with commas, or a combination of both.

MIN

This function is the opposite of the MAX function, so it gives the lowest value in the list.

Here you can also use a range, individual cells separated with commas, or a combination of both.

AVERAGE

As the name suggests, this function calculates the average of the numbers in the list.

Here you need to be careful that only numbers in the list are taken up.

In other words, only cells with values inside are used to calculate the average. So it will ignore empty cells.

And the MAX and MIN functions do return a "0" on empty cells, be careful with that.

(Danielle Stein Fairhurst, 2019)

Logical functions: IF

The IF statement requires three fields in the formula:

1. The evaluation of the logical expression;
2. The result if (1) is true;
3. The result is (1) is false.

So the formula will look like this:

=IF(statement that is tested, value if true, value if false)

So the first field consists out of a logical expression. This is something that is either true or false when evaluated.

When it is true, then the if statement returns the value of the second field. And when it is false, then the if statement returns the value of the third field.

With this formula you can use the "insert function dialog box" to set up the formula. This tool just helps you to build the formula.

And for this, click the "fx symbol" just left of the formula bar.

But the easiest way is to use the excel shortcut: Control + A (just after you have started the if function).

(Danielle Stein Fairhurst, 2019)

Topic 3: Excel for Valuation: COUNTIF, VLOOKUP, INDEX and MATCH

Functions in excel: An introduction

Within financial modelling the most useful functions fall into the categories:

1) logical, 2) aggregation, 3) lookup and 4) financial.

In my previous blog on financial modelling I have talked about basic excel functions and the logical function "IF".

In this blog I will talk about the aggregation functions (COUNTIF and SUMIF) and the lookup functions (VLOOKUP, HLOOKUP, INDEX and MATCH).

See a little overview below. The topics of today are underlined.

And we will work with "excel shortcuts" here. In case you are not familiar with them, please read my previous blog on: Excel Shortcuts & Business Valuation.

1. Logical functions (e.g. IF, AND) are used when you need to evaluate a condition;

2. Aggregation functions (e.g. SUMIFS, COUNTIFS) are helpful when there is a lot of data arranged either horizontally or vertically that need to be added together;

3. Lookup functions (e.g. HLOOKUP, VLOOKUP) are used when you need to look up a value to return a single amount;

4. Financial functions (e.g. NPV, IRR, PMT) are used to calculate net present values, interest payments or depreciation amounts.

(Danielle Stein Fairhurst, 2019)

Aggregation function: COUNTIF

The function COUNTIF is used to count the cells in excel that match a certain criteria.

For example, you have sold different kind of products on a certain day. And you like to know how many products you have sold of a certain product category.

For this, what is you do is:

Simply begin with typing: =COUNTIF(

Then press "Control + A" because this is the shortcut to get into the "formula creator" (insert function dialog box).

You can also click the fx symbol for this next to (left of) the formula bar, but this is more slow than the mentioned shortcut.

In this formula you need to give in the range of cells that you want to consider.

Please note, with F2 you get outside the dialog box to select the range. This is better (faster) than using the computer mouse. You can select the range with holding the "shift" button to "shade" an area.

And then for the "criteria" you fill in what you want to "count". In this case the certain product category. And here you link to a cell in which you have typed in a certain product category.

In the end, this will give you the numbers of sales in a certain product category. So sales number is only counted if it falls in a certain product category.

(Danielle Stein Fairhurst, 2019)

Aggregation function: SUMIF

When I continue with the above, in business we want to know, not only the numbers that we have sold, but also the amount of turnover per product category. This as an example.

Here we use a SUMIF function. And basically this function "sums" rather than "counts" the values of cells. And this in a given range of cells that meet a certain criteria.

To do this, type in: SUMIF(

Then use the shortcut "control + A" to create the formula in the "dialog box".

And there you need to give in the range with for example "product types" sold.

And you need to give in the criteria, in this case the product type that you are looking for.

And then you need to give in the sum range, in this case the turnovers.

In the end, you will know how many products where sold per product category (countif), and we will also know what the turnover was per product category (sumif)! 😊

(Danielle Stein Fairhurst, 2019)

Lookup function: VLOOKUP and HLOOKUP

Lookup functions are still used a lot in financial modelling.

They are useful to know, but other functions like INDEX/ MATCH create more robust solutions.

So let's first look at VLOOKUP.

VLOOKUP stands for "vertical lookup" and it can be used when you have a list of data with the key field in the leftmost column.

So you "lookup" in the (vertical) left column.

Let's say you have a vertical list with some fruits and the prices of the fruits in the column next to it.

Now start a VLOOKUP function with typing in: =VLOOKUP(in a cell.

Then type control + A to get set up the formula (in the so called dialog box).

In the vlookup dialog box (criteria: "lookup value"), link to a cell in which you have typed in one of the fruits of the list.

Recall that you can use F2 to get outside the dialog box in order to select the cell. This way you do not need to use the computer mouse and you can stick to you keyboard which is faster! 😊

And in the total array just select all the cells with fruits and prices. Or you could use a "named range" here, a topic I have discussed in my previous blog.

When you have created a "named range" and when you can not recall the name, then just select F3 to bring up all the named ranges in the model.

When you eventually get to "Col_index_num", here you need to give in, in what column excel needs to find the value. For example "column 2" price (when the first column gives the fruit names).

And in the 4th parameter/ box you want to give in "zero" when you want an exact match (most used).

So in this very simple VLOOKUP, excel will give you a certain price that is matched to a certain input, in this case fruit names.

(Danielle Stein Fairhurst, 2019)

VLOOKUP and HLOOKUP continued

When you have created a VLOOKUP function as above, then it will break when somebody adds or deletes a column.

This because it "returns" (gives) a value from a specific column, in this case the 2nd column, as mentioned.

This because at the parameter "Col_index_num" you give in, in what column excel needs to find the value. For example "column 2" price (when the first column gives the fruit names).

So this formula is not very robust when you add a column (accidentally). But you can make it more robust with making the number "2" in the parameter "Col_index_num" actually "dynamic".

You can do this with a so called MATCH function. This way the number 2, which implies the 2nd column, will change when more columns are added, so your formula then becomes dynamic!

I will discuss how a MATCH function works later in this blog.

At last, a HLOOKUP, so a horizontal lookup, works exactly the same way as a VLOOKUP. Only the data needs to be arranged horizontally instead of vertically.

(Danielle Stein Fairhurst, 2019)

Index and Match: Introduction

Robust formulas like a nested formula with a combination of INDEX and a MATCH, used with "named ranges" are less likely to break and cause problems in models.

Let's look at how we can use INDEX and MATCH to create more robust formulas.

Just imagine that in your financial model you are referencing to another file. And your colleague keeps adding and deleting rows and columns.

The VLOOKUP function (improved with "MATCH") may work. But with large tables and INDEX and MATCH formula combination will be more efficient.

Let's assume you need an input from an external excel file with horizontally (in the upper row) "manufacturing plants" in different cities. And vertically (in the left column) the different costs/ expenses of those plants.

You can simply link to for example the cell that gives the "labour costs" in the "plant in Amsterdam", when you need this input to your model.

But when your colleague, for example, adds a column or row in the table to which you link, then you go wrong in you model!

By using a combination of an INDEX and MATCH formula, the exact location of a required cell will be picked up, even if its cell-position in the table changes.

(Danielle Stein Fairhurst, 2019)

Index and Match: Continued

For this we need to create a MATCH function in an empty cell first. This way you lock the column of the specific cell you need.

Secondly, you need to create a second MATCH function in an empty cell. And this in order to also lock the row of the specific cell you need.

Now the basis is made in order to make you model "dynamic". So now it sort of "follows" the cell you want to pick up as an input for your model.

Now create an INDEX formula that will return the value that you specify.

When typing =INDEX(and then control + A for the insert function dialog box, it will ask you which 'argument list' you wish to use. Select the first one.

For the "array" select the whole table. And then "hardcode" the "row number" and "column number".

Now the function works, but we do not like the "hardcodes" in the formula.

So here we want to enter the MATCH functions 1 and 2, as mentioned above.

So now these MATCH function are "nested in" the INDEX function. And your model will be dynamic.

As mentioned, we use the first and second MATCH function created above. Just cut and paste the formulas without the "=", and now you are done! 😊

(Danielle Stein Fairhurst, 2019)

Topic 4: Excel for Business Valuation: OFFSET, FORECAST and CHOOSE

Function OFFSET

The function OFFSET is used to return the address of a cell (or a range of cells) through the use of a reference cell.

And it is in general used to "offset" a series of values by a variable amount.

For example, if you want to delay a project by a certain number of months, and you want these months to be "dynamic", then you can use the "offset" function.

This in order to move the (project) value by the number of months that you give in.

I will give a more detailed, and practical, example for financial modelling for "business valuation" later on. But let's first take a look at how we build the function (technically) in Microsoft excel.

And please try to model here with the "excel shortcuts", and try NOT to use the mouse since this works less fast.

In case you are not familiar with the "excel shortcuts" then please check my earlier blog on excel shortcuts for business valuation.

And for my Dutch colleagues, please make sure your excel is put in the "English language" in order for the "shortcuts" to work. Article: Excel Shortcuts & Business Valuation:

https://www.linkedin.com/pulse/excel-shortcuts-business-valuation-joris-kersten-msc-bsc-rab

When using OFFSET, act as follows:

Go to a cell and type in =off and then you should see "offset" and press TAB to get into the function.

After that you can type the shortcut 'Ctrl, A' to be able to type in the "function arguments".

What you also can do is to go to a cell and then click on the 'fx' button. This to open the 'insert function dialog box' in order to find the OFFSET function.

Or better, use the shortcut 'shift, F3' in order to get here. And do not forget to use the 'fn' button with certain laptops. So with many laptop you have to press 'fn' as well to use F1 until F12.

When you are in the offset function, then you need to fill in a 'reference point' cell, so this is the basis of the function (in the example above, the number of months).

When you are in the function, and when you want to give in the 'reference point' you can simply click the cell. But better is to use the keyboard since it is faster.

You can use the keyboard by pressing F2 to be able to select the cell. So with F2 you "jump out" the function box in order to be able to select the cell with the keyboard.

Then you give the "offset rows" (number of cells below reference point) and "offset columns" (number of cells besides reference point).

And height and width will be left blanc, because this is used when you want the result to be a range of cells instead of a single cell.

(Danielle Stein Fairhurst, 2019)

Function OFFSET: In valuation

So a practical situation in which we can use an offset function is when we model a cash flow.

As we know in most B2B companies we first have sales (revenue recognition), and then the cash comes in later, in for example 1 or 2 months.

We can then simply use an offset function with as reference point a (dynamic) cell. In this cell we type in for example the number of months we expect the clients to pay on average.

And then it tells us how many months, after the actual sales took place, the cash in coming in.

The only funny thing here is that when we copy the formula we can get funny messages in the cash boxed in the first month.

Basically since then there is sales, but no cash yet, and it can then copy inputs of the text boxes there (e.g. text "revenue" or "sales" or "turnover").

So what we do here is to create a "nested offset formula".

I have discussed "nesting" in the previous blog in this sequence. And with "nesting" we basically add functions into the formula to solve specific issues.

Here we only want excel to give numbers (for cash) and otherwise "zero". So here we build in an "IF function" and an "ISNUMBER function" in order to let excel give back only numbers! Problem solved.

(Danielle Stein Fairhurst, 2019)

Function FORECAST

When you highlight a range of cells in a column or row, and then drag it down, then excel will use 'linear regression' to forecast what the expected outcomes will be.

This is very quick and handy, but not a very good modelling habit. Because for example your colleague cannot see where the numbers come from.

So you better use a forecast function here. The function predicts the forecast data based on the historical data using a linear trend.

What you need to do is:

Type in =fore and then look for 'forecast' and then TAB to choose the function.

Then use shortcut ctrl A to get into the function.

For X you give in the cell of the date for which you want to know the forecast.

Remember to use F2 to get outside the function box in order to select the cell.

And then for "known y's" you give in the range of historical data. Do not forget to F4 ("dollarize") them for better results.

And then for "known x's" you give in the corresponding years for the numbers you know already (also "dollarize" range).

And then you get the forecast!

And maybe you want to copy this formula down with a shortcut: Use shift to shadow down the cells, and "ctrl, D" to "copy down".

What also is handy is to create a basic "line chart" with clicking "insert" and then the line chart. (or better use shortcut: ALT, N, N1).

And then right click on the the graph and select "add trendline", and you will get a graphical view of the numbers calculated above straight away.

(Danielle Stein Fairhurst, 2019)

Function CHOOSE

The choose function returns a value from a list of values based on a certain position.

For example it can take the 5th day from a list of week days.

And the function obviously works from =CHOOSE and then you need to give in the index number (this is the certain position) and then the different values, for example the weekdays.

For us people working in finance, accounting and valuation, this tool is very handy to build in "scenarios" in your valuation models like:

- Discounted cash flow valuation model;
- Leveraged buyout model;
- M&A model (buy side).

This since it helps us to "choose" multiple scenarios in our models, and with the "choose function" we can switch scenario very easily. 😊

(Danielle Stein Fairhurst, 2019)

Topic 5: Excel for Business Valuation: NPV, IRR, PMT and EOMONTH

Working with dates

Working with dates in excel is always an issue and you need to be careful and consistent.

A very handy function in excel concerning dates is EOMONTH. The function gives you the last day of the month with reference to any date.

In excel you go to a cell and type is =eo and then with TAB you jump into the function.

Then use shortcut ctrl A to be able to enter the "function arguments".

Do not forget to use the keyboard here and no mouse since the latter is inefficient. Check out the excel shortcuts in the older blog below when you are not familiar with them.

And for my Dutch colleagues, do not forget to put your excel in English, otherwise they do not work.

Article: Excel Shortcuts & Business Valuation:

https://www.linkedin.com/pulse/excel-shortcuts-business-valuation-joris-kersten-msc-bsc-rab

When you are in the box of "function arguments" then just press F2 (and "Fn" as well with certain laptops) to jump out of the box and to be able to select cells.

With "start date" select the cell with the start date inside. And with "months" select how many months later you want to have the date (last date of the month).

And obviously you can copy this formula to the right. This with shortcut ctrl R (copy right), and before the copying you need to "shade" the area for copying with holding "shift".

EOMONTH also logically takes "leap years" into account.

(Danielle Stein Fairhurst, 2019)

Working with dates: Continued

Another very handy function is for example the month function. This function returns the month number of a specific date.

So it gives the month number in which a certain date falls.

You can use this info for example for summarising raw data. Think for example of sales you get on many dates.

With typing in =MONTH and then select a certain date, the function will give you the month number.

And in a practical situation you can then use a SUMIF function (see precious blog) to sum the sales for every month. And this can then be nicely shown in a graph.

By the way, when you have a certain date given, with shortcut ALT, H, N, and then press "down", you can select "short date" and "long date", depending on how you like to show the dates in your tab!

(Danielle Stein Fairhurst, 2019)

Net present value (NPV)

NPV is the value of the expected future cash flows of an investment calculated to today in for example euros.

And we discount these cash flows back with a "discount rate", and this is often the WACC (weighted cost of capital). Check out my previous blogs on WACC since I have written many blogs on this topic.

In excel we can build the NPV formulas manually, but we can also use the build in function.

The latter can be done as follows:

Type in =NPV tab, and then go with ctrl A to the box with function arguments. And here you "jump out" with F2 (with Fn for certain laptops) and select the cell with inside the WACC.

And then for "value1" select the range of which you want to have the NVP. Again, jump out with F2 and then select the range with holding shift.

And there it is! 😊

(Danielle Stein Fairhurst, 2019)

Internal rate of return (IRR)

The IRR is the return of a project or investment which gives a NPV of zero.

With financial sponsors, so private equity parties, this IRR is very important. Since with a LBO model (leveraged buyout) we want to know the IRR (in combination with the credit statistics) of an acquisition.

To calculate the IRR of a range of cash flows, act as follows:

Type in =IRR tab, and then ctrl A to get into the "function arguments". Then jump out with F2 and select the range of cash flow with holding shift.

And we leave the box "guess" blanc for now. I will get back to this later in this sequence of blogs.

And then the IRR is calculated. Once you start to know these formulas, you can type them in straight away without using the "function arguments".

(Danielle Stein Fairhurst, 2019)

Loan calculations

The most common form of calculating loan repayments is to use an "amortisation schedule".

Within this method regular (fixed) repayments of equal value are made over the term of the loan. And inside sits an interest component and a principal component.

To calculate the payment of both interest and principal use the PMT (payment) function in excel.

The formula is:

Repayment = loan amount * interest * (1 + interest)^N / (1 + interest)^N – 1)

You can do this on a calculator in order to check it, but excel does this very fast with the PMT function.

And here you need to give in rate (interest), number of repayments and principal amount.

So this is the total amount of principal and interest.

And with I-PMT (interest payment) and P-PMT (principal payment) you can also calculate the separate amounts for interest and principal.

With this amortised schedule, in the end interest is getting less and less since you are paying down the debt (less debt is less interest).

And then the rest of the "fixed/ regular payment" is seen as paying back principal, so this amount is then by definition going up yearly (because of declining interest).

(Danielle Stein Fairhurst, 2019)

Topic 6: Excel for Business Valuation: Custom Formatting, Conditional Formatting and Sparklines

Formatting: An introduction

Good formatting is very important in order to build a good and clear financial model for business valuation.

In the current version of Excel all the "formatting options" are already available in the "home tab" of excel.

And with the "shortcut" ALT – H – N you can change the "number format" on any cell.

This from the "number ribbon" in the "home tab" of excel.

Before I continue please also make yourself familiar with the other basic "keyboard shortcuts" in excel. This since that just works a lot more easy than using the computer mouse.

You can find the shortcuts in my previous article below, and next I will start with "custom formatting".

And do not forget to put you excel in "English", otherwise the shortcuts will not (all) work.

· Excel Shortcuts & Business Valuation:

https://www.linkedin.com/pulse/excel-shortcuts-business-valuation-joris-kersten-msc-bsc-rab

Custom formatting

The function =NOW() in excel gets the current date and time in a specific cell.

And by default; depending on your set region and location (in control panel), then is displayed dd/mm/yyyy hh:mm.

When you then go to the cell and press the shortcut "Ctrl + 1" you get into "format cells".

Then with pressing tab you can put the cell on category "date".

And then with one more tab you can pick the date format you like.

In addition, in the category "custom" you can also just type over the standard format in order to create a "customised format" yourself when you want to.

And excel will just remember these customised formats that you have made yourself.

(Source used: Danielle Stein Fairhurst, 2019)

Custom formatting: Continued

When you type in a number in excel in default it will jump into the "general format".

And then again with shortcut "Ctrl +1" you get in to "format cells". And here you can put the cell (or selected cells) in a "currency format" (e.g. dollar, euro, yen etc.) with using the tab button.

Here you can use all kinds of different currency symbols in the category “currency”.

And even when there is a currency that you excel does not recognise, you can then add it in category “custom”.

As with date & time, excel will remember this "customised format" under “custom”.

(Source used: Danielle Stein Fairhurst, 2019)

Conditional formatting

Conditional formatting is a tool that enables you to apply formats to a cell or a range of cells.

And here the formatting changes depending on the value of the cell or the value of a formula.

The shortcut to reach conditional formatting is: ALT – H – L.

So for example you can you use: ALT – H – L – H – B.

This means that you use the function “highlight cells rules” and “between” of conditional formatting.

This basically means that with this tool excel marks numbers (for example) “red” of a range you selected before when they meet a certain condition.

So for example when the numbers are ‘between’ 3 and 8.

To remove this conditional format, use ALT – H – L – R. And to change the conditions for "marking red" you can also use this shortcut.

(Source used: Danielle Stein Fairhurst, 2019)

Conditional formatting: Continued

In addition, with shortcut ALT – H – L – D you get to “data bars” in conditional formatting.

This is very handy tool that you can use for any numerical data in excel.

This since these bars graphically show (in the cell) the relative size of each value (of the range you selected before).

Also “icon sets” and “colour scales” are very handy.

With “icon sets” (ALT – H – L – I) you can conditionally show a small icon that represents changes in data.

Under “manage rules” (ALT – H – L – R) you can modify the “conditions” you want to have for the representation of the specific icons.

And with "colour scales" (ALT – H – L – S) you can assign rules for data in a table in order to give cells a specific colour.

This way you can for example quickly assess what is good or bad.

Again under "manage rules" (ALT - H - L - R) you can set the conditions for a cell value to appear in a certain colour.

(Source used: Danielle Stein Fairhurst, 2019)

Sparklines

At last, "sparklines" are funny little graphs within cells in order to give more meaning to the numbers.

In order to use them, select the data first for which you want a "sparkline". For this 'selecting task' you hold "shift" and then with the keyboard select your range.

Then use shortcut: ALT – N – SL.

And then select (with your keyboard again) the cell in which you want the "sparkline", then "enter", and here is your handy little graph!

To edit the "sparkline" select the cell, and then use shortcut ALT – JD to edit the little graph.

(Source used: Danielle Stein Fairhurst, 2019)

Source blog: Using Excel for Business and Financial Modelling: A practical guide – 3rd edition (2019). Author: Danielle Stein Fairhurst. Wiley.

Excel shortcuts and the computer mouse

When you work in excel to build valuation models (DCF, LBO, M&A etc) it is better to NOT USE THE MOUSE. This just works very inefficiently

In The Netherlands, my home country, I still see a lot of valuation consultants who use the mouse to build financial models instead of the keyboard.

When you try to get rid of the mouse, you will see that things will just run more smoothly.

To use the keyboard, please put excel in "English/ United Kingdom".

I will now give you a few excel shortcuts in order to get you set up for the basics.

Most of the below excel shortcuts are described clearly in the brilliant book of Danielle Stein Fairhurst.

Using excel for business and financial modelling: A practical guide. Third edition (2019). Danielle Stein Fairhurst. Wiley Publishing company. 9781119520382.

Later in this blog you will find more info on this great book on financial modelling.

Shortcuts for general windows

Typ in:

Alt + tab to switch program;

Ctrl + tab to switch workbooks;

Alt + F4 to close program;

(check whether your computer has a FN key, next to ctrl. If yes, then you need to press FN as well for the function keys F1-F12).

Ctrl + N for a new workbook;

Shift + F11 for a new worksheet;

Ctrl + W to close worksheet;

Alt + E + L to delete a sheet;

Alt + W + F + F to freeze (and un-freeze) panes;

Alt + W + Q to zoom in or zoom out.

Source: Danielle Stein Fairhurst (2019). Using excel for business and financial modelling: A practical guide. Third edition.

Navigating in excel

Also with navigating inside excel there is no need to use the mouse.

Your keyboard is very good able to navigate you around in excel. Here are a few shortcuts you need to know:

Arrows keys: Use them to move around;

Ctrl + pg up/ down to switch worksheets;

Ctrl + arrow keys to go to end of continuous range and select cell;

Shift + arrow keys to select a range;

Shift + ctrl + arrow to select a continuous range.

And here are a few more:

Home to move to the beginning of the line;

Ctrl + home to move to cell "A1";

Shift + enter to move to the cell above;

Tab to move to cell to the right;

Shift + tab to move to cell to the left;

Alt + down arrow to display a drop down list.

Source: Danielle Stein Fairhurst (2019). Using excel for business and financial modelling: A practical guide. Third edition.

Editing in excel

Again, for editing counts the same: Do NOT USE THE MOUSE.

You keyboard can do this job for you, you only need to remember some shortcuts.

In practise it means that you need to apply the shortcuts stubbornly (remove you mouse) and after a while you really do not want to go back.

The basic shortcuts for editing are:

Ctrl + S to save your workbook;

Ctrl + C to copy;

Ctrl + V to paste;

Ctrl + X to cut;

Ctrl + Z to undo;

Ctrl + Y to redo;

Ctrl + A to select all;

Ctrl + R to copy the far left cell across the range. You can set this range with holding "shift";

Ctrl + D to copy the top cell down the range. You can set this range with holding "shift";

Ctrl + B for bold;

Ctrl + 9 to hide row;

Shift + ctrl + 9 to un-hide row;

Shift + spacebar to highlight row (and ctrl + shift and + for another row);

Ctrl + spacebar to highlight column (and ctrl + shift and + for another column);

Ctrl + minus sign to delete selected cells.

Source: Danielle Stein Fairhurst (2019). Using excel for business and financial modelling: A practical guide. Third edition.

Shortcuts for formulas in excel

As you might guess, also when using formulas in excels, NO MOUSE PLEASE!

This is what you need to know!

And please practice with this a lot:

F2 (or ctrl + `) to edit a formula/ showing precedent cells;

Alt + enter to start a new line in the same cell;

Shift + arrow to highlight within cells;

F4 change absolute referencing ("$");

Esc to cancel a cell entry;

= to start a formula;

Alt + = to automatic sum selected cells;

Ctrl + ` to copy formula from above cell;

Ctrl + ~ to show formulas;

F9 to recalculate all workbooks.

Source: Danielle Stein Fairhurst (2019). Using excel for business and financial modelling: A practical guide. Third edition.

Checking your work in excel

Excel has some great build in tools in order to check your financial valuation models.

Needless to say that there are shortcuts for these checking functions as well!

Here are a few very powerful ones:

Alt + M + P to trace immediate precedents;

Alt + M + D to trace immediate dependents;

Alt + M + A + A to remove tracing arrows;

Ctrl + [to highlight precedent cells;

Ctrl +] to highlight dependent cells;

F5 + enter to go back to the original cell (for example after you jumped back with "ctrl + [");

Shift + ctrl + { to trace all precedents;

Shift + ctrl + } to trace all dependents.

Source: Danielle Stein Fairhurst (2019). Using excel for business and financial modelling: A practical guide. Third edition.

Formatting your cells

And at last, for formatting the most powerful basic shortcuts are:

Ctrl + 1 for the format box;

Alt + H + 0 to increase decimal;

Alt + H + 9 to decrease decimal;

Shift + ctrl + ~ for a general format;

Shift + ctrl + ! for a number format;

Shift + ctrl + # for a date format;

Shift + ctrl + $ for a currency format;

Shift + ctrl + % for a percentage format;

Alt + H + H to color a cell;

Alt + H + O + I to fit width to cell;

Alt + I + R to insert a row;

Alt + I + C to insert a column;

Alt + H + B + A to add a border.

Source: Danielle Stein Fairhurst (2019). Using excel for business and financial modelling: A practical guide. Third edition.

Further reading on excel shortcuts and financial modelling

For further reading I suggest you to read the book below. I have mentioned this book already since it is just a brilliant book. The book will learn you all on financial modelling with shortcuts and with advanced techniques.

Using excel for business and financial modelling: A practical guide. Third edition (2019). Danielle Stein Fairhurst. Wiley Publishing company. 9781119520382.

Valuation & Funding of Startups

Sources blog:

- Angel: How to invest in technology start-ups (2017). Jason Calacanis. Publisher: Harper Collins Publishers;
- Founder's pocket guide: Startup Valuation (2017). Author: Stephen R. Poland. 1X1Media US.
- Founder's pocket guide: Convertible Debt (2017). Author: Stephen R. Poland. 1X1Media US.
- Silicon Valley: Waar de toekomst wordt gemaakt (2014). Author: Eva de Valk. Lebowski Publishers Amsterdam.

Topic 1: Valuation & Funding of Startups: Funding rounds

Early staged funding

The first round of funding in many start-ups comes from the founders themselves. This in the form of working in their own business for free for months.

And because of this it is called "sweat equity".

A variation on "sweat equity" is called "bootstrapping". Bootstrapping basically means that you use whatever resources in order to finance your business.

For example you might be able to find a client who is willing to finance the company a little.

And then there are the "friends & family" or there is "self-funding".

With self-funding this is a very strong signal for potential investors. These investors are then straight away interested in how & why an entrepreneur is doing that. So at least you will get attention.

(Jason Calacanis, 2017)

Early staged funding: Incubators

And then there are the well know "incubators".

Start-up entrepreneurs can also join an "incubator" or "accelerator" in order to get financing.

The financing will range from 25,000 USD to 150,000 USD in early staged/ seed funding. And this for 5-10% of the shares.

These incubators are focused on different industries like: healthcare, hardware, software, mobile etc. And they are focused on different regions in the world.

At Silicon Valley the incubators only have become popular since about 2007. And they are partly responsible for the explosion in the number of start-ups around.

(Jason Calacanis, 2017)

Seed & angel funding

Most founders get to their seed financing round by completing successfully 2 or 3 of the "early stage" funding strategies discussed above.

Although it is possible that some founders skip the "early stage" funding strategies completely.

In this case, think of a start-up in a market that is really "hot".

Like for example when you built a really nice app in the on-demand space in 2014-2015.

Uber and Airbnb were really hot in this time period, and it was then possible to raise 1.5 million USD in seed funding straight away.

Also founders who sold their former start-up to google or facebook are often able to get to seed funding straight away.

This since the market believes they understand the startup-game. And this way they can attract seed financing with simply a basic prototype or slide deck.

(Jason Calacanis, 2017)

Bridge round, aka "seed plus"

A seed startup can run out of money before having reached the targets needed for a VC firm (venture capital) to fund a "series A" round.

Or they can run out of money before they reach "break even" or get profitable.

And then these start-ups can undertake what is called a "bridge round".

This round of funding is typically performed by the same investors as who did the seed round. Since these investors will simply lose their money if they don't continue investing in the startup.

(Jason Calacanis, 2017)

Series A

The series A is the most important round for a start-up, because this is typically done by a professional VC firm.

These VC firms will join the board of the company. And they will also create a good "governance" structure in the start-up.

And a governance structure simply means that from then on there will be a board of directors. And these will have regular board meetings.

These meetings will result in "board resolutions" all with an eye on maximizing the shareholder value of the start-up.

After a successful series A, subsequent rounds will follow: B, C, D, E, F and mezzanine.

(Jason Calacanis, 2017)

Topic 2: Startup valuation: Pre-money and post-money valuation

Startup valuation: An introduction

Early stages of a startup are funded by the founder and/ or friends and family. Here for in general no valuation needs to be made.

But in a later stage also "angels" and "venture capitalists" are involved in the funding and then a valuation is needed.

So at a certain stage startups need to have a valuation. Now let's take a look at the milestones on which you need a valuation:

Developing a funding plan (1)

When you start to think about the kind of startup you are building, and when you need outside investors, then it is time to think about valuations.

This enables you to start thinking about funding rounds and the amount you can attract in each round.

Starting discussions with equity investors (2)

When you start scheduling investor meetings and making funding pitches, then you really need a valuation of your startup.

This is order to have relevant discussion with (equity) investors.

Establishing a stock incentive plan (3)

Startups often set aside a pool of stock options to be used to reward employees.

This because these employees take a risk of working for a startup, because startups pay (in general) lower salaries and less benefits (in the short term).

When you start creating these incentive plans for the employees you need a valuation.

Equity split discussions among co-founders (4)

One of the essential steps in startup formations is to establish the "ownership split" when there are multiple founders.

You do this before you start negotiating with outside investors, and a valuation comes in very handy here.

All the above 4 issues/ events will be discusses in great detail in this sequence of blogs.

But we need to look at the basics first, and this is: Pre-money and post-money valuation.

(Stephen R. Poland, 2017)

The basic valuation equation

Before outside investors are attracted to a startup, the founders own 100% of the equity.

Investors buy a part of that ownership by giving cash to the company.

So the money is given TO THE COMPANY.

This since the company needs the cash to buy assets, create assets and pay for example the employees and rent for the office.

When you want to negotiate a deal with investors you need to take three steps:

1. Assign a value to the startup BEFORE the "investment money" is injected. This is what we call the PRE-MONEY VALUATION of the startup;

2. Then add the money invested in the startup to the pre-money valuation. And this is what we call the POST-MONEY VALUATION of the startup;

3. Divide the money that is invested in the company by the post-money valuation. And now the "equity-stake" that the investors get within the company becomes clear. Also this is also called the "founder's dilution" percentage.

Example:

1. The pre-money valuation of your startup is: 2.000.000 euros (= pre-money valuation);

2. The amount invested is: 1.000.000 euro (= money invested);

3. The total valuation is then: 3.000.000 euro (2.000.000 + 1.000.000) (= post-money valuation).

(Stephen R. Poland, 2017)

Calculating the investor ownership percentage (or founder dilution)

How to actually make a valuation of a startup will be discussed later in this sequence of blogs.

These are the so called "valuation methods", and again I will discuss them later in this sequence.

Let's for now assume that the pre-money valuation of a startup is 1.000.000 euros.

And let's assume that the investors brought 250.000 euros in the company.

Then the investor ownership (or founder dilution) looks as follows:

Pre-money valuation = 1.000.000 euros;

Amount invested = 250.000 euros;

Post money valuation = 1.250.000 euros.

So the percentage of equity owned by the investors after the investment is:

250.000/ 1.250.000 * 100% = 20%.

Or we could say that the founder dilution = 20%

(Stephen R. Poland, 2017)

Expressing your valuation to investors

Option 1: Implied valuation

When a startup founder is talking to investors, they could say that they are raising 150.000 euros for 15% of the company/ shares.

This implies a post-money valuation of 1.000.000 euros.

This because:

150.000/ 0,15 = 1.000.000 euros (= post-money valuation)

And this again implies a 850.000 euros pre-money valuation.

This because 1.000.000 euros (post-money valuation) – 150.000 euros (amount invested) = 850.000 euros.

Option 2: Implied founder dilution

Another way of expression your valuation to investors is to express the money you want to raise on a certain pre-money valuation.

For example you say that you want to raise 500.000 euros on a 1.000.000 euros pre-money valuation.

This way the post-money valuation = 1.500.000 euros (1.000.000 + 500.000).

And then the implied ownership percentage the investors get (or founders dilute) is:

500.000 euros/ 1.500.000 euros * 100% = 33%.

(Stephen R. Poland, 2017)

Topic 3: Valuation methods for Startups (early stage) – Part 1

Different valuation methods

In order to valuate early stage startups there are different valuation methods.

In this blog (written in a "part 1" and "part 2") I will discuss several valuation methods like:

1. Market comp valuation method (part 1);
2. Step up valuation method (part 1);
3. Risk mitigation valuation method (part 2);
4. The Venture Capitalist (VC) quick valuation method (part 2);
5. The VC valuation method (part 2).

Let now start with the so called "market comps".

(Stephen R. Poland, 2017)

The market comp valuation method: An introduction

With regular valuation and Mergers & Acquisitions (M&A) we tend to look at "comparable companies" in order to make a valuation.

I have discussed this topic for M&A already in the past (in 2 parts). And startup "comps" work in a similar way.

In case you want to read how "comps" are done for regular valuation and M&As. Then please read my previous blogs under here.

And below I will just continue with discussing "comps valuation" for startups.

- Valuation Multiples 1 – Comparable Companies Analysis:

https://www.linkedin.com/pulse/valuation-multiples-1-comparable-companies-analysis-joris

- Valuation Multiples 2 – Precedent Transaction Analysis:

https://www.linkedin.com/pulse/valuation-multiples-2-precedent-transaction-kersten-msc-bsc-rab

Valuation "comps" for startups, short for "comparison", are often used by investors to get a quick estimate valuation for the startup.

It goes something like this:

"you are like startup X and that one was just valued at 1,5 million USD pre-money. So your startup must be in the same pre-money range".

(Stephen R. Poland, 2017)

Market comp method: steps

In order to valuate with market comps you need to make a few steps:

Step 1: Create a short profile of your startup

You need to list the factors that describe your startup, like: stage of development, target markets, technology approach, customer traction etc.

Step 2: Find similar startups with known valuations to use as comps

Several websites and startup blogs offer detailed information, like for example:

- CrunchBase: www.crunchbase.com
- Gust: www.gust.com
- AngelList: www.angel.co

Step 3: Compare your startup profile to the comp's profile

Once you have found 2 or more startups that are similar to yours, then make notes to compare them in detail. Compare them for example on:

Industry, niche, founder experience, company location, customer traction, B2B or B2C, stage of development, funding level, team etc.

Step 4: Adjust the comp valuation for large and obvious differences

It can be difficult to find comp startups that align perfectly with your startup. This always is an issue with comps, even in valuation in M&As for mature companies.

And some factors have a major impact on the validity of the comp. Think for example of the stage of development of the startup.

If you find a good comp where most of the comp factors match, except one or two, then adjust the valuation up or down to compensate for the difference.

Remember that comps are not an exact science, you need to use your judgement to make adjustments. And try to be fair since later on you need to defend your adjustments in front of investors.

(Stephen R. Poland, 2017)

The step up valuation method

Startup founders often take their accomplishments into account. So they measure their progress and plan their next goals and milestones.

And with this "step up valuation method" a structured approach is used to look at achieving these goals and milestones. This in order to come up with a valuation.

This "step up valuation method" is developed by "1x1Media US", and they are the developers of the book I have used as a source for this blog:

- Founder's pocket guide: Startup Valuation (2017). Author: Stephen R. Poland. 1X1Media US.

When you are a startup entrepreneur, or consultant to startup founders, this book is highly recommend to read.

And the other books on startups that have been published in this range ("Founder's pocket guides") are highly recommended as well. I really like that these books are just practical! 😊

Within the "step up valuation method" they basically look at 5 startup characteristics, further divided over 10 factors, in order to determine a valuation.

The 5 startup characteristics considered are:

1. Quality of management team – 0 to 500.000 USD added to pre-money valuation;
2. Sound idea - 0 to 500.000 USD added to pre-money valuation;
3. Working prototype - 0 to 500.000 USD added to pre-money valuation;
4. Quality of the board of directors - 0 to 500.000 USD added to pre-money valuation;
5. Product roll-out or sales - 0 to 500.000 USD added to pre-money valuation.

Now let's take a look at how to further divide these characteristics in 10 valuation factors.

(Stephen R. Poland, 2017)

Step up model: 10 valuation factors

The 5 startup characteristics are further divided over 10 valuation factors.

And the method works very simple since it just provides 250.000 USD in (pre-money) valuation for every "yes".

So in total you can get to a valuation of 2.500.000 USD for an early staged startup. Since this is a common limit for most investors to consider.

And now it is just a matter to "rate" (say yes or no) the startup on the following 10 factors.

1. Total market size over 500.000.000 USD;
2. Business model scales well;
3. Founders have previous "exit experience" or other significant experience;
4. More than one founder is committed full time;
5. MVP (minimum viable product) is developed, and customer development under way;
6. Business model is validated with paying customers;
7. Significant industry partnerships are signed;
8. Execution road-map developed and being achieved;
9. IP (intellectual property) issued or technology is protected;
10. Competitive environment is favourable.

And as mentioned, for every ticked box (so a "yes") you can determine a 250.000 USD pre-money valuation.

E.g. with 6 ticked boxes you get to a pre-money valuation of:

6 times 250.000 USD = 1.500.000 USD pre-money valuation.

(Stephen R. Poland, 2017)

Topic 4: Valuation methods for Startups (early stage) – Part 2

Different valuation methods for startups

In order to valuate early stage startups there are different valuation methods.

In this blog (written in a "part 1" and "part 2") I will discuss several valuation methods.

In the previous blog: "Valuation methods for Startups (early stage) – Part 1" I have discussed, the:

1. Market comp valuation method (part 1);
2. Step up valuation method (part 1);

And in this "part 2" of the blog I will discuss the:

1. Risk mitigation valuation method (part 2);
2. The Venture Capitalist (VC) quick valuation method (part 2);
3. The VC valuation method (part 2).

Let now start this part 2 of the blog with the so called "risk mitigation valuation method".

Risk mitigation valuation method: An introduction

Before I move on to the more quantitative VC (venture capital) methods, I want to shortly discuss the "risk mitigation valuation method".

This method is far more qualitative in nature, but it is still a very interesting method.

I will give you a short overview of the method here, and I will get back to it later in this sequence of blogs since it is an interesting perspective on valuation (for startups).

A startup accomplishes tasks/ milestones. Think of for example: Launching an early version of the product, signing up paying customers, attracting good team members, filing for a patent etc. etc.

When these activities take place then the risk of the startup is reduced. Consequently you could argue that then the valuation of the startup grows.

(Stephen R. Poland, 2017)

Risk mitigation valuation method: An overview

The risk mitigation method assigns dollar values to the accomplishments and validations of the startup.

It does this in four categories of risk mitigation:

1. Technology;
2. Market;
3. Execution;
4. Capital.

The value assigned to the accomplishments represent either:

1. Actual dollars spent to achieve the task, or,
2. Estimations of the "worth or value" of the item/ outcome.

As an example, you might spend 50.000 USD to build a working prototype of your product. This can be logged as actual dollars spent in the category: Technology.

Or you can for example assign 150.000 USD to your successful attracted early adopter customers. And this can be logged as a "perceived value" of the accomplishment in the category: Market.

This does make sense, although you can see that especially the 'estimations of value' are highly subjective. I will talk about this more later in the sequence of blogs.

(Stephen R. Poland, 2017)

Risk mitigation valuation method: Risk categories

From an investor's point of view, the 4 risk mitigating categories can be summarised by asking the follow questions:

Technology (1)

· Does the product work as planned?

· Can the product be manufactured at a price that supports the business model?

· Are there patents and/ or "trade secrets"?

Market (2)

· Do customers care about your product or service?

· Are they willing to pay for it?

· Is the market big enough for you (and the competitors)?

Execution (3)

- Is the team experienced in the segment that the startup targets?
- Do founders have (startup) experience?
- Do founders have track record to "execute" on plans they make?
- Are founders able to attract key personal needed?

Capital (4)

- Did founders invest personal funds in the startup idea?
- Have founders been able to attract funding from family and friends?
- Do founders have a funding plan that outlines milestones and funds needed?
- After how many funding rounds is the startup "break even"?

(Stephen R. Poland, 2017)

The VC (Venture Capital) quick valuation method

The VC quick valuation method is a little more quantitative in nature. It looks at how much money the founders need in order to survive for 18 months.

Let's say the founders need 3 million USD to survive for 18 months at the current "burn rate".

A VC wants to own at least 20% of the shares in a company, other wise it is irrelevant for them.

Since anything less than 20% isn't worthwhile, and anything significantly more than 20% (probably) dilutes the founders and existing shareholders too much.

Well in this case the post-money and pre-money valuation is calculated as follows:

1. 3 million USD = 20% shares;
2. 15 million USD = 100% shares (3/ 0,2 = 15);
3. 15 million USD (post money valuation) – 3 million USD investment = 12 million USD pre-money valuation.

Well, of course this is a very simple perspective just focused on the valuation. And there are a lot more factors to consider, like for example:

- Liquidation preferences;
- Anti-dilution provisions;
- Board seats, etc etc.

I will get back to these 'deal structuring' issues later on in this sequence of blogs.

(Stephen R. Poland, 2017)

The VC valuation method: Exit values

With the VC valuation method, we need to make a few steps.

For the people involved in "private equity" and M&As this method has the same kind of thinking as when you build a "Leveraged Buyout" (LBO) model in excel.

So with this method you need to estimate upfront what your "exit value" will be.

For example, startups in your industry are sold for about 2 times the yearly revenues.

When yearly revenues are expected to be 20 million USD in year 5 (your exit year), then the exit value is:

· 2 times 20 million USD = 40 million USD (exit value)

Another example is that startups in your industry have P/E ratios (price/ earnings ratios) of 10.

Assume that you expect you return on sales to be 16% as an example. And assume you expect your sales to be 25 million in year 5 (your exit year). Then the calculations are as follows:

- 16% * 25 million USD turnover = 4 million USD earnings.
- 4 million USD * factor 10 = 40 million (exit value)

(Stephen R. Poland, 2017)

The VC valuation method: Continued

So let's assume that the expected value of the startup is 40 million USD in 5 years (exit value).

When we assume that a venture capitalist want to get their money back 20 times (ROI multiple = 20) in 5 years, we can make the following calculations:

1. 40 million USD/ factor 20 = 2 million USD (estimated exit value/ ROI multiple = CURRENT post money valuation);

2. Assume that you are trying to raise 500.000 USD;

3. 2.000.000 USD - 500.000 USD = 1.500.000 USD (CURRENT post money valuation – investment = CURRENT pre-money valuation);

4. 500.000 USD/ 2.000.000 USD = 25% (investment/ post-money valuation = investor ownership percentage).

So this implies that when you want to raise 500.000 USD now, your pre-money valuation is 1.500.000 USD now.

And your startup needs to be acquired for 40 million USD in 5 years in order to be able to make the investors a desired multiple on their money of 20.

So with the VC valuation method we calculated backwards, like we do in M&A with a LBO model (from exit value to IRR).

(Stephen R. Poland, 2017)

Topic 5: Startup Funding & Convertible Debt (part 1)

Convertible debt for startups: An introduction

Within a 'convertible debt investment deal' an investor makes a loan to a certain startup.

And that loan converts to equity at some point in the future. This with an extra bonus to the investor for taking on higher risk of investing in the (early stage) startup.

The convertible debt can also be called a "convertible note".

When later on in the life of a startup an 'equity deal' is negotiated with "later stage investors", then a valuation needs to be negotiated and placed on the startup.

And this valuation then provides input for the conversion of the convertible debt (CD). The exact calculation will be shown later in this sequence of blogs.

A few important points of convertible debt for startups are:

1) Delayed valuation

There is a delayed valuation since it simply is not needed to make a valuation to issue CD.

This can be handy for early stage startups, because when they need more time to bring their product to the market (as often is the case), it can be very tough to make a sensible valuation.

2) Accrued interest

The holder of the CD gets interest like with a regular loan. But the interest 'accrues' over the term of the CD, so it gets added on top of the total value of the CD.

3) Trigger event

The CD converts at a certain "trigger event". And this most often takes place when the startup raises its first "valued" round. And this stands for an equity investment against a "valuation".

After that the CD converts against a certain amount of equity. And the original CD holders get the same rights as established in the negotiations with the new investors in the "valued" round.

4) Discount rate sweetener

CD also carries a discount on the valuation at the trigger event. These discounts typically range from 15% - 25%.

So CD converts to relatively many shares at the trigger date. This benefit is for the investor who took the risk of investing early in the startup.

(Stephen R. Poland, 2017)

Convertible debt: A closer look

An investor will make a CD loan to startups in order to convert the loan to equity in the subsequent funding round.

The time frame for expectations of the next funding round is 12-24 months. So the money raised with the CD should enable the founders to reach the next funding round.

The investors in CD also carefully look at "exits" when they invest in the startup.

So a startup that wants to issue CD should have the potential to get acquired by a larger company at a time in the future (the "exit").

Investors need this exit in order to realise a healthy return (internal rate of return = IRR) on their investments.

Issuing CD for startups is best suited for "early stage startups" and this to "angel investors".

The CD can then fund many early staged milestones like:

- Building an early version of the product;
- Forming the core team;
- Engaging with early customers, etc.

And here the "delayed valuation" for CD comes in handy.

Because at that moment there (likely) are still great unknowns that make establishing a sensible valuation very difficult. Since still many startups in the early stage phase do not know things like:

- What the ideal market niches for the products/ services are;
- The exact working of the business model and revenue model;
- The exact status of IP (intellectual property) such as patents, etc.

But even without these unknowns some investors will like the potential of a startup. And then CD could be a very suitable financial instrument! 😊

(Stephen R. Poland, 2017)

Advantages of convertible debt

Because a company valuation and other deal terms do not need to be negotiated (yet), CD can be raised much more quick than equity!

Also the "delayed valuation" is an advantage as well, as mentioned already.

Because CD can be issued more quick, and in a simpler way than equity, the "legal fees" made by lawyers are substantially lower than with issuing equity.

Simply because fewer legal documents need to be written, therefore limiting the billable hours of lawyers.

And CD can be used as a "rolling raise" which means that money can be raised as "chunks". So startups can raise smaller portions of CD in order to put the money to work quick.

These are all advantages of CD.

(Stephen R. Poland, 2017)

Disadvantages of convertible debt

Obviously there are also some disadvantages of CD.

Let's start with that funding rounds are "un-priced". In other words, there is no valuation.

This can be an advantage, as mentioned before, but it can also be a disadvantage for the investor. This since he/she does not know with what share of the company he/ she will end up with.

On the other side, this disadvantage might be offset with the fact that with CD you can realise a very early stake in a potential startup (relatively) easy.

Another point is that CD is still debt, so it also possesses all the legal implications of debt. So if the startup is unable to raise an equity round, it must deal with the CD somehow!

I will look at the options on how to deal with this point later on in this sequence of blogs on startups.

Also some investors request a collateral on CD like with "normal debt" often is the case.

Or even worse, investors can request a "note holder approval".

But you do not want to go back to these debt holders for a signature when you are raising more funds for your venture. Since this is what a "note holder approval" entails.

At last, one of the most important disadvantages of CD is that a "trigger event" sometimes does not take place.

So then the CD reaches maturity before a new equity investment (with a valuation) is negotiated.

I will look at this "timing issue" of CD in the next blog on this topic. And I will also discuss how to deal with this.

Moreover, I will then look at a real life example of issuing CD with numbers, in combination with real life additional terms that are often negotiated with CD.

(Stephen R. Poland, 2017)

Topic 6: Startups in Silicon Valley: The beginning – Part 1

Silicon Valley: An Introduction

In the middle of Silicon Valley (SV) Stanford University is located.

It is a University set up by businessman and politician Leland Stanford (1824-1893) and his wife Jane Stanford in the 19th century.

The "first father" of SV is Fredrik Terman (1900-1982) who spent his whole life working at Stanford University.

Terman realised that a part of the campus could be used to grow tech companies in the so called "Stanford Industrial Park".

In 1953 the first company was located here. And soon the famous company "Hewlett-Packard" followed.

From then on also other tech companies from all over the US opened up locations at the Stanford campus like: General Electric, Eastman Kodak and Lockheed.

And in this area, now called "Stanford Research Park" are now located more than 150 tech companies. And with big names like for example: VM-Ware, SAP, Skype, Nokia, Mercedes-Benz, Tesla and until 2011 the HQ of Facebook.

Terman's most famous students are still William Hewlett and David Packard, the founders of Hewlett-Packard (HP).

HP is famous for introducing on of the first computers for business (1966), a pocket calculator (1972), the PC (1980) and the laser printer (1984). In 1960 it was located at the "Stanford Industrial Park" before it was set up from the "famous garage".

(Eva de Valk, 2014)

Frederick Terman, cold war and government

The cold war resulted in a technological 'flexing of muscles'.

On both sides of the spectrum (US and Soviet Union) a lot of money was spent on technology in order to be able to control each other.

After the Soviet Union lanced the first "Sputnik" satellite in 1957, then America decided they wanted to put the first man on the moon.

This "space race" gave an important impulse to technological innovation. And most of the budgets available landed in the "Bay Area" where SV is located.

For example, a new research centre of NASA located in Mountain View. And Stanford University received, next to MIT, a large part of the budgets available for military related research purposes.

(Eva de Valk, 2014)

William Shockley: The 2nd father of Silicon Valley

Next to Frederick Terman, is William Shockley the "second father" of SV.

William Shockley is famous for being co-inventor of the "transistor" (1951) with his colleagues John Bardeen and Walter Brattain.

A transistor is an electric switch that can stop or let go electricity. So it puts electricity on or off, like a zero or one in computer terms.

So William Shockley and his colleagues managed to integrate a switch in a semi-conductor. And it was very small, fast and reliable compared to solutions used in the past.

In 1956 the 3 co-investors won the Nobel price for physics for this invention.

And the semi-conductor transistor opened up a lot of new opportunities like travelling to space.

In 1957, only 6 years after presenting the transistor in 1951, the Soviet Union lanced the first satellite; the Sputnik.

And 12 years after that the American Neil Armstrong made a first step on the moon in 1969. This would have been impossible without the semi-conductor transistor.

In the years after that, transistors got cheaper and more advanced.

Nowadays almost every electric device contains transistors. From complex computers and spacecrafts, to coffee machines and alarm clocks.

Now let's jump back to Silicon Valley with this in mind.

(Eva de Valk, 2014)

Shockley Semiconductor Laboratory

In 1955 William Shockley founded the "Shockley Semiconductor Lab" in Palo Alto.

Historians argue that Shockley's choice for location Palo Alto for his company contributed that SV is located in the bay of San Francisco. And this instead of on the East Coast or in LA.

His company was expected to become highly successful, all the ingredients were there:

A great invention (transistor), big chances on commercial success, investors, and he attracted a team of great scientists and workers, and he even had a Nobel price.

But the company fell apart after a year and a half already.

Shockley used "germanium" as the semi-conductor for his transistor. But "silicon" was probably a better choice.

On top of that, he was not a very good manager and annoyed his employees including his top 8 scientists.

In the end, his top 8 scientists left and formed "Fairchild Semiconductors" (1957). They were very productive and timing was great since the "space race" just started.

The Sputnik was just lanced by the Russians (1957) and the US and Soviet Union were both trying to be first in bringing man to the moon.

For the development of rockets and space shuttles enormous amounts of small, reliable and heath resistant transistors were needed.

And this was exactly the product on which "Fairchild Semiconductors" was working. They were doing great!

(Eva de Valk, 2014)

The name "Silicon Valley"

The name "Silicon Valley" (SV) was first mentioned in 1971.

And it obviously comes from the transistor companies in the sixties.

So "silicon" is the semi-conductor used in modern chips.

First the scarce "germanium" was used and then "silicon"; an element that comes from sand.

Silicon conducts better than germanium and also behaves better under high temperatures.

And this makes it better suitable for use in rockets and planes.

(Eva de Valk, 2014)

Spin-offs of “Fairchild Semiconductors”

The success story of "Fairchild Semiconductors" changed the entrepreneurial climate in the Bay Area (Silicon Valley).

And to leave a company, and to start a competing firm became more normal, and these were called “spin-offs”. This way more and more startups were formed and created.

20 years after 1957 more than 65 chip companies were active in the Bay Area.

And because of all these successful companies, investors and lawyers also located themselves in the bay.

This way the great infrastructure with financial and legal professionals, giving support to startups, was formed.

And this has been very important for the entrepreneurial climate in the area.

"Fairchild Semiconductors" was in the end very successful. After 10 years they had 11 thousand employees and multiple millions in profit.

But there was some trouble within the management and in 1968 Robert Noyce and Gordon Moore stepped out and started again.

This spinoff was the famous “Intel”. A world player still active in Silicon Valley.

(Eva de Valk, 2014)

Wall Street & The Federal Reserve Banking System

Source blog: Book: "Why Wall Street matters" of William D. Cohan from 2017.

Wall street: Introduction

Wall street lies downtown Manhattan New York. And runs from Broadway and Trinity Church to the West, and to South Street to the East.

It used to be the thoroughfare that connected the East River to the Hudson.

Wall Street was named after an actual wall that the Dutch inhabitants started building halfway the 17th century. It functioned as the norther border of their relatively small enclave in the South.

Later when the English took over the wall was removed by the end of the 17th century and the stones removed where used for the foundation of the City Hall at 26 Wall Street.

After the American war of independence it was Philadelphia, and not New York, that was the nation's financial power.

And in Philadelphia Robert Morris created the first private commercial bank in the United States. Actually it was the country's first initial public offering (IPO) since investors were attracted.

In 1790 in Philadelphia the nation's first stock exchange was created. And a few years later New York followed as well.

(William D. Cohan, 2017)

Initial public offerings (IPOs)

The practice of IPOs was already relatively old because the first modern IPO occurred in the beginning of the 17th century in The Netherlands. This with the public sale of stock of the "Dutch East India Company".

The IPO was a crucial moment in capitalism in a sense that capital could be raised from people having nothing to do with the founding or management of a company.

At the same time the Amsterdam Stock Exchange was created to allow for the trading of the East India Company's stocks.

(William D. Cohan, 2017)

Wall Street at the end of the 18th century

In the 1780s the first congress was built on Wall Street and George Washington was inaugurated as the nation's first president.

The lawyer Alexander Hamilton created the "Bank of New York" and President Washington signed the law creating the Supreme Court of the United States.

Then the first federal bond was issued in Philadelphia and sold to investors. This in order to refinance the debt from the American war of independence.

This was another important milestone in the history of finance: The opportunity for an investor to sell a security to a broker, or middleman!

And these middleman where willing to take the risk of buying a bond from a seller until a new buyer could be found.

New York's first stock exchange was opened at 22 Wall Street in 1792 by a group of "auctioneers" who had been designated by the Treasury. This to sell the bonds that were issued in order to pay off the young nation's debt from the war.

Hamilton's Bank of New York became the first stock traded on the new exchange. And at the end of the 18th century the Bank of New York was headquartered at what is now 48 Wall Street.

(William D. Cohan, 2017)

Wall Street nowadays

What we think collectively of "Wall Street" no longer exists on Wall Street.

The only major Wall Street firm physically on Wall Street is the US securities arm of Deutsche Bank. They bought the building at 60 Wall Street that was once the headquarters of JP Morgan.

55 Wall Street which was once the headquarters of Citigroup is now a restaurant. And there are many stores like a Tiffany, Hermes, BMW showroom etc etc. And there are apartment for rent or sale at number 37, 63, 75, 95 and 101.

So although it's pure function vanished it is still a powerful symbol of American capitalism.

(William D. Cohan, 2017)

Investment banking

Investment banks (banks who are consulting for example in Mergers & Acquisitions, bond issues and IPOs) were historically small and private.

The only capital they had available to them was the money their partners invested. And they could borrow money from other investors, from banks, or from "the market".

But unlike "commercial banks" they did not have a ready source of raw material (the client deposits) to use to run their businesses.

That's why Wall Street investment banks and brokerage firms have always been a very dangerous enterprise. And what kept the investment banks on the narrow path was the daily chance that their partners' capital could be lost.

But this changed in the latter part of the 20th century when investment banks started to go public. In effect using from then on other people's money to take risks, rather than their partners'.

(William D. Cohan, 2017)

Crises

Crises are not new, and they keep coming back when you look at history. And now the question is how the consequences of these crises should be handled?

Should the government have a role in encouraging the bad behaviour of bankers? This through an implicit or explicit promise to bail them out if things go wrong.

A problem would then be created that academics call "moral hazard".

Usually in the US the answer would be to let a bank fail if it is going to fail. Or to let a railroad or manufacturing company go bankrupt when it fails. This way the market can sort out the winners from the losers.

But this idea was sorely tested with the financial crisis in 2008!

Eventually was decided to bailout the financial sector in 2008 with the "Troubled Asset Relief Program" (TARP).

With this program about 750 billion USD was injected in the biggest banks at the most acute moment of the crisis.

This act probably saved the financial system, and loans were eventually paid back.

But in the end we can not forget that a large slice of the blame for the 2008 crisis goes to financials who created securities of questionable value (at least with a crazy complexity) and sold them all over the world.

(William D. Cohan, 2017)

Source blog: Book: "Why Wall Street matters" of William D. Cohan from 2017.

The Federal Reserve banking system: An introduction

The Federal Reserve is the centralized national bank of the US. It is created more than a century ago by powerful bankers on a remote location.

Because of the constant turmoil of boom and bust cycles in the late 19th century, and early 20th century, there was a belief in the US that a more tightly, structured and centralized financial system was needed.

Back then Mr. J.P. Morgan saved the financial system already a couple of times, but he would not live forever.

And also the nation's financial system grew alongside the economy. So people got skeptic on whether one man could save the system over and over again.

In November 1910 the Rhode Island senator Aldrich invited a select group of politicians and bankers to the exclusive Jekyll Island Club off the coast of Georgia.

During the next two weeks the bankers and the senator set up a system of 12 regional "Federal Reserve Banks" with a central governing board.

And this board is composed of not politicians but bankers, or men and woman appointed by bankers.

(William D. Cohan, 2017)

Goals of the Federal Reserve banking system

The plan was to institutionalize what Mr. J.P. Morgan had done in both the financial crises in 1893 and 1907.

The new central bank would become the nation's lender of last resort. And it would also strive to keep the financial system from overheating in the first place.

The politicians of the time augured against the banker's ideas made on Jekyll Island. Congress simply feared putting Wall Street in control of something as crucial as the central bank.

Much of that fear derived from the concentration of financial power that was already in the hands of a small group of Wall Street bankers.

(William D. Cohan, 2017)

Development of the Federal Reserve system

The Federal Reserve Act of 1913 created a system of 12 regional Federal Reserve banks. These are owned by the commercial banks in the various districts.

And they have the ability to regulate the money supply, to tame inflation, and to serve as the nation's lender of last resort during a financial crisis.

The act also provided for a governing board based in Washington; the Federal Reserve Board. The members were to be appointed by the president of the US. And the chairman of the Federal Reserve Board is one of the most powerful individuals in Washington.

(William D. Cohan, 2017)

Lender of last resort

The Federal Reserve system was created, in part, to be a lender of last resort.

But of course, it would not be normal for a bank to get "aid" from a reserve banks.

The danger is that when a bank has financial concerns and goes to the central bank to get help in the first place, the financial concerns/ problems could be a self-fulfilling prophecy. This because of the public opinion.

That very fear is what caused Hank Paulson; the Treasury secretary, to insist that all the big banks take TARP money ("Troubled Asset Relief Program") during the 2008 financial crisis, whether they said they needed it or not.

More than 100 years after the founding of the system it is much debated whether the Federal Reserve system is a source of good or evil.

For now let's stick to the basis, and that implies that the Federal Reserve is designed to act in the interest of banks, bankers, and the overall financial system.

And they do this by focusing on keeping inflation low and employment robust.

Of course this needs to be done to coincide with the interests of the American people.

(William D. Cohan, 2017)

Source blog: Book: "Why Wall Street matters" of William D. Cohan from 2017.

Bonds, Bond Markets, Rating Agencies and Credit Ratings

Source blog - Book: Bonds – An introduction to the core concepts. 2012. Mark Mobius. Publisher: Wiley.

Corporate Finance: Bonds - an introduction

Basic elements of bonds

The face value, or the par value, of a bond is the amount of money that needs to be paid back at the maturity date.

And the coupon rate is the amount of interest, stated in percentages, that the bond will pay on a quarterly, semi-annual or annual basis. And this rate remains the same over the life of the bond, so even if the price of the bond fluctuates (and it will if it is publicly traded).

Some bonds pay a floating rate of interest, where the rate is adjusted periodically in line with some measure of market interest. Such as the rate on treasury bills.

Another type of bonds, zero coupon bonds, do not make periodic interest payments. But they pay the total interest all at the end, so at maturity. These types of bonds are sold with high discounts in order to simulate the accumulated interest over time.

A maturity date is the date on which the principal is paid back. And the last interest payment is also made on that date. Bonds feature a range of maturity dates, from 1 day to 30 years.

Short term bonds are those that mature in two years or less, and intermediate bonds have maturities of up to 10 years. And long-term bonds have maturities of 10 years or longer.

(Mobius, 2012)

Price & yields

When a bond is traded on the secondary market, before it reaches maturity, then the price of the bond is affected by the rise, or fall, of interest rates and credit quality.

When market interest rates go up bond prices will go down.

And when market interest rates go down bond prices will go up.

Because when market interest rates are going up, or down, it is less, or more, favorable to possess the bond that pays a certain amount of coupon.

There are three kinds of yields that investors in bonds matter:

1. Coupon yields;
2. Current yields;
3. Yields to maturity.

The coupon is simply the interest rate that the bonds pays, as promised by the issuer.

The current yields of the bond is the coupon payment divided by the market price of the bond. The market price is likely higher or lower (when publicly traded) than the original value (the original value = the face value).

And the yield to maturity is a even more accurate yield than the current yield since it takes the total bond return into account. And it takes several factors into account like: principal pay back, interest and the time redemption.

So when people talk about the yields of bonds they talk about the "yield to maturity".

(Mobius, 2012)

Seniority & call provisions

Like preferred stock bonds are regarded as senior securities. This means that paying interest on the bonds receives a higher priority than dividends paid to the shareholders of common stock.

Bonds can be repaid at maturity date but can also be redeemed before that date.

Early repayment is often handled through a "sinking fund". This is a special account in which money is deposited and management by the bond trustee.

Having such a fund is reassuring and helps minimizing the risk of the issuer not being able to repay the principal when it comes due. Details on the sinking fund can be found in the bond contract (called the bond indenture, as mentioned before).

"Call provisions" allow the issuer to buy back (in other words: to call) part or all of the bonds issued before maturity. The reason for this repurchasing could be that the interest rates have dropped.

But issuers need to pay a call premium when they buy back the bonds, this in order to protect the bondholders. And some bonds have "deferred call provisions" which means they cannot be called for a certain period of time.

(Mobius, 2012)

Covenants

"Negative covenants" of bonds are written directly into the agreement that creates the bond issue. And they are legally binding the issuer and they are there to protect the bondholders.

Imagine a negative covenant as a promise not to do something. For example a negative covenant limits the amount of dividend a company can pay and they restrict the ability of the company to issue additional debt.

Logically, the more negative covenants exist in a bond issue, the lower the coupon (interest it pays). This since the bond can then be seen as less risky.

On the other side you have "affirmative covenants" and this requires the bond issuer to do something.

For example it provides that the issuer of the bonds needs to maintain adequate levels of insurance in the company, or that the company needs to deliver audited annual reports to the bondholders.

In bond agreements both the negative and affirmative covenants are there to project the bondholders.

(Mobius, 2012)

Stocks versus bonds

Bonds tend to be safer and less volatile than stocks, but this does not mean they are 100% safe.

Although for example US government securities like treasury bills, notes and bonds can be considered risk free.

But other bonds in the market issued by corporations and financial institutions range from "investment grade" bonds to "higher yield" speculative issues (also called "junk bonds").

There is lots more to come on "credit ratings" (e.g. "investment grade") on bonds in the upcoming blogs in this sequence.

Bonds allow corporations to raise lots of money to finance everything, from acquisitions to new assets needed for expansion. They offer a good alternative for issuing stocks for two reasons:

· If demand for a company's stock stays the same, more shares would dilute existing shareholders equity. And this could result in the stock price going down;

· And secondly, as you might remember from your "corporate finance class" in university, debt is cheaper than equity (and bonds are obviously debt). And corporations even gain tax benefits from issuing bonds since the interest paid is deductible for tax purposes.

(Mobius, 2012)

Source blog - Book: Bonds – An introduction to the core concepts. 2012. Mark Mobius. Publisher: Wiley.

Bonds & Bond Markets - Corporate Finance

Bond markets: An introduction

When people are talking about the capital markets they generally mean the:

- Money markets;
- Equity markets, and,
- Bond markets.

The money markets consist of financial institutions and dealers who buy, sell, borrow and lend cash instruments and short term financial instruments. And these with durations from overnight to up to 12 months.

Equity markets refer to markets where equities or company stocks, or stock derivatives, are traded. And bond markets are those markets in which participants buy and sell debt securities.

Bonds are loans lasting from 12 months to over 30 years. They normally pay interest at regular intervals and they pay back their principle at maturity date.

These bond markets are also called debt-, credit- or fixed-income markets.

In bond markets the borrowers are the issuers of the bonds. This can be governments, corporations, banks, (international) organisations, individual etc.

And lenders are the entities that lend through buying the bonds.

(Mobius, 2012)

Operations of the bond market

Domestic bond markets handle all types of debt like government securities and corporate issues. And these are issued in their own domestic currency.

If a domestic market is too small or too restrictive to meet an organisation's needs, then there is the international bond market.

The most prominent international bonds are Eurobonds. And these are bonds that are denominated in a currency different from the currency of the country where the bond is issued or traded.

For example, a US dollar bond issued and traded in Germany would be considered a Eurobond.

Eurobonds are helpful for multinational companies in order to raise money in the various countries in which they are operational. So for example a Japanese company may issue a Eurobond in Switzerland denominated in euros.

There are a number of other types of international bonds. For example "foreign bonds" are issued by foreign companies or governments and denominated in the currency of the issuing domestic market.

And "Dragon bonds" are issued in Asia and usually denominated in US dollars. More on this in one of a subsequent blog on "international bonds" in this sequence.

(Mobius, 2012)

Over the counter (OTC) trading

The domestic and international bond markets consist of a large interconnected networks of dealers and traders all over the world.

Transactions are conducted between broker-dealers and large institutions "over the counter" (OTC). In OTC trades, traders deal directly with another party over the phone or computer.

The bond market is decentralised. However, some bond trading still takes place on established exchanges. Such as the NYSE (New York Stock Exchange), and this is the largest centralised bond market in the US.

A wide range of bonds are traded on that market, including corporate and government bonds. And corporate bonds and other corporate debt issues account for the largest part.

Also at LSE (London Stock Exchange) debt securities are traded, from simple Eurobonds to complex asset-backed issues, high yield bonds and convertible bonds.

Issuers there include governments and their agencies, large corporations and supranational bodies, such as the European Bank for Reconstruction and Development.

(Mobius, 2012)

Players in the bond market

The bond market includes three main players: issuers, investors and intermediaries.

Issuers are the organisations (e.g. governments and companies) that are looking to borrow money.

And since the requirements of these organisations often exceed the bank's appetite, large bond issues are a good alternative for these borrowers.

Investors are individuals or institutions that provide capital to bond issuers.

Institutions such as insurance companies, mutual funds, pension funds and savings institutions dominate the bond market and account for most of the bond holdings globally.

And intermediaries are the market players that bring issuers and investors together. Think of merchant banks, investment banks, financial advisors and brokers.

These intermediaries play a vital role during issuing the bonds in the "primary market" and trading them in the "secondary market".

(Mobius, 2012)

The primary market

When an organisation decides to issue a bond, the first step in the process is to contact a "underwriter" to arrange the sale.

Most of these primary market bond issues are done by the big well known investment banks like JP Morgan and Goldman Sachs.

And these underwriters are responsible for advising an issuer on the timing of the sale and the terms of the offering (e.g. interest rate + size of the offering).

To price the issue correctly is critical in the process in order to sell them well. And knowing the major purchasers of the bonds is essential as well for underwriters. Since they will be stuck with the bonds when they are unable to sell them.

Another aspect of the selling process is to obtain a rating from a rating agency giving a stamp of approval on the issue.

Favourable ratings are sought after by underwriters to make the bond more appealing. In fact, for some bond buyers a rating is required before a purchase is made.

In the next blog in this sequence "bonds" I will talk about the "bond ratings" and "rating agencies" in detail.

(Mobius, 2012)

Types of bonds

There are three types of bond ownership forms: Bearer bonds, registered bonds and book entry bonds.

The name bearer bonds describes that whoever holds, or bears, the bond is the owner. And the bond issuer has no control over how the bond ownership can be transferred since no record is kept of who owns them.

With registered bonds the issuers maintains a record of who owns each bond with the owner's name and address printed on the certificate.

And with book entry bonds ownership is recorded electronically by a central depository or central register. Whenever a bond is sold the transfer from the old owner to the new owner is made by the depository on its computer records.

(Mobius, 2012)

The secondary market

Once a bond has been issued in the primary market, then it can be traded in the secondary market.

Like in the bond market operated by the NYSE. However, most trading activity occurs electronically via computers and phones through a network of dealers.

In this secondary market investors purchase the existing bonds from other investors instead of the issuers.

Most bonds are traded by investment banks. So they are the market makers for specific debt issues. And investors who want to buy or sell a bond need to call the bank that makes a market in that bond, and ask for a price quotation.

(Mobius, 2012)

The Repo market

"Repo" is an abbreviation of "repossession".

The "repo rate" is the discount rate that a central bank uses to repurchase government securities from commercial banks. And this depends on the level of money supply the central banks want to have in a country's system.

So therefore to temporarily expand money supply the central bank decreases the repo rate. The commercial banks can then swap their government bond holdings for cash at a relatively low rate. And in order to reduce the money supply the central banks increase the repo rate.

So "repos" refer to "repurchase agreements" that involve selling and buying back a bond (or other financial asset). And this at an agreed price and a future date.

In other words, the seller is temporarily selling a financial asset in order to obtain a short term loan. And the securities are "pledged" as a collateral. But with the understanding that the seller must purchase the asset back in the future.

The difference between what the assets are sold for, and what the costs are to buy back, represents the interest gain (or repo rate). And this is the interest gain for the purchasing party when they return the asset to the original seller.

Repo transactions are conducted by institutions, professional investors and high net worth individuals. And central banks often use repos as a form of monetary control by adding or taking cash from the markets (through commercial banks).

(Mobius, 2012)

Source blog - Book: Bonds – An introduction to the core concepts. 2012. Mark Mobius. Publisher: Wiley.

Bonds, Rating Agencies and Credit Ratings

Rating agencies: An introduction

Before buying a bond investors want to know whether the interest will be paid, and whether the principal will be paid back. So the investor wants to know the credit worthiness of the issuer.

So here you need to conduct research to the history, track record and financial strength of the borrower.

And you can image that this is very time consuming and here for "rating agencies" are developed.

With bonds higher "credit ratings" result in that they pay lower interest because they are perceived to be safer.

Contrary, a lower rated bond is perceived more risky and pays a higher interest to compensate for the risk.

In the US rating agencies distinguish bond issues in "investment-grade" and "non-investment grade".

And they to this with "letter designations" that stand for the quality of a bond issue.

For example a "triple A" (AAA) rating may be an agency's top "investment grade" rating. While a "D" might signal a company in default.

An "investment-grade" debt instrument is considered safer, and less likely to default, than a "non-investment-grade" (speculative) security. The latter is also called "junk bond" or "high yield bond".

Mutual funds, pension funds and insurance companies are among the largest buyers of debt securities in the US. These "institutional investors" typically perform their in-house credit analysis for internal risk management criteria when they buy bonds. But they use credit ratings to find out what the outside world thinks of a specific debt issue.

And concerning the ratings, critics argue that conflict is interest is an issue. This because the larger credit reporting agencies earn their revenue from the issuers of the bonds that they rate.

(Mobius, 2012)

Top 3 agencies: Moody's

Moody's is one of the top 3 credit rating agencies.

The company's ratings are carried on "any type of debt or obligation of interest to institutional investors". Including bonds, debentures, asset-backed and mortgage-backed securities, convertible bonds, medium term notes, derivative securities etc. And Moody's is active worldwide.

The process of assigning a rating starts with gathering information from publicly available data like: Annual reports, prospectuses, offering memoranda, indentures of particular securities etc.

Other info they use is for example market data, such as: Stock price trends, trading volumes and bond spread. And they also use economic data from industry groups, agencies and bodies like the World Bank.

Moreover, info is gained from books and articles that comes from financial-, academic- and news sources. And also industry experts, government and academia are consulted.

Moody's ratings rank an issuer's general creditworthiness, or the quality of individual obligations, against expected loss.

And the general expectation obviously is that lower rated issuers, and/ or debt, will on average default more frequently than those that are higher rated.

Moody's rating scale runs from high; Aaa, to low; C.

With Aaa there is minimum credit risk. And with C the bonds are typically in default with little chance of interest and principal being recovered. By the way, the lowest "investment-grade" rating with Moody's is Baa3.

The scale for long term debt, so debt with maturities of one year or more, contains of in total 21 generic letter grades and is divided into two classifications: Investment grade and speculative grade.

Each letter-grade category features accompanying numerical symbols (like 1, 2 or 3). And these are used to further refine the rating.

Historically the default rate for Aaa securities is insignificant, but when you move further down the scale the risk of default rises.

(Mobius, 2012)

Top 3 agencies: Fitch Ratings

Fitch is best known for its credit ratings, but it also publishes a variety of other ratings, scores and measures that assess an organization's financial or operating strength. Fitch for example also rates: Asset managers, managed funds, servicers of residential and commercial mortgages etc.

The credit ratings evaluate an organisation's ability to meet its financial obligations. So the obligations to make interest payments and repay the principal on a debt obligation.

Their ratings cover corporate-, sovereign-, financial-, bank-, insurance-, municipal and other public finance entities, plus structured finance securities and other obligations.

Fitch's ratings for "investment grade" long term financial instruments, with low to moderate credit risk, range from AAA to BBB-.

Speculative, or "non-investment grade", categories are rated BB+ to D for international long term instruments. And long term categories from AA to CCC may be further defined with plus or minus signs.

Fitch bases its ratings on publicly available information and information that sourced from the issuer and underwriter. This alongside information from reports filed with regulatory agencies, industry or economic data and insights from analysts.

(Mobius, 2012)

Top 3 agencies: Standard & Poor's (S&P)

S&P issues credit ratings for both public and private corporations.

The ratings represents the agency's opinion of an issuer's creditworthiness, or that of a debt security or financial obligation.

The company's rating scale ranges from a top grade of AAA for long term "investment grade" instruments to D for default.

AAA, AA, A and BBB are considered to be "investment grade".

And BB, B, CCC, CC and C are more speculative and might be considered "non-investment grade".

The ratings are based on information supplied by the issuer of the debt or financial obligation, and from other reliable sources.

(Mobius, 2012)

Ratings & Bond portfolios

Moody's conducted a study of corporate bond default rates from 1970-2005.

They conclude that the chance that an "Aaa rated bond" defaults is just 0,36% within 10 years, and 0,64% within 20 years

But chances on default get bigger when bonds move down the scale. For example, chances on default get 0,87% for A rated bonds within 10 years, and 1,55% within 20 years.

And with "Caa rated bonds" expectations for default rose to 14% within 10 years, and 26% within 20 years.

Moody's also found that default rates for corporate bonds remained at historic lows during 2007 (0,3%), but increased quickly to 2% in 2008 and 5,4% in 2009. This because of the credit crunch in relation to the subprime mortgage crisis.

In 2008 the SEC (securities & exchange commission in the US) reported that the rating agencies had significant weaknesses in their rating practices for "mortgaged backed securities" (the securities that "caused" the credit crunch).

But still the rating agencies are popular!

This since ratings help make the entire financial system more efficient by reducing the costs associated with obtaining reliable credit information.

But a wise investor always stays critical and does his/ her (financial) homework as well on issues of specific securities!

(Mobius, 2012)

Source blog - Book: Bonds – An introduction to the core concepts. 2012. Mark Mobius. Publisher: Wiley.

Valuation of Oil & Gas Companies – An introduction

Source blog – book: Valuing oil and gas companies: A guide to the assessment and evaluation of assets, performance and prospects – Second edition (2008). Authors: Nick Antill and Robert Arnott. Woodhead publishing limited.

The oil industry: An introduction

Before we can start to look at the valuation of different oil companies we need some background on the oil industry and the market for oil.

In this blog I will look at the history of the oil market, and I will look at a few of the main companies active in this market.

Let's start with a (short) summarised history of the industry!

Oil market history

By 1800 oil-lamps for lighting where already widely used, thus creating a high demand for lamp oil.

This lamp oil was until 1859 mainly derived from relative expensive animal & vegetable oil. And after that "kerosene" which was less expensive.

So the high demand for kerosene resulted in that "Colonel Edwin Drake" found oil in Titusville in Pennsylvania in 1859.

Then in 1878 the invention of the oil stove had an important effect on the petroleum industry as well. The stove became a commercial success leading to a sharp increase in the demand for fuel oil.

But the in the US increased demand for oil, was more than offset by an increased supply of oil. And in 1895 the US was able to export up to 44% of its crude oil production.

But when the "T Ford" was introduced in 1908, and the first world war took place, this turned around. And it made the US a "net oil importer" around 1920.

Although this changed quickly again because of some major oil discoveries in the US in the early 1920s. Followed by the discovery of the big "East Texas Field" in 1930.

But this also caused an oversupply, with an oil price getting to only 0.65 USD bbl (per barrel) in 1931.

The US has been importing crude oil from 1915-1932. But the country was still a "net exporter" because the export of refined products exceeded the crude oil imports. But after the second world war the US consumption outpaced production again and in 1947 they became a "net importer" again.

Until 1955 the US produced more than 50% of the world's entire oil production. And until 1964 they remained the largest oil producer, but then the Middle East took over.

At around 1984 the US oil production was about 18% of the total world production.

(Antill & Arnott, 2008)

The oil industry: Recent history & OPEC

In 1950 the Middle East produced around 1.8 million barrels of oil per day (mmbbl/d), that was about 17% of the world's production.

And this increased to 5.2 mmbbl/d in 1960, by then around 24% of the world production.

To protect its own oil industry, the US introduced mandatory import quotas which limited the imports of Middle East crude oil.

This kept the oil price in the US sort of constant, but "non US crude oil" decreased in value since a major part of their market (the US) was inaccessible due to the quotas.

And as an answer to this, the OPEC (Organisation of Petroleum Exporting Countries) was formed in 1960 by 5 major oil exporting countries: Venezuela, Kuwait, Saudi Arabia, Iran and Iraq.

In 1970 the US relaxed its import quotas. And after the Yom Kippur war of 1973, in which the price of oil went up significantly, the developments in oil prices were relatively stable after 1974.

Oil prices where high and this made it attractive to explore and develop oil areas that were not of economic interest in the past.

As a result major investments were made in new oil areas in Alaska, Mexico and the North Sea. And these areas started to produce oil by the end of the 70s.

This resulted again in a large decrease in OPEC production after 1977 as a result of these new areas. Btw, OPEC produced in 1977 the high amount of 31.3 mmbbl/d.

(Antill & Arnott, 2008)

The oil industry: Recent history & OPEC (continued)

Concerning oil prices, the Iranian Revolution drove the spot price of OPEC oil to 25 USD bbl in 1979. And this resulted in another round of oil price increases to over 40 USD bbl.

But these price increases were poorly timed, because world demand was falling and many new oil fields outside OPEC were getting more and more operational.

Then mild winters in 1982 and 1982 in Western Europe resulted in even more over supply, and oil importing countries did not need to buy the expensive OPEC oil anymore.

This resulted in that OPEC production was about 15 mmbbl/d in 1985, less than half of its production in 1977 (31.3 mmbbl/d, as mentioned).

This had an severe effect on oil prices, and when in 1986 OPEC production went to 18 mmbbl/d the price collapsed to below 10 USD bbl.

And since 1986 OPEC attempts to maintain the oil price at the level of the full cost of non-OPEC supply.

(Antill & Arnott, 2008)

The oil companies: Standard Oil

Most of the big oil companies had their origins in the US when the "Drake Oil Field" was found in 1859 in Pennsylvania.

The first big company formed was then "Standard Oil" with financing of John D. Rockefeller.

By the end of the 1870s over 90% of all kerosene was passing through standard oil's facilities.

The company got so big that the whole company "Standard Oil Trust"; consisting out of Stadard Oil New Jersey, Standard Oil Ohio etc. etc., needed to be divided. The US supreme court ordered this in 1911.

And the main oil companies as we know (knew) them were formed out of Standard Oil:

- Standard Oil of New Jersey became: Exxon;
- Standard Oil of New York became: Mobil (before merger Exxon);
- Standard Oil of California became: Chevron;
- Standard Oil of Ohio became: Sohio (before taken over by BP);
- Standard Oil of Indiana became: Amoco (before taken over by BP);
- Continental Oil became: Conoco;
- Atlantic Oil became: Sun Oil.

(Antill & Arnott, 2008)

The oil companies: Royal Dutch & Shell Group

Despite early US dominance of the oil industry, there was another major player at the beginning of the 1900s.

The company was Royal Dutch Shell with a background in two companies:

1. Royal Dutch;
2. Shell Transport & Trading.

Shell Transport & Trading was set up late 1800 by Marcus Samuel, and the company transported kerosene in large quantities to the far eastern market.

And Royal Dutch had its origins in the "Dutch East Indies" where for several years oil seepages had been reported. By 1892 Royal Dutch was producing oil with a crazy growth (sixfold increase) in only two years of time.

By around 1900 there were takeover attempts of Standard Oil. And in order to resist this Royal Dutch and Shell Transport & Trading merged in 1907.

So at the time of this merger in 1907 the oil market was dominated by Standard Oil and Royal Dutch Shell.

(Antill & Arnott, 2008)

Companies in the Oil market: Continued

In the first blog in this sequence I have discussed the major oil companies set up from the start of the industry: Standard Oil and Royal Dutch/ Shell (name after the merger).

But the big growth in the US oil exploration activities at the end of the last century (1800s) resulted also in a number of smaller companies.

For example successful drilling in California in the late 1880s resulted in the company "Union Oil".

And further success in the South of the US resulted in companies like Gulf Oil, Sun Oil and Texaco.

And all these companies could exist alongside the mighty "Standard Oil", because the market was (and is) huge.

At the beginning of the 20th century also in the Middle East geological surveys for oil started to take place.

By 1909 it became clear there was oil potential in Iran and as a result the "Anglo-Persian" company was set up.

Later the British government invested in this company and eventually this company became BP (British Petroleum) in 1954.

(Antill & Arnott, 2008)

The "seven sisters"

The oil market grew very fast in the first half of the 20th century (1900 – 1950).

The discovery rates of oil fields were very high, as well as the demand for oil due to new technology.

This obviously also resulted in a growth in number of oil companies.

And therefore in the 1950s the name "seven sisters" came up.

This to describe the cartel of the 7 major oil companies consisting out of:

1. Exxon;
2. Mobil;
3. Chevron;
4. Texaco;
5. Gulf;
6. Royal Dutch/ Shell;
7. British Petroleum (BP).

The companies dominated the oil industry at the time (1950s).

But this is now diminished due to the trend of "nationalisation" from the 1950s onward.

Let's not take a look at this "nationalisation".

(Antill & Arnott, 2008)

Nationalisation

The first companies in the oil industry where all backed by individuals and institutions that were looking to maximise profits (all over the world).

By the 1930s was clear that the costs of producing oil in countries outside the US were significantly lower than within the US.

So as a result large profits were being made by foreign companies out of national reserves from countries in the Middle East.

But this was going to stop!

Iran (Persia) cancelled in the early 1930s the "Anglo-Persian" agreement already. However, a new agreement was ratified again only 1 year later.

The first real incident took place in 1938 when the Mexican government nationalised the oil industry and did not compensate any of the foreign companies (mostly American).

And during the 1940s and 1950s most host countries with oil started to tighten the grip on their own resources, this including most of the countries in the Middle East.

In the late 1940s new agreements were made again in Venezuela and Kuwait.

And in 1952 Iran nationalised the whole of its oil industry, so they basically put BP out of the game in Iran.

This was also done by Nigeria in 1979 when they nationalised all assets of BP (in Nigeria).

And by 1973 the original "concessions" in both Venezuela and Kuwait were effectively terminated.

So oil companies in these regions could only operate under service agreements since then.

(Antill & Arnott, 2008)

Saudi Arabia with "Aramco"

The last major oil producer that nationalised its oil industry was Saudi Arabia.

In Saudi Arabia oil was exploited by a consortium of companies known as "Aramco".

This consortium consisted out of:

1. Exxon;
2. Chevron;
3. Mobil;
4. Texaco.

In 1950 the venture Aramco held 50% of the concessions in Saudi Arabia, so they had the rights on 50% of the oil in the ground in Saudi Arabia.

But by 1974 this fell to 40%.

And it went even worse for the consortium (Exxon, Chevron, Mobil and Texaco), because still in 1974 the government of Saudi Arabia made clear that it wanted the full 100% of the concession.

In 1976 the deal was effectuated, and afterwards the consortium still had some tasks in the oil industry concerning operations and technical service for a fee of 0.21 USD bbl (per barrel).

Nowadays the main producer countries own the bulk of their reserves, and the major companies are the producers.

(Antill & Arnott, 2008)

Reserves and production: Oil

In this paragraph I will look at the reserves of oil.

But although there are lot of books available on (general) valuation, this is very limited for specific "valuation of oil companies". And I do medium sized deals, and valuations, in production and services companies in The Netherlands, so no oil & gas. ☹

This is why my source used for this blog is rather old. In general this is not a problem since the source is very good on valuation techniques. But when looking at the reserves of oil, the picture given is obviously NOT completely contemporary.

So please do not forget the estimations date back from 1999-2000.

In 1999 the world's total proven oil reserves were close to 1,000 billion barrels.

And about 75% estimated to be in OPEC countries, particular in the Middle East.

Russia accounted for about 5% and the rest of the world had about 20% of the reserves.

From the OPEC producers, Saudi Arabia had about 25%, and Iraq (11%), iran (9%) and Kuwait (9%) together about 30%.

Out of the Middle East Venezuela and Mexico had about 11%, the US about 3%, and Africa about 7%.

(Antill & Arnott, 2008)

Source blog – book: Valuing oil and gas companies: A guide to the assessment and evaluation of assets, performance and prospects – Second edition (2008). Authors: Nick Antill and Robert Arnott. Woodhead publishing limited.

Valuation of Banks – An introduction

Source blog - Book: The Valuation of Financial Companies (March 2015). Authors: Mario Massari, Gianfranco Gianfrate & Laura Zanetti. Wiley Publishers.

The business of banking

While some banks only offer one type of service, most banks offer a wide array of financial products and services.

When we look at the business models of banks and different types of revenues, it looks as follows:

1. Commercial bank: Net interest income;
2. Commercial bank, investment bank, assets management: Fee and commission income;
3. Investment banking: Trading income;
4. Bank assurance: Premium underwriting.

Historically the core source of revenues for (commercial) banks is the issuance of loans to individuals and/ or businesses.

And collecting money in the form of deposits.

Then "net interest income" is typically the difference between the interest earned on loans and the interest paid to depositors.

So in this sense commercial banking is a "spread business".

(Massari, Gianfrate, Zanetti, 2015)

Fee & commission income

The second major source of revenue in the banking industry is "fee & commission income".

Services such as "underwriting" and "placements of securities", "trust services" and "securities brokerage" are commonly performed for a fee or commission.

Both "commercial banks" and "investment banks" undertake these activities, but the difference lies here lies in which type of client they target.

For "investment banks" the clients here are generally large corporations to be served with tailored advisory services like:

Initial public offering (IPOs), seasoned equity offerings or Mergers & Acquisitions (M&As).

For "commercial banks" the clients here are individuals and small & medium sized enterprises for which less customized services are provided.

Typically fee-based services offered by commercial banks are:

- Asset management: Management fee for assets under management.
- Private banking: Advise to wealthy individuals.
- Corporate advisory: Risk management services, advise on financing structure & issuing new securities (debt + equity), and M&A transactions.
- Brokerage & dealership: Commission on trades in the secondary market.

A third source of revenue (trading income) are "trading" activities of banks "in the name" of the bank (proprietary trading).

And a fourth source of revenue are non-banking activities like for example real estate development, insurance activities, minority investment in non-banking companies etc.

(Massari, Gianfrate, Zanetti, 2015)

Commercial banks

Commercial banks are the banks people have in mind when we speak about banks.

They receive money from customers as deposits (liabilities), and they provide money in the form of loans (assets).

This is the main part of the business, but commercial banks also provide some other services like:

1) Trust services (managing the client's assets), and 2) investment- or financial advice.

The balance sheet of a commercial bank is both asset- and liability driven.

Because these banks have to compete, and succeed, in both "attracting money" (deposits) and lending out money (issuance of loans).

And the ability to attract deposits at a cost lower cost than the return on the assets is the core of a bank's profitability.

(Massari, Gianfrate, Zanetti, 2015)

Commercial banks: Introduction bank's Profit & loss statement

So banks make interest income which simply is: Loans, mortgages and other investments times the "interest rate for assets".

And banks make interest expenses which simply is: Deposits and other interest bearing liabilities times the "interest rate for liabilities".

The result here is: Net interest income.

Then there are the operating expenses that need to be deducted.

And a popular ratio here is: Operating expenses / Net interest income = "cost/ income ratio".

This since it tells something about the operational efficiency of a bank.

After that, loan loss provisions and taxes are deducted to get to net income.

And net income/ equity = return on equity.

And as we know, when the return on equity is higher than the cost of equity, then we are creating value.

This is a very simplistic overview of how a bank works over the P&L!

In the next blog I will talk about this in way more depth when discussing "financial statement analysis" of banks.

(Massari, Gianfrate, Zanetti, 2015)

Commercial banks: Introduction bank's balance sheet

At last, let's take a first look at the balance sheet of banks:

The consolidated balance sheet items for all US commercial banks (at December 2012) show on the asset side "loans and leases net of loan provisions" as a majority of the assets of about 51,5%.

With "net" loans we mean: Taking the estimates for loan losses into account.

The other two main asset categories (all US commercial banks consolidated at December 2012) are securities of 21% (which do not include securities held in trading accounts) and cash 10%.

And on the liability side deposits represent about 83% and equity only 11,5%.

This is just a first introduction on the balance sheet of banks, and in the next blog I will dive into these issues in way more depth.

(Massari, Gianfrate, Zanetti, 2015)

Investment banks

Investment banks help corporations and governments to raise debt and equity securities in the market.

The investment banking activities range from the origination to the "underwriting", and placement, of securities.

With the term "underwriting" is meant the practise of purchasing securities from the issuer and then selling them in the market.

Investment banks are also involved in the stages following the placement. This through brokerage, deal services and/ or market making in the "secondary market".

And they are also involved in advising in M&As and corporate restructuring based on a fee.

At last, they are active in "proprietary trading", basically trading "in their own name" of:

Stocks, bonds, currencies, commodities, derivatives etc.

(Massari, Gianfrate, Zanetti, 2015)

Financial statement analysis for banks: An introduction

Before we can get to the actual "valuation of banks", we need to look at "financial modelling for banks", "regulatory capital for banks" and "financial statement analysis for banks".

Let start now with the "financial statements of banks".

In this blog a lot of accounting information will come by and here I need to mention that I am NOT an accountant.

I am a 'business economist' with a master of science in strategic management, and I am involved in M&A as a trainer and consultant.

Therefore I have a good basic accounting knowledge, because this is needed for M&A activities, but in the end I am not an accountant.

So always check specific accounting issues in valuation and M&A with a certified public accountant.

In this blog the intention is not to be "correct" from an accounting perspective. I just want to make the reader familiar with the financial statements of banks, and its components on the balance sheet, P&L and cash flow statement.

Balance sheet: Fixed tangible assets (operating)

Let's first start with the balance sheet (BS) when discussing the financial statements of banks.

Banks make most of their profits from financial activities, but they still need some tangible fixed assets.

Think of for example: Security systems, real estate, furniture and computers.

Any revaluation in these assets must increase "other items of comprehensive income" in the income statement (IS) and the "revaluation reserve" (on the equity part of the BS).

And on this reserve further devaluations will have an impact afterwards, and not on the IS.

Another asset, Investment property, is defined as land, building or part of a building, utilised to earn rentals or gain from capital appreciation.

An investment property needs to be recognised at its cost (including transaction costs) initially. And they can be measured after that either at "fair value" or at "depreciated cost".

(Massari, Gianfrate, Zanetti, 2015)

Balance sheet: Intangible assets

Intangible assets are identifiable non-monetary assets without physical substance. And in order to be able to put them on the BS the asset must:

- Be separately identifiable;
- Be controlled by the company;
- Produce probable future benefits to the firm;
- Have a cost that can be reliably measured.

So concerning banks, these assets could be for example: Computer software, brands or capitalised "development costs" (the D of R&D).

The initial recognition of intangibles consist of recording the asset at its initial historical cost, regardless of whether it was purchased or built internally.

And after that the intangible assets, with exception of goodwill, can be measured with the cost method (depreciation) or revaluation method (fair value).

Concerning goodwill, the so called "acquisition method" needs to be applied to account for a business combination.

This implies that all the assets and liabilities of the controlled entity must be recognised at fair value. This also includes items not recognised before the acquisition.

(Massari, Gianfrate, Zanetti, 2015)

Balance sheet: Securities

With the term securities is meant:

- Fixed income securities;

· Shares;

· Interests in funds held in the bank portfolio either in the "trading book" (securities actively traded by the bank in daily operations with aim for a short term gain), or "banking book" (which includes the securities that are not actively traded by the bank, often held to maturity);

For financial assets the proper measurement and classification is not easy. In general, there are two valuation criteria for securities:

1. "Amortised cost" with impairment test (ACIT);

2. Fair value approach.

With ACIT banks have to record an impairment loss whenever the "recoverable amount" of an asset (recoverable either through use or sale) is lower than its carrying amount on the BS.

And with the second approach fair value can be defined as "the price that would be received to sell an asset, or paid to transfer a liability, in an orderly transaction between market participants at arm's length at the measurement date".

In practice this valuation can result in three methods with method 1 as most favourable:

1. Mark-to-market: Mark to price of a similar asset traded in an active market;

2. Mark-to-model: Based on the application of a valuation technique (model);

3. Mark-to-management: By judgement, this is a subjective procedure.

(Massari, Gianfrate, Zanetti, 2015)

Securities continued: Classification scheme

The book keeping rules also give a "classification scheme" to measure the value of financial assets and liabilities after their initial recognition.

There are four categories:

First category: Fair Value Trough Profit and Loss (FVTPL)

FVTPL consists out of two sub categories:

1. Financial assets initially recognised at fair value (with the exemption of non listed shares for which the price can not be reliably estimated). Most financial instruments in a bank's BS are comprehended in this group.

2. Held for Trading (HFT) assets, so assets acquired principally for being sold. Financial derivatives may be included in this group with the exception of those derivatives that have a hedging instrument role.

Second category: Loans and receivables (L&R)

These are defined as non-derivative financial assets with fixed or determinable payments that are not quoted in an active market.

Third category: Held to Maturity (HTM)

These are defined as non-derivative financial assets with fixed or determinable payments, and fixed maturity, on which an entity has a positive intention and ability to hold until maturity.

Fourth category: Available for sale (AFS) assets

These are non-derivative assets that do not fit in the first three categories.

(Massari, Gianfrate, Zanetti, 2015)

Securities continued: Representation

The value change of financial assets is represented as follows in the financial statements:

1. FVTPL and HFT financial activities are measured at fair value. And any change in their value is taken up in the IS;

2. HTM assets are valued at historical "amortised cost" and any impairment loss is recorded in the IS;

3. L&R are measured at "amortised cost" with impairment testing;

4. AFS assets are measured at fair value and any revaluation impacts the revaluation reserve.

(Massari, Gianfrate, Zanetti, 2015)

Source blog - Book: The Valuation of Financial Companies (March 2015). Authors: Mario Massari, Gianfranco Gianfrate & Laura Zanetti. Wiley Publishers.

Energy Transition

Energy transition: Introduction to Sustainable Energy

Energy transition: An Introduction

In this sequence of blogs I will talk about the "energy transition" in The Netherlands to "fossil free" energy.

Topics that I will discuss are:

1. What is 'fossil free' energy and electricity;
2. Opportunities and threats of fossil free energy and electricity;
3. Costs and benefits of a certain energy mix;
4. Challenges of transitions.

I got the idea of writing this sequence of blogs after reading the following book:

· De Energie Transitie: Naar een fossielvrije toekomst, maar hoe? (2018) Marco Visscher. NwA'dam Publishers.

Fossil fuels

With an energy transition the change from 'fossil fuels' to sustainable energy sources is meant, like for example sun and wind energy.

With these sustainable energy sources less carbon dioxide (co2) comes into the air. And co2 is a greenhouse gas that is released by burning coal, crude oil and gas.

Fossil fuels come from deep within the earth. They are the remains of dead plants, animals, fungus and bacteria. During million of years they are compressed to earth layers and rocks.

Fossil fuel contains:

1. Coal (mainly used for electricity);
2. Crude oil (mainly used for transportation and industry);
3. Gas (mainly used for heating and electricity).

The burning of these fossil sources deliver a tremendous amount of energy, and that's why they have been, and are, so popular!

(Source used: Marco Visscher, 2018)

Fossil fuels: The history

Fossil fuels largely contributed to the world's growth by the 'industrialization'. The most wealthy countries in the world have this position (partly) due to fossil fuels.

And due to this companies within this 'fossil fuel industry' belong to the biggest companies in the world, think of Shell and Exxon.

By the way, this is where my expertise as a "financial valuator" comes in. Since I determine the value of companies. Right now I am also writing a sequence of blogs on the valuation of "oil & gas companies" (clearly companies in "fossil fuels").

The first article in this sequence is published already, in case you are interested to read it, I will give you the link: Article 1: Valuating Oil & Gas Companies: The Oil Industry

https://www.linkedin.com/pulse/valuating-oil-gas-companies-industry-joris-kersten-msc-bsc-rab/

So we benefited a lot of fossil fuels. This in a sense that our productivity went up, larger cities developed, our health increased, we lived longer, and we could produce more food that we could also store longer.

And due to fossil fuels trees were saved, that we would otherwise have burned, in order to heath ourselves, and for the cooking of food.

Also no longer whales and seals needed to be killed to use their 'fat oil' for lightning.

And because of the development of machinery (powered with energy and electricity from fossil fuels), there was less pressure for child labor, slavery and housekeeping duties became more light.

Also fossil fuels have literally 'lightened up' the world.

Moreover, the use of crude oil and gas made modern techniques for agriculture possible. This resulted in increased productivity for agriculture. And of course fossil fuels where needed for the distribution (transport) of this food.

But in contrast, fossil fuels also increased pollution a lot, and it might have caused climate change.

(Source used: Marco Visscher, 2018)

Sustainable energy

Sustainable energy consists out of technologies based on sources that are "renewable". And renewable in a sense that these sources will not get depleted.

Traditional energy sources like 'wood' and 'animal manure' count for almost 50% of all "renewable energy". Wood is part of so called 'biomass'.

And biomass is a collective term for:

1. Biodegradable products and waste;
2. Sugar cane;
3. Rapeseed oil;
4. Organic waste;
5. Animal manure.

In The Netherlands; the country where I live, especially "wood pellets" are added, and burned, in coal energy plants.

So a part of this coal energy then officially counts as "sustainable energy". Also called 'green electricity' in The Netherlands.

In The Netherlands this "biomass" counts for more than 50% of all sustainable generated energy. So at both a global level, and in The Netherlands, biomass is an important source of sustainable energy.

Another important source of sustainable energy worldwide is "hydro-electric" energy.

Hydro-electric power stations generate almost 4% of all energy used worldwide.

And Norway in Europe generates 98% of its energy needs from hydro-electric energy.

(Source used: Marco Visscher, 2018)

Sustainable energy: Continued

In the 1960s and 1970s methods of generating energy from the "sun" and "wind" came up.

And the oil crisis of 1973 gave further incentives to be less dependent on oil with the help of "solar panels" and "wind turbines".

Also this energy of the sun and wind are can be called "sustainable", "renewable" or "green". This since this type of energy is infinite available.

Because the sun will keep on shining (solar panels), wind keeps on blowing (wind turbines), water keeps on flowing (hydro-electric power plants), and new trees can be planted (biomass).

And here I assume that the sun will keep on shining for a couple more years. 😊

Strictly looking at the term "renewable" fossil fuels are renewable as well. Because they are formed by natural processes, again and again.

But this would take millions of years, so therefore fossil fuels are actually not considered "renewable".

(Source used: Marco Visscher, 2018)

Biomass renewable ?

Renewable energy resources do NOT automatically produce NO co2.

For example when you burn biomass co2 is produced. But still biomass is considered "co2 neutral".

This because not more co2 is produced, than what the burned plant or tree took out of the air before (when it was still growing).

So the question is whether biomass is really environmental friendly?

People critical here use the argument that a forest only grows slowly.

So co2 is produced straight away by burning for example 'plant or wood products' (biomass). But co2 reduction only takes place with a delay, because these plants and trees only grow slowly afterwards again.

In addition, critics claim that with burning wood (biomass) more co2 is produced for a certain amount of energy, than would have been produced in the case of burning coal or gas.

At last, the "wood pallets" (biomass) to burn with for example coal are often distributed by ships. And these ships sail on a dirty type of oil.

This discussion is still open, and I will come back to the topic biomass in detail within this sequence of blogs on the "energy transition".

(Source used: Marco Visscher, 2018)

Nuclear power plants and geothermal energy

Nuclear power plants are not producing co2, but they are not considered "sustainable".

This because they are producing nuclear waste that will stay 'radioactive' for thousands of years. And this is seen as a big issue (the question is whether this is correct …).

Nuclear energy, for which uranium is used, is a complete different energy type, next to fossil energy and sustainable energy.

And phasing out nuclear power plants in western Europe is sometimes seen as a part of the energy transition.

Well, nuclear power plants are very controversial since we all remember the disaster that took place in "Chernobyl".

Although the techniques of building nuclear power plants changed drastically compared to the old days. Super entrepreneurs like "Bill Gates" are working on safer nuclear power plants with also new ideas on how to deal with the nuclear radioactive waste.

So in this sequence of blogs I will come back to discuss nuclear power plants in detail.

At last, in The Netherlands we are looking for alternatives for gas. Therefore "geothermal energy" is used more and more.

This is a renewable type of energy coming from 'the earth' (ground).

Due to a well (warm) water is pumped up, and due to another well (cold) water is pumped back into the ground. This technique can supply buildings with heating and cooling.

And also this technique will be discussed in more detail later in this sequence of blogs.

(Source used: Marco Visscher, 2018)

In the next blog in this sequence "energy transition" I will talk about the "pro's and con's" of the different types of energy, and renewable energy.

I will also talk about our current "energy mix", and about the difference between 'sustainable energy' and 'sustainable electricity'.

· De Energie Transitie: Naar een fossielvrije toekomst, maar hoe? (2018) Marco Visscher. NwA'dam Publishers.

Energy transition: Energy mix of The Netherlands & Goals for co2 reduction

The first article in this sequence is published already. In this article I gave an introduction to "fossil fuels" and "sustainable/ renewable" energy.

And in this article of today, I will talk about:

- The pros and cons of different energy sources;
- Goals for co2 reduction in The Netherlands for 2030 and 2050;
- Sun & wind energy;
- The current energy mix of The Netherlands;
- The difference between 'electricity' and 'energy'.

Let's start!

Pros and cons of different energy sources

Nowadays you often hear negative stories about "fossil fuels".

You then hear people saying things like:

- Fossil fuels contribute to high co2 production;
- Fossil fuels contribute to air pollution;
- Fossil fuels are responsible for dangerous 'mining';
- The big oil companies misuse their power, etc. etc.

And about sustainable/ renewable energy you often hear positive stories nowadays, like it is:

- A modern source of energy;
- A clean source of energy;
- A "solution" for the "climate problem";
- Good for the economy and will provide jobs, etc. etc.

On the other hand, complete opposite opinions are also there.

Then you hear about sustainable/ renewable energy for example:

- Sustainable energy is unpractical;
- Sustainable energy is not feasible;
- Sustainable energy pollutes the horizon (think of wind turbines);
- Sustainable energy is too expensive;
- Sustainable energy is a "left-wing" hobby, etc. etc.

And then concerning fossil fuels is said that it will be an indispensable source of energy.

So who is right ??

(Source used: Marco Visscher, 2018)

Pros and cons of different energy sources: Continued

The question "who is right" from the previous paragraph is very hard to answer.

For example, modern mining for coal has very advanced techniques with highly educated staff using complex equipment.

Compared to that, mining for resources that are used to build "wind turbines", and "batteries" in order to store "renewable energy", is much more dangerous. And this for the people working in that industry.

This does not mean that coal is better, for example still lots of coal is mined in a not so high tech way as mentioned above in poorer countries. So it is just an example to show that the situation is 'nuanced'.

I will try to look at this 'nuance' in way more detail in this sequence of blogs.

(Source used: Marco Visscher, 2018)

Goals for co2 reduction

At the 'Paris Climate Conference 2015' negotiators agreed on limiting the average increase in temperature on earth to max 2 degrees Celsius in relation to the pre-industrial time period.

The ambition of the European Union is to reduce co2 production in 2050 with 80%, and this to co2 levels of 1990.

The Netherlands even goes further, "Cabinet Rutte III" recorded in the coalition agreement to reduce greenhouse gasses (predominantly co2) with 95% in 2050, also to co2 levels of 1990.

And in between, at 2030, The Netherlands aims for a 49% decrease already, also to levels of 1990.

For this 5 sectors are appointed in The Netherlands that all need to reduce their co2, and these sectors are:

1. Electricity;
2. Industry;
3. Mobility;
4. Agriculture and land use;
5. Building.

(Source used: Marco Visscher, 2018)

Goals for co2 reduction: Continued

When we look at the amount of co2 reduction that needs to be obtained in 2030, in comparison to 1990, this is as follows:

1. Electricity: 20.2 megaton reduction;
2. Industry: 14.3 megaton reduction;
3. Mobility: 7.3 megaton reduction;
4. Agriculture and land use: 3.5 megaton reduction;
5. Building: 3.4 megaton reduction.

This is 48.7 megaton co2 reduction in total in 2030, in relation to 1990.

And a "megaton" = 1 million ton".

Greenpeace calculated that all 10 coal power plants active in The Netherlands in 2015 produced about 52 megaton co2.

So even when this number of Greenpeace is a little exaggerated, you can still see the tremendous amount of work that needs to be done before 2030 to achieve the reductions in the 5 sectors.

And even after 2030, the sectors need to look at further reduction to 95% in 2050, in comparison to 1990. Also that will be a second enormous task.

(Source used: Marco Visscher, 2018)

Sun & wind energy

Wind turbines and solar panels in The Netherlands now (source of 2018 used) produce 60 petajoule (PJ) of energy. Actually this is 'electricity', more on this distinction between energy and electricity in the next paragraph.

1 peta joule = 1000 billion kilo joule.

And this again equals: 278 million kilo watt hours. And kilo watt hours is an often used "unit measure" for energy/ electricity.

Now the 60 PJ from sun and wind energy (electricity) in 2018 needs to be 5 times higher in 2030.

So then these sources sun & wind need to produce about 300 PJ of energy.

And the production of this approximately 300 PJ is again planned as follows:

1. Parcs of wind turbines at sea: 176 PJ;
2. Inland wind turbines and solar panels: 126 PJ.

And in order to put this (about) 300 PJ in "wind & sun energy (electricity)" in 2030 in perspective:

Current 'electricity' use in The Netherlands (2018) is about: 430 PJ !!

So the challenge is enormous!

(Source used: Marco Visscher, 2018)

The energy mix in The Netherlands

For the current energy mix in The Netherlands (2018) we need to make a distinction between:

1. Energy (80%);
2. Electricity (20%).

Concerning sources used for energy (about 80% = energy, about 20% = electricity) in The Netherlands, this consists out of:

1. Oil & Gas: 78%;
2. Coal: 14%;
3. Biomass: 5%;
4. Wind energy and nuclear energy: About 3%;
5. Sun energy, hydro-electric, geothermal: Rounded of 0%.

Concerning sources used for electricity (about 80% = energy, about 20% = electricity) in The Netherlands, this consists out of:

1. Gas: 46%;
2. Coal: 35%;
3. Wind turbines: 7%;
4. Biomass: 6%;
5. Nuclear power: 3%;
6. Solar panels: 2%;
7. Oil: 1%.

And let's now take a look at the distinction between "energy" and "electricity" a little more in detail.

(Source used: Marco Visscher, 2018)

Difference between "energy" and "electricity"

In the paragraph above the distinction was made between:

1. Energy;
2. Electricity.

So 'electricity' is a form of 'energy'. And we get electricity from a socket, battery or power pack.

And the rest of the energy (80%) is used for for example: Heating and transportation.

So electricity counts for about 20% of the total energy use in The Netherlands.

Solar panels and wind turbines only produce electricity, so imagine that 'hypothetically' all electricity is produced by "wind & solar". Then still there is a big gap for "energy demand" that can not be supplied by "wind & solar" (80%).

The expectations are do that in the future we will use more and more electricity in The Netherlands compared to other energy.

This because we stop with our gas production. So more heating needs to be done with electricity, like with for example with a "heath pump". This also counts for cooking, so we can use electrical cooking with 'induction' for example.

And to use less oil, we can switch to electric driving, and re-charge the batteries on a socket.

So the "energy transition" can therefore partly be seen as a transition to electricity. This means that relatively more electricity needs to be produced (with less co2 production as well).

(Source used: Marco Visscher, 2018)

Source used

· De Energie Transitie: Naar een fossielvrije toekomst, maar hoe? (2018) Marco Visscher. NwA'dam Publishers.

Corporate Finance: Various

Risk Free Rate & Equity Risk Premium

Source blog: Book - Fundamentals of Corporate Finance – 3rd edition (2017). Authors: David Hillier, Iain Clacher, Stephen Ross, Randolph Westerfield, Bradford Jordan. Publisher: Mc Graw Hill.

Returns: An introduction

When we discuss historical returns of different types of financial assets, then the first question is: How to calculate returns from investing?

Well, returns will generally have two components:

First, you may receive some cash directly while you own the investment. And this is the "income component" of the return.

And second, the value of the asset bought will often change. And this is the "capital gain" or "capital loss" part of the investment.

So for example, you buy a share in the stock market for 25 euro, and you receive a 2 euro dividend on the share in one year. Moreover, the price of the share will go up from 25 euro to 35 euro in one year.

The return you made on this share is called the "dividend yield" + "capital gain yield".

The dividend yield = 2/ 25 = 8%

The capital gain yield = (35-25)/ 25 = 40%

Total return = 48%

(Hillier, Clacher, Ross, Westerfield and Jordan, 2017)

Historical returns

Now knowing what returns are, we can take a look at the historical "rates of return" of a number of different securities in different countries.

Well, I am from the Netherlands, so for the Netherlands we can take a look at:

- The Amsterdam Stock Exchange (SE), all shares.

And we can take a look at the "returns" un-adjusted for: Taxes, transaction costs and inflation. And this for example in the time period: 2006-2016.

For example we can take a look at the growth of an investment in the Dutch stock market during 2006-2016.

This shows what the worth of the investment would have been, if the money that was initially invested had been left in the stock market, including re-investment of the yearly dividends in that same market.

When looking at the stock market data we can use "index values" for every year between 1 January 2006 and 1 January 2016.

With index values we put 1 January 2006 on 100%, and then we look at subsequent years in relation to the 100% of the 1st of January 2006.

And as we all can remember, the "credit crunch" also affected The Netherlands.

Because of this, the "stock market index level" of "Amsterdam SE, all shares" was at the 1st of January 2009 only about 55% of what it was at the 1st of January 2006.

So from this perspective, the value invested in the Dutch stock exchange almost halved in only three years of time due to the credit crunch.

On top of index values, we can look at the different returns per year based on the index values.

(Hillier, Clacher, Ross, Westerfield and Jordan, 2017)

Average returns

When we look at the different returns per year, based on the index values, we can then also calculate the "average yearly returns".

In the example given above on the Dutch stock exchange, we would look at the 10 yearly returns over 2006 until 2015 (10 years) and then sum them, and in the end divide them by 10.

In case of The Netherlands, this would then be about 1.83 % average annual return (2006-2015).

But what does this average tell us ??

Well, nothing more, nothing less, than that if you were to pick a year randomly from the 10 year stock market history, and you would have to guess what the return was in that year, then the best guess would be: 1.83%.

(Hillier, Clacher, Ross, Westerfield and Jordan, 2017)

Risk premiums on equities

Now that we get a little feel of average returns on shares, let's start comparing them to other returns.

And we often like to compare them (returns of shares) with government issued securities. Since these are free of much of the variability that we see back in the stock markets.

Governments borrow money by issuing bonds in different forms. The so called "treasury bills" (T-bills) have the shortest time to maturity of the different government bonds.

And because governments can always raise taxes to pay its bills, the debt represented by T-bills is virtually free of any default risk over its short life.

So we like to call the return on such debt the "risk free rate".

The return on long term government bonds is slightly more risky because the period of borrowing is about 10 years. This means that investors need to bear the risk longer than on T-bills.

Well, what we find interesting is the following:

We like to compare the return on ordinary equities (shares) with virtually risk free rates on T-bills and 10 year government bonds.

And the difference between these returns can be seen as the "excess return" you make on an "average risky assets" like shares of large corporations listed on the stock exchange.

This "excess return" can be seen as a reward for bearing risk, and that's why corporate finance practitioners like to call it the "Equity Risk Premium" (ERP).

When we are looking at the situation in The Netherlands, as this is where I am from, the ERP is yearly on average about 4% above bond returns and about 3.5% above T-bill returns.

This depending on how we exactly measure and calculate this (more on this later on). And calculated on the very large time period: 1900 – 2010.

So at least we can conclude that over the long term (>100 years) risky assets, like equity in corporations on the Dutch stock exchange, earns on average a "risk premium".

So there is a reward for bearing risk! 😊

(Hillier, Clacher, Ross, Westerfield and Jordan, 2017)

Return variability/ Measuring risk

I have discussed that year to year returns on equities (shares in corporations in The Netherlands for example) are more volatile than returns on 10 year government bonds.

And "risk" tells us something about the "variability" of these equity returns.

So basically we like to know the "spread in returns".

For example, we have found that the average yearly returns on the Dutch stock exchange were about 1.83% (2006-2015).

But now we find it very interesting to know how much the actual return deviates from this average in a typical year.

In other words, we like to know how "volatile" the return is!

And in corporate finance for this we use the statistical measure "variance" and also it's square root, called the "standard deviation".

Let's now take a look at the calculations.

(Hillier, Clacher, Ross, Westerfield and Jordan, 2017)

Historical variance and standard deviation

The variance actually measures the "average squared difference" between the actual returns and the average returns.

The bigger this number is, the more the actual returns tend to differ from the average return.

In addition, the larger the variance (or standard deviation) is, the more spread out the returns will be.

Let's now take a look at historical returns, so we will look at how to calculate the historical variance and standard deviation.

What we need is the following:

1. Actual returns;
2. Average returns that can be calculated from the actual returns;
3. The "deviation", that is: actual return – average return;
4. The squared deviation.

When we then sum the squared deviations of for example a certain amount of years, we get the "sum of the squared deviations from the average".

And for people who followed a statistics class in the past, you might remember that for the "variance" you need to divide this number by: "(N – 1)".

In which N stands for the certain number of years of returns taken into account.

After we have calculated the "variance" (also called "sigma squared") we like to calculate the "standard deviation" (SD).

SD simply is the square root of the variance. And the SD is used because the variance is measured in "squared" percentages and therefore hard to interpret.

In the end the SD comes out as a normal percentage, for example 7%.

In the next blog on returns, I will pick it up from here, at least for now we have discussed the important concept of average returns and SDs in corporate finance! 😊

(Hillier, Clacher, Ross, Westerfield and Jordan, 2017)

How to build Excel Models for Business Valuation ?!

Author: Joris Kersten MSc BSc RAB

Co-author/ edited by: Lance Rubin (Owner Model Citizn @ Melbourne Australia)

Introduction to the Author.

Joris Kersten (1980) is an independent consultant in Business Valuations and Mergers & Acquisitions (M&A) in medium sized transactions from the Netherlands.

In addition, Joris provides a lot of training in Business Valuation and Financial Modelling all over the world. He provides the training at leading ("bulge bracket") Investment Banks, Corporates, Financial Institutions and Universities.

Some of the cities/countries he has visited include New York, London, Hong Kong, Singapore, the Gulf States and also Peru, Surinam, Mongolia and Kuwait.

Joris graduated as a Master of Science (MSc) in Strategic Management and Bachelor of Science (BSc) in Business Studies, both from Tilburg University in the Netherlands.

In addition, he graduated (cum laude) as Registered Advisor Business Acquisitions – Tax & Law (RAB). and has a degree to teach at University.

Joris now also lectures in Corporate Finance & Accounting at well-known universities in the Netherlands (Maastricht School of Management, TIAS Business School and Nyenrode University).

Joris' current focus the "Executive Master in Business Valuation" in order to get his licence as "Registered Valuator" (RV) to be able to do valuations in disputes and court cases in the Netherlands.

Why did Joris select the topic and why is he passionate about it?

This article is focused on "scoping" the development of a financial model but more specifically about scoping it for business valuation purposes.

Basically, scoping is about assessing the work that needs to be done and data that needs to be collected for a certain business valuation to be undertaken.

When for example an entrepreneur comes to me and he/ she needs to know the value of their company however the underlying reason for wanting that valuation can be for many different reasons and perspectives.

The owner might need to know the value of the business because they are planning to sell 100% of the shares or only a certain percentage of the shares. Or maybe the owner is going through a divorce or other personal legal issues and needs to know what is the value of 50% of the company.

Perhaps they are looking to attract a "private equity" investment for further grow and expanding the operations of the company. When dealing with private equity investors there are a range of entirely new questions like how many shares they need to give away to make it attractive for the amount of money they need to grow. Often this results in the owners owning a much smaller percentage of the overall company in the hope that it's a bigger enterprise valuation which means in $ terms they all win.

So "scoping" is about finding out the primary purpose for my client's valuation and what needs to be done by me as the valuer and financial modeller.

Scoping the model is not only important for valuation purposes but for any key decision-making purpose. The financial models ultimately are designed to fulfill a specific need of the users of the model. This use needs to be understood by all parties involved in the model building process and therefore scoping is the critical first step.

Explain the topic and context in a few sentences.

As a valuer one needs to find out the primary reason for a valuation.

In addition, one needs to find out how big the company is and the level of complexity that exists in their "business model".

The other critical element that impacts the scope is time.

Firstly the time series (ie annual, monthly and which periods are actual results vs forecast) that is being used for the model.

Secondly the time frame that things need to happen (e.g. when does the valuation needs to be ready and what as of date does it relate to). Valuations certainly have a shelf life.

These are critical elements to "scoping".

If you had to teach this topic in class to school kids what key tips would you give them to focus on?

As mentioned above, Joris teaches at a lot at universities so this is handy when it comes to educating complex topics simply.

For these students "Business Valuation" and "Financial Modelling" are relatively new concepts and he always explains valuation as follows:

When you sell shares (equity) in a company, you can determine the price of those shares by:

1. Comparing it to the market price of similar companies on the stock exchange;

2. Comparing it to prices that were paid to similar companies in recent M&A (merger & acquisition) transactions;

3. Looking at the cash flow earning capacity of the company while taking the risk of being able to generate that cash flow on a sustainable basis into account

4. Looking at the return investors could receive when they buy the shares in the company.

Let's now take a closer look at these different methods.

Three valuation perspectives.

In a traditional "sell side" M&A transaction, one would help the shareholders of let's say a private firm to sell their shares to for example a listed company (strategic party) on the other side.

In a typical "sell side" advisory process one builds the "football field for business valuation".

This means that we look at the value of the firm we are selling from three different perspectives:

1) We try to find companies listed on the stock exchange that look like the firm that we are selling.

For listed companies we can see their "market value of equity" and their "market value of debt". Together (market value of equity plus debt) this equals the "enterprise value" (EV).

We can then divide this EV by the last twelve months (LTM) cleaned earnings before interest, tax, depreciation and amortization (EBITDA). The answer to this division is often referred to as the "EBITDA multiple" that we can then apply to the specific firm that we are selling.

EBITDA is used as it's the closest comparable proxy for cash across different companies. It is a proxy for comparable cash as the non-cash items are removed like depreciation and amortization, pre-interest to calculate enterprise value and

pre-tax as companies can be structured differently and have different tax treatments.

The reference to "cleaned" means that the EBITDA is adjusted for non-recurring items that are not likely to recur on a sustainable basis;

2) We try to find M&A deals of similar companies to the one we are selling that took place in the most recent past.

We try to find these in all kinds of different databases or websites to that we can find the EV's and divide these by the LTM EBITDA's at the respective dates of those deal. The purpose is to find comparable "EBITDA multiples" that we can apply to the firm we are selling;

3) We can then conduct a "discounted cash flow analysis" (DCF). In this method we estimate future free cash flows (FCFs) of a firm. Free cash flow refers to the money available (after all expenses) to all the providers of capital, namely equity & debt.

We are required to bring all those future FCFs back to today so we can compare it to the other valuation methods which are based on the defined "time" mentioned above.

Bringing cashflow back to today is commonly referred to as "discounting" with a discount rate that represents a relative honest cost of capital of the firm plus potentially an associated risk premium. The outcome here is also an EV for the firm we are selling at the same date defined in the scope.

In summary with a sell side M&A transaction we look at:

- the value and EBITDA multiples of similar companies on the stock exchange,
- similar companies in a precedent M&A transaction,
- the cash flow earning capacity of the firm that we are selling while we are taking the risk of that firm into account using a DCF analysis.

This gives us three perspective on the value of the firm we are selling.

This is a great start but we are not there yet!

Two more valuation perspectives.

We also like to know what a potential investor would be willing to pay for a similar company. Think of the well-known "private equity firms" (financial sponsors).

These parties typically buy and sell shares regularly and often hold them for only a few years so they can generate a significant return for their funds or investors.

The funds and their investors expect a certain return for the high risk they are taking backing these particular transactions especially where the company cannot access cheaper costs of capital eg debt from a bank.

The investors are therefore interested in earning at least say 18% compounded annually over the holding period. This is also often referred to as an internal rate of return (IRR).

With most transaction models for example "Leveraged Buyout (LBO) models" we calculate the IRR of a transaction. Here we assume a certain price (the one we are trying to calculate for the firm) that needs to be paid for the shares. Once we have this price, we can check whether a return of 18% is feasible.

This is done to assess whether the sale is a "potential LBO" or not as it might be of interest for a potential private equity buyer for the shares. If yes, we need to approach, and talk with, them.

It is very important to also look at how the buyer of the firm will "look financially" after the deal. This is important when we sell shares to a strategic party where these are for larger listed companies. This information is important as it will have to be disclosed to the market.

The other reason for doing so is to make sure that the buyer needs to "look better after a deal" in financial terms. "Looking better after a deal" means that the earnings per share (EPS) relative to the capital purchased after a M&A deal should be higher than without the deal.

When its higher we say that the deal is "accretive", otherwise it is "dilutive".

In general, M&A deals should be "accretive" for the shareholders of the buyer or have a very good reason if its dilutive.

How do you scope the actual financial model build?

Having the valuation scope defined and its purpose is useful in crafting what the model needs to contain from a scoping perspective.

Fundamentally we need to make sure that the scoping phase of building any model clearly identified key value chains and the drivers of performance based on actual business activities not just x% growth rates.

The story and the strategy need to link clearly to these drivers to craft a compelling pitch to interested parties.

How these drivers link ultimately to the free cashflow generated and enable the risks embedded in the business to be "modelled" through scenario and sensitivity analysis and for those more advanced perhaps Monte Carlo simulation.

Summarized

Joris tells his University students that building a financial model for business valuation for a M&A transaction is a lot of work!

As a matter of fact, you need to build five models as discussed above.

It's critical to understand what needs to be done before you start and take the assignment (or even before you estimate any valuation).

Therefore starting with "scoping", in other words finding out what needs to be done and how complex the business and its environment becomes essential.

What practical steps can everyone take now to learn more?

In order to get the "scope" for a valuation assignment right, you need to familiarise yourself with the 5 valuation techniques and financial models as mentioned above:

1. Comparable company analysis;
2. Precedent transaction analysis;
3. Discounted cash flow (DCF) analysis;
4. Leveraged Buyout (LBO) analysis;
5. M&A analysis (accretion/ dilution).

For each of the above analysis you need to consider the exact content within these financial models and how much time it will take you to build them.

Of course, we do not need to build the models from scratch every time. But still it is a lot of work to build for example the "debt schedule" of a LBO analysis, or to come up with the value drivers in a DCF analysis.

It can take a lot of time to be able to find good comparable companies and/ or precedent transactions.

And you need these as a benchmark!

Your experience really comes from doing many different kinds of M&A transactions as an analyst for a minimum of three years before you get a basic level of competency.

But it will probably take you ten years of working experience in M&A to become really good!

At last, having superb excel skills, and being able to "model with the keyboard and no mouse", really helps to bring speed and style to your models.

When having all the above skills and experience, your "scoping" abilities upfront for a valuation model is likely to have similarly reached a higher level

What are good places (links) to find out more on the topic?

In the attachment below (this book) Joris has added some of his recent articles on:

1) Business Valuation (5 articles);

2) Cost of capital/ weighted average cost of capital (12 articles).

The first 5 articles give you a good basic understanding on the 5 business valuation techniques. And they help you out with some "excel keyboard shortcuts".

The second 12 articles will give you more in-depth insights in valuation and more technical components of valuation. Like the: Equity market risk premium, betas, capital structure, country risks, capital asset pricing model (CAPM), cost of debt etc. etc.

With all this information you get an honest idea on what kind of work needs to be done to make good business valuations.

And it gives you an idea on what kind of things you should not forget or underestimate, very important for "scoping" upfront.

How important is this skill in the context of learning Financial Modelling?

You really need to be able to determine the "scope" of any valuation assignment and building the financial model as part of this is critical as mentioned above.

If you do not have proficient Financial Modelling skills your boss will most likely not be happy with you as it takes you too long to produce good valuation models.

If you lack these skills then even as an independent valuer, or for example as a partner in a M&A boutique, then you are probably charging too less for your valuation projects in relation to the longer than average hours that you spend to complete your analysis.

How does all this disruption, AI and automation talk impact this topic?

So far, valuations are still man or women-made with of course our favorite program Microsoft Excel.

But in the end, we still build the financial models ourselves and they require some human intervention and discussions.

Whilst there are technologies that enable us to build these models quicker and often in a more automated manner, risk assessments and storytelling to pitch deal is still done by humans .

This very specific work is hard to automate entirely!

But we have to be careful and keep on following what is happening in the fintech world all the time! 😊

Investment Management: Securitization, Subprime Loans and Collateralised Debt Obligations

· Source: Essentials of Investments: 11th edition (2019). Authors: Bodie, Kane and Marcus. McGraw-Hill Education New York.

The financial crisis of 2008: The antecedents

In 2007 most people thought it was highly unlikely that within two years the world's financial system would be facing its worst crisis since the great depression in the 1930s.

Of course there was the collapse of the still quite recent high tech bubble (2000-2002). But the "Federal Reserve" responded to an emerging recession after the tech bubble by aggressively reducing interest rates.

The "treasury bill" (short term government debt) rates dropped significantly between 2001-2004.

Also the LIBOR rate dropped significantly. And the LIBOR rate (London Inter Bank Offered Rate) is the interest rate at which major banks lend to each other.

This worked well and the recession after 2001 was mild. And the stock exchange (e.g. S&P 500 index) was fully recovered again in about 2006 compared to before the tech bubble collapsed.

(Source used: Bodie, Kane and Marcus, 2019)

Banking sector & TED Spread

As well the banking sector "seemed" healthy after the tech bubble, this when taken a look at the "TED Spread".

The "Ted Spread" is the "spread" (delta) between the 3-month LIBOR and 3-month treasury bill rate.

So these are 1) the rate at which banks borrow from each other, and 2) the rate at which the US government borrows.

And a common measure of "credit risk" in the banking sector is measured with this TED Spread.

And this TED spread was only around 0.25% in 2007, which suggests that the fears of default or "counterparty" risk in the banking sector was very low.

(Source used: Bodie, Kane and Marcus, 2019)

Housing prices and financing houses

But the low interest rates, and an apparent stable economy, after the tech bubble contributed to a big increase in the housing prices from around 2000 to 2007.

Housing prices more than doubled in this period.

Actually when you look at housing prices in the US from 1997 to 2007, so 10 years, then housing prices even tripled.

And also the way houses where financed changed.

From the 1970s "Fannie Mae" (FNMA = Federal National Mortgage Association) and "Freddie Mac" (FHLMC = Federal Home Loan Mortgage Corporation) began buying large quantities of mortgage loans.

They bought them from "originators" (parties who in first instance issued the mortgage loan) and bundled them into pools that could be traded like a "financial asset".

These pools of loans were actually just claims on the underlying mortgages, so they started to be called "mortgage backed securities". And this process of bundling was called "securitization".

Fannie Mae and Freddie Mac became very big in this area, and together they bought more than half of the "mortgage backed loans" that originated from the "private sector".

(Source used: Bodie, Kane and Marcus, 2019)

Securitization

With "securitization" the loan originator gives a loan to a "home owner". The originator then sells the loan to for example Fannie Mae or Freddie Mac and recovers the cost of the loan.

In turn, Fannie Mae or Freddie Mac would pool the loans into "mortgage backed securities" and sell them again to investors such as "pension funds" and "mutual funds".

Typically, Fannie Mae or Freddie Mac would "guarantee" the credit or default risk of the loans included in each pool.

And because the mortgage cash flows were passed along from the homeowner to the lender, then to Fannie Mae or Freddie Mac, and then finally to the investor (e.g. pension fund or mutual fund), these "mortgage backed securities" were called "pass-throughs".

(Source used: Bodie, Kane and Marcus, 2019)

"Subprime" loans

In essence, mortgages that had been securitised into pass-throughs, and guaranteed by Freddie Mac or Fannie Mae, they were low risk mortgages.

The loans could not be too big, and homeowners had to meet the underwriting criteria, in order to establish their ability to pay back the loan.

For example the ratio "loan amount to house value" could not be more than 80%.

But then the "private label pass-throughs" (subprime loans) followed after the "government-agency pass-throughs" (of Fannie Mae and Freddie Mac).

With the private label pass-throughs (subprime loans) the investor, so the last in line, would bear the risk that homeowners might default on their loans.

And this was not the case with the "pass-throughs" of Fannie Mae and Freddie Mac (government agencies), since they "guaranteed" the mortgages.

Then even worse a strong trend of "low documentation" loans, and then "no documentation loans" emerged within the subprime loans (private label pass-throughs).

And also other underwriting standards deteriorated with the subprime loans.

For example, by 2006 the majority of the subprime borrowers purchased houses by borrowing the entire purchase price.

So loans were given out with a ratio "loan amount to house value" of 100%.

And when housing prices started to fall the highly leveraged loans were quickly "under water" (more debt than house value).

(Source used: Bodie, Kane and Marcus, 2019)

Mortgage derivatives

Then from 2004 higher interest rates put payment pressure on homeowners since the initial low interest payment period was over.

(low interest beginning, "normal" interest rate later, and this was the common deal in "adjustable rate mortgages").

Also the housing prices peaked in 2006, so home owner's ability to re-finance when they were in trouble became problematic after that.

This since their level of "equity" (value of the house minus loan on the house) decreased due to decreasing housing prices. And less equity = less possibility to re-finance.

So mortgage defaults started to grow in 2007, and consequently losses on mortgage backed securities as well, with the credit crunch as a result.

So the question is: Why would investors be willing to buy all of these very risky (subprime) mortgages?

Well the answer is, due to:

Securitisation;

Restructuring;

Credit enhancement.

Due to new "risk shifting tools" investment banks could carve out "AAA-rated securities" (triple A = very good) from original issued "junk loans" (very bad).

And this is done through so called "Collateralised debt obligations" (CDOs).

CDOs were designed to concentrate the credit risk of a bundle of loans on one class of investors.

So the bundle of loans was divided in tranches.

For example 70% of the bundle was allocated to a "senior tranche" (low risk) and for example 30% was allocated to a "junior tranche" (high risk).

Simply said, now even bundles of risky subprime loans could be rated "triple A" (AAA by Moody's, Standard & Poor's and Fitch).

This because default rates of above (for example) 30% seemed very unlikely.

(Source used: Bodie, Kane and Marcus, 2019)

Rating agencies

Rating agencies could (because of the CDO structure) carve out large amounts of AAA-rated securities out of actually "low rated mortgages".

Now we know that these rating were wrong, but how could this happen?

First: Default probabilities on the loans had been estimated using historical data, and this turned out to be not representative for the CDOs.

And Second: The rating agencies extrapolated historical default numbers to a new sort of borrower pool (CDOs) which was also not a good fit either.

(Source used: Bodie, Kane and Marcus, 2019)

In the next blog in this sequence I will finish this discussion on the "2008 financial crisis".

Topics that will then come back are: Credit Default Swaps, new systemic risk and the Dodd-Frank Reform Act.

Source: Essentials of Investments: 11th edition (2019). Authors: Bodie, Kane and Marcus. McGraw-Hill Education New York.

How to break into M&A/ Investment Banking ?

I get a lot of DMs of people who ask me to find them a job in M&A.

Unfortunately I am not in a position to arrange jobs since I work around the clock myself, and I want to use my spare time for my family and sleep.

But I can write you an article with the key "Corporate Finance skills" you need to master in order to break into M&A/ Investment Banking.

So in this article I will purely focus on the "Technical Corporate Finance Skills" you need to master in this field.

These key technical skills consist out of:

1. Understanding the concept "Net Debt";
2. Financial Modelling skills in excel;
3. Understanding the concept "discount rate/ WACC";
4. Valuation skills in order to build the "valuation football field";
5. Basic understanding of Investment theory.

Let's now look at these 5 topics in more detail ! :-)

Net Debt (1)

Within the concept "net debt" you need to understand the following issues:

1. Cash & debt free;
2. Net debt;
3. Adjusted net debt;
4. Adjusted net debt: Cash like items;
5. Adjusted net debt: Debt like items;
6. The "enterprise value" to "equity value" bridge ("the equity bridge");
7. M&A closing mechanisms: Completion accounts vs. Locked box;
8. Consolidation of a target and Purchase Price Allocation (PPA).

Financial Modelling skills in Excel (2)

With these skills you need to master:

1. Basic excel functions like: SUM, IF, IFERROR, SUMIF, SUMIFS, SUMPRODUCT, VLOOKUP/ HLOOKUP, LOOKUP, INDEX/ MATCH, CHOOSE, OFFSET, EOMONTH/ EDATE, MAX/ MIN etc.;

2. Formatting in excel;

3. Building the three financial statements with interest on average/ ending balances of debt (circular references/ iterations);

4. Building the three financial statement with interest (circular references/ iterations) + debt schedule and "debt sweep";

5. Building models with NO MOUSE (!!), but with keyboard excel shortcuts for efficiency and speed.

Discount rate/ Weighted Average Cost of Capital (WACC) (3)

Here you need to understand the following concepts:

1. Betas;

2. Equity Market Risk Premium;

3. Capital Asset Pricing Model (CAPM);

4. Cost of debt;

5. Capital structure;

6. Weighted average cost of capital (WACC);

7. International WACC and country risk;

8. Basics of real options;

9. Adjusted present value method (APV);

10. Valuation of company abroad;

11. Illiquidity discounts;

12. Control premiums;

13. Minority discounts;

14. Small firm premiums.

Valuation techniques (4)

Here you need to understand the "valuation football field":

1. Comparable company analysis;

2. Precedent transaction analysis;

3. Discounted cash flow analysis;
4. Leveraged buyout analysis (LBOs) to calculate IRR (internal rate of return);
5. M&A analysis to calculation "accretion/ dilution" of a deal.

Basic understanding of Investment theory (5)

1. Different asset classes and financial markets;
2. Portfolio theory;
3. Debt securities;
4. Security analysis;
5. Derivatives markets.

Final remarks:

So it looks like there is a lot you need to know.

This is true, but do not forget that in the end it is not rocket science!

You can self-study the concepts with books, or follow additional online/ offline training.

And feel free to check my about 80 free blogs I have written on these subjects here on linkedin (this book).

Economics: Do economies have to grow to maintain the same level of prosperity ???

Economics & Prosperity

This is a blog on "Economics & Prosperity".

I think it is an important blog since it is written in the middle of the "Corona Pandemic" (May 2020). And this pandemic gets us people thinking about "globalisation" and "economic growth".

The source used is a chapter from the book below.

The book is a very smart and funny one with more than 100 scientific questions in all areas.

I have used a short article as source for this blog on "economics & prosperity".

· Book: Hoe zwaar is licht: Meer dan 100 dringende vragen aan de wetenschap (2017). Beatrice de Graaf & Alexander Rinnooy Kan. Uitgeverij Balans Amsterdam. Specific article used: Waarom moet een economie groeien om het bestaande welvaartsniveau te handhaven? (2017) Author: Dirk Bezemer.

Economics: Gross Domestic Product

The yearly growth of an economy is measured by the relative growth of the "Gross Domestic Product" (GDP) per year.

To calculate GDP one takes all final products and services traded in a year.

And one calculates the "value added" of this, which consists out the sales prices minus cost prices of a year.

Then this number is adjusted for inflation, and the result is the real GDP of a year.

The relative yearly growth of this number is what we call "economic growth" or "income growth".

This since this total "value added" equals the sum of all incomes.

And then preferably we like to see the growth divided by a country's population, so then we get the growth "per capita".

(Source used: Dirk Bezemer, 2017)

Economics & Prosperity in The Netherlands

In the Netherlands (where I am from) our real incomes have grown significantly.

Real incomes are now:

· 30 times as high as in 1300;

- 10 times as high as in 1700;
- 5 times as high as in 1924;
- 2 times as high as in 1976.

Taking this into account, a good question for example is:

Are we due to this income growth now double as prosperous as in 1976 ???

And would we now have been less prosperous as in 1976 when real incomes would not have doubled, but stayed the same ???

(Source used: Dirk Bezemer, 2017)

Prosperity

Prosperity (in general) is the "gratification of wants" of people. This concept comes close to "wellbeing" and "happiness".

And the level of the "gratification of wants" depends on:

1. Our "wants";
2. Our ability to gratify those "wants" (with for example our income).

Now two mechanisms why income growth is needed could be:

1. The effect of "inurement";
2. The urge to compare.

Let's now discuss these two mechanisms in more detail.

(Source used: Dirk Bezemer, 2017)

The effect of "inurement"

When a person gets more income he/ she can gratify more wants, but he/ she gets used to this gratification.

I am from The Netherlands, and it was years back (before I was born, and I am from 1980) that we had a toilette outside of the house.

Now a toilet inside of the house is just really, really, normal here!

So the experience of gratifying a want, like wanting to have a toilet inside of the house, instead of outside like in the old days, is now completely vanished away.

We got used to it!

So now new wants need to be satisfied again, so more income is needed, and income growth is needed for that.

(Source used: Dirk Bezemer, 2017)

The urge to compare

Secondly, people judge whether their wants are gratified by comparing themselves to the group they live in.

For example, maybe you never wanted to have a mobile telephone, but now (most likely) you have one.

Actually, now you would be really miserable when you would not have one.

Economists call this the effect "keeping up with the Joneses".

So people want to gratify wants that their peers are also gratifying.

So because living in groups, and in society, people get more and more wants every day.

And income growth is needed to keep up with that!

(Source used: Dirk Bezemer, 2017)

Society and economy

Obviously this is a quite simplistic explanation of why economic growth is needed.

This since the social context in which you live, and your own "self", also decide on how much you want and to what extent that you "compare" yourself with peers.

But when we just look at the "market economy", then we can conclude that this system is focused on, and very good in, realising "economic growth".

And a market economy does this by creating new wants due to:

1. Marketing;
2. Encouraging competition.

(Source used: Dirk Bezemer, 2017)

Prosperity

Again, this analysis is quite simple, but it offers you 2 ways to increase your perceived level of prosperity:

1. By increasing your income to satisfy more wants;
2. By decreasing your wants.

As mentioned, market economies focus on the first way.

There is nothing wrong with that, but you need to be aware of it! Otherwise life is nothing more than a "rat race". 😊

And you might want to consider the second way as well. This at least as a person, since I do not see many countries/ societies choosing this option in the foreseeable future. 😊

(Source used: Dirk Bezemer, 2017)

Source used for this blog

The source used is a chapter from the book below.

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Mergers & Acquisitions: The three big mistakes

Source used

For this article I have used the handbook below as a source.

The book is brilliant, and written by two experienced EY M&A consultants and a professor in Corporate Finance:

· Why deals fail & how to rescue them (2016). The economist books, London. Anna Faelten, Michel Driessen, Scott Moeller. 9781781254530.

Introduction

Global M&A deal making broke the 5 trillion USD barrier in 2015. And this was 3.7 trillion USD in 2007. This according to data on announced deals by 'Dealogic'.

And the combined value of all M&A deals from 1980 to the end of 2015 was almost 65 trillion USD.

Now the question is whether M&A deal making hurts of helps business and the economy overall?

The answer is that M&A, when properly done, drives corporate and economic growth!

But the other way around is also true, when poorly done, it can damage business and the economy.

I will give you some more statistics on success rates later on.

(Faelten, Driessen & Moeller, 2016)

Introduction: The three mistakes in M&A deal making

When Hewlett-Packard (HP) took over the UK company called "Autonomy" in 2011 nobody predicted the disaster that would follow post-deal.

Just 12 months after the deal HP was facing write downs of 8.8 billion USD, nearly 80% of the 11 billion USD they paid for the company called "Autonomy".

HP argued they were victim of fraud by Autonomy's management and its auditors, blaming the losses on accounting failures.

(Faelten, Driessen & Moeller, 2016)

Hewlett Packard (HP) and the company called "Autonomy"

HP was founded in their famous garage in Palo Alto (Silicon Valley) in 1939.

They were one of the core Silicon Valley start-ups and later one of the biggest manufacturers of computers.

In 2010 Mr. Leo Apotheker became CEO (ex SAP) and the market was expecting immediate acquisitions since HP's share price was suffering.

The company "Autonomy" was a Cambridge University spin-off, founded in 1996, and a success story. HP announced a bid in 2011 of a stunning 64% premium on the share price of Autonomy.

Autonomy was one of the fastest growing software businesses in the world. Their main product was the "Intelligent Data Operating Layer" (IDOL), a highly intelligent tool for indexing unstructured data.

So HP bought the company at a record high price, and most of this price was written down withing two years after the deal.

HP blamed the huge write offs on the accounting practices of the acquired company, but industry experts and analysts were questioning the accounting practices of Autonomy for years already.

So HP should have dealt with these accounting issues in the due diligence, both pre-announcement, and pre-completion, of the deal.

(Faelten, Driessen & Moeller, 2016)

Post-deal of the Autonomy transaction

The decision to use acquisitions to buy yourself into a certain strategic paths is commonly used by companies.

But there are a number of alternatives of M&A which should be evaluated as well.

And these could have been, for example for HP, less risky.

On top of that, when one believes M&A is the right tool, than the decision for which target company to go is also a tricky one.

Buyers need to find a target that is both a strategic fit, and the target needs to be 'in the market'.

And it is possible that HP focused too much on its target Autonomy, a common error for buyers. This since with this standpoint buyers lose their bargaining power when negotiating the final price.

(Faelten, Driessen & Moeller, 2016)

Mistake one in M&A: Planning

Within the HP/ Autonomy deal many mistakes took place.

But Mrs. Faelten, Mr. Driessen and Mr. Moeller identified three overall mistakes in M&A deal making. They mentioned them in the book that I have used as a source for this article:

1. Failure of planning;
2. Failure of communication;
3. Failure to properly consider the impact of people.

Let's start with mistake one: Planning.

Using the HP example then we can conclude that the acquisition of Autonomy was a risky one, even for HP.

HP had a value of about 100 billion USD and Autonomy about 11 billion USD at the time of the acquisition.

The target was magnified a lot because HP based their future on the strategic wins obtained by the transaction.

But when you do not have a clear, detailed, well over thought, and articulated deal strategy, the no planning of the integration will be sufficient!

Hubris will therefore be one of the most common M&A pitfalls for business leaders since underestimation of the M&A integration task is easily done.

In subsequent blogs on this topic "M&A success", I will talk with a lot more depth about deal strategy & planning.

(Faelten, Driessen & Moeller, 2016)

Mistake two in M&A: Communication

HP's failure to communicate the benefits of the deal convincingly to their stakeholders resulted in a significant fall of their share price on the day of the announcement.

The expected "synergies" should be clearly communicated in the due diligence phase!

And the 100-day integration plan should be written when the deal is announced.

Within the case of HP, a net present value of 2.9 billion USD synergies were expected. This, amongst others, should justify the 24 times trailing EBITDA that was paid for the enterprise.

On top of that, HP admired the culture of Autonomy. But they did not truly understand this culture, and they did not know how to adopt it by HP's other divisions.

All these issues need to be explained and communicated well to the stakeholders of the company.

(Faelten, Driessen & Moeller, 2016)

Mistake three in M&A: People

Poor communication and a lack of understanding of the culture of Autonomy led to the third failure: The appreciation of the value of people.

Autonomy's culture was a culture that HP wanted.

But they failed to learn, and lock in, the more entrepreneurial culture of their expensively bought target.

(Faelten, Driessen & Moeller, 2016)

Additional issues in M&A

In the subsequent blogs on this topic; "M&A success", I will talk with a lot more depth about the above success factors and issues.

And maybe you are surprised that "price & value" have not come up yet as one of the big mistakes in M&A.

Of course this is a (huge) issue, but "price & value" are not part of the three big mistakes in M&A.

Reason is that there is not such a thing as the "right price of a deal".

This since it really depends on the buyer's view of the financial future of the target and the expected synergies.

So determining whether the price was really right can only be done afterwards!

Have said this, ceteris paribus, the lower the price paid, the more easy a successful transaction can be achieved!

(Faelten, Driessen & Moeller, 2016)

Success rates of M&As

Numerous studies from the 1980s and 1990s show failure rates in M&A of about 70% to 80%.

And more recent studies show failure rates of about 50%.

But this still implies the high risk of M&As and the need to understand what drives M&A success!

Globally about 25.000 to 35.000 M&A deals take place yearly.

So they are not a rare phenomenon at all!

In the subsequent blogs/ articles on this subject I will study/ evaluate the success factors of M&A more carefully.

This in order to come with some rules of thumb that can help you when working on, or being part of, M&A transactions!!

(Faelten, Driessen & Moeller, 2016)

Source used

For this article I have used the handbook below as a source.

The book is brilliant, and written by two experienced EY M&A consultants and a professor in Corporate Finance:

· Why deals fail & how to rescue them (2016). The economist books, London. Anna Faelten, Michel Driessen, Scott Moeller. 9781781254530.

Central Banking

Joris has a fascination for finance, but not only "corporate finance", M&A and valuation …

One of his big interests is "Central Banking", the "Monetary System" and "Money Creation" …

In this sequence of blogs on Central Banking he will talk about these topics.

Source used:

Central Banking: Theory and Practice in sustaining Monetary and Financial Stability (2014). Thammarak Moenjak. Wiley Publishers Singapore.

Central Banking

Prior to the creation of central banking societies often used precious metals like gold or silver. This as a means of transaction for goods and services.

When society developed to a certain extent the use of precious metals as money became more formalized and standardized. So the metals were made into coins which made them easier to transport.

In 1609 merchants and the city of Amsterdam decided to set up the bank of Amsterdam to do tasks like sorting, classifying and storing the coins. Amsterdam was the premier global trading hub of that time.

In 1659 the Bank of Stockholm was established in Sweden. At first, the bank simply took copper coins and lent them out against tangible assets such as real estate.

Later this bank started to issue notes of credit to depositors who wanted to withdraw their copper coins.

With their features of having fixed face values in round denominations, no paid interest, and being freely transferable from one holder to another, these notes were considered the first modern bank notes.

And this bank became, after a government intervention (and renewed bank), the present day Swedish Central Bank.

And this is the world's oldest central bank; the Swedish Riksbank.

(the bank of Amsterdam collapsed in 1819)

The Swedish Riksbank was chartered to not only act as a clearinghouse for merchants since it also lent funds to the government.

Later on many other central banks were also created to help finance government spending, especially wars.

By the 19th century the central bank's close ties to their governments, and wide acceptance of their banknotes (in many cases they had a monopoly on note issuance), helped induce commercial banks to also open accounts at central banks.

This to place their deposits with the central bank and they became their clients.

(Thammarak Moenjak, 2014)

Lender of last resort

By the 19th century it was well recognised that financial panics and resulting bank failures could be very disruptive and costly.

Successfully calming panics and rescuing banks however required many factors like:

- Deep pools of financial resources;
- Extensive networks in the financial system;
- Operations know how;
- Public confidence.

This put central banks in a unique position to assume the role of protector to the financial system.

This due to their:

- Close ties to their governments;
- Large reserves;
- Extensive networks with corresponding banks, and in many cases the monopoly over note issuance.

In the latter half of the 19th century the Bank of England took the responsibility of "lender of last resort" to distressed banks.

However, they bank would lend to troubled banks only if sound collateral was posted, and they charged interest above the market rates for such lending.

In the US prior to 1913 the US had two central banks which were modelled after the bank of England:

- The Bank of United States (1791-1811);
- The Second Bank of the United States (1816-1836).

But their charters were not renewed due to the public's distrust of concentrated financial power.

During the 80 years that the US had no central bank, bank panics and bank failures were frequent.

And a severe banking crisis in 1907 highlighted the need for a central bank in the US.

This led to the creations of the "Federal Reserve System" in 1913.

(Thammarak Moenjak, 2014)

Bank Supervisor

By adopting a lender of last resort function central banks were taking risks that could damage their own capital.

This was particularly true in cases where troubled commercial banks where facing:

· Solvency problems: Their debts exceeded their assets and capital combined.

This contrary to mere:

· Liquidity problems: Their debts did not exceed their assets and capital combined, but they could incur losses as they tried to liquidate their assets to meet their liabilities.

So to ensure the safety and soundness of commercial banks' operations "ex ante", many banks found it beneficial to have a formal authority to inspects commercial banks' operations.

So following the assumption of the lender of last resort role, central banks started to assume "formal bank regulatory" and "supervisory" functions.

Although, the notion that central banks were public institutions acting in the public interest, only became widely accepted after 1914 in the wake of World War I.

This because central banks were used for their wartime financial management.

However not all central banks had embraced the bank supervisory role.

(Thammarak Moenjak, 2014)

Conductor of Monetary Policy

For central banks to gain trust, many of the central banks embraced the "gold standard".

Here they fix the value of their money to gold, and only issue an extra amount of money if they had gold reserves to match the extra amount of money.

By the late 19th century the trend among existing and emerging central banks was to adopt this gold standard, so they could issue money according to the value of gold they had.

But during world war 1 the gold standard was practically discarded, because countries printed money to finance the war.

After world war 1 the international community embarked on the gold exchange standard. Here the major countries pegged the values of their currency to gold.

This status remained even during the great depression of the 1930s.

(Thammarak Moenjak, 2014)

By the 1950s through the influence of John Maynard Keynes governments and central banks became aware of the possibility of affecting economic activities through the use of activist fiscal and monetary policy.

By then the international community adopted the "Bretton Woods System" as a replacement of the golden standard.

Here the US pegged its dollar to gold at 35 US dollars per ounce, and other countries fixed their value of their currencies to the US dollar.

By the 1960s the use of activist monetary policy in the US, especially to stimulate economic activity and to reduce unemployment became dominant.

Here the tie between the US dollar and gold became questioned as the US kept issuing more and more money with its fixed supply of gold.

By the 1970s the Bretton Woods system became untenable.

Faced with inflation pressure and attempts by many countries to exchange their US dollar holdings into gold from its vault, the US decided to delink the US dollar from gold.

(Thammarak Moenjak, 2014)

The current stage of central banking

Most modern central banks now focus on:

- Delivering low and stable inflation;
- Financial stability.

Moreover, they are prohibited from directly financing government spending.

Although, to deliver low and stable inflation and financial stability, different central banks take different operational approaches.

(Thammarak Moenjak, 2014)

Commonalities in Modern Central Banking

Despite the differences in timing and circumstances of their origins, modern central banks have a few commonalities by the late 2000s:

1. The focus on the maintenance of monetary stability;
2. The focus on the maintenance of financial stability;
3. The prohibition on direct lending to the government.

On the monetary stability front, theoretical development over the last decades, and various high inflation experiences around the world, suggest that to support long term economic growth, the best thing a central bank can do is to deliver an environment of monetary stability.

This is an environment in which inflation is low and stable.

In such an environment households and firms are more likely to be able to optimize investments and consumption.

Second, on financial stability, experiences from various financial crises around the world suggest that to ensure long term growth, central banks should have a direct role in the maintenance of financial stability.

Central banks can help maintain financial stability either as regulators to ensure that the system is resilient beforehand.

Or as lenders of last resort who help to prevent the total collapse of the financial system.

And third, direct lending to the government is akin to printing money and giving it to the government.

Printing money and giving it directly to the government cheapens the value of money relative to other goods and services. This could lead down to the dangerous path of hyperinflation.

(Thammarak Moenjak, 2014)

Diversity in Modern Central Banking

The consensus on the roles of central banks has started to coalesce around monetary and financial stability, noticeable key underlying differences remain, including:

1. The actual operations in the maintenance of monetary stability;
2. The institutional setup with regard to the maintenance of financial stability;
3. The explicit role of central banks in ensuring full employment.

I will dig down on these differences in my upcoming blogs on this interesting topic: Central Banks !!!!

(Thammarak Moenjak, 2014)

Source used: Central Banking: Theory and Practice in sustaining Monetary and Financial Stability (2014). Thammarak Moenjak. Wiley Publishers Singapore.

Practical Valuation

Valuation made practical ! Part 1

Valuation & the balance sheet

Companies need "assets" for their operations.

Think for example of a construction company that needs trucks, building machines and inventory for construction projects.

These assets are put on their balance sheets.

Some people argue that the total value of a company is the value of its assets.

And when you minus the debt that is attracted to finance those assets, the equity is what remains.

This technically is true, but here we have calculated the book value of a company, which means that actually the purchase price of these assets is taken into account minus some depreciation. This to arrive at the equity value.

But this is something else than business valuation, because with valuation we do not look at the book value of businesses, we look at the "economic value" of businesses.

Economic value

"Economic value" is the key for business valuation.

We calculate the economic value of businesses with so called "discounted cash flow valuation" (DCF).

DCF valuation is accepted all over the globe, and I have literally provided training on valuation with DCF all over the globe, in:

Peru, Mongolia, Surinam, Kuwait, Saudi Arabia, Luxembourg, New York, London, France etc etc.

What DCF valuation basically says is that when the assets make more return, than they should (above a hurdle rate), the company is creating value.

This basically means that if the left hand side of the balance sheet (the asset side) is making more return than the right hand side (liability side) requires, then the company is creating value.

This needs some clarification on how this can be calculated.

Returns: NOPAT

Companies create turnover by selling products and/ or services, also known as the P * Q equation (price * quantity).

But there is also direct labour involved, or the buying in of stock.

So when products and/ or services are sold (revenue), companies also need to book up "costs of goods sold" (COGS) against these revenues.

This all happens into the P&L (profit & loss statement).

And revenues – COGS = Gross margin.

After that a company still needs to take up SG&A in the costs, which stands for sales, general and administrative expenses.

And then the P&L arrives at the EBITDA (earnings before interest tax depreciation and amortisation).

Revenues – COGS – SG&A = EBITDA.

This number is very popular, because the lines below EBITDA are less relevant than the lines above EBITDA. I will explain this more clearly later in this sequence of blogs.

After EBITDA, depreciation and amortisation (= depreciation on intangible assets) (D&A) is deducted to arrive at EBIT.

EBIT is earnings before interest and tax.

Revenues – COGS – SG&A – D&A = EBIT.

In valuation we do NOT like interest, and I will explain later in this series of blogs why this is.

So after EBIT we deduct Tc (corporate tax), and here we take the "marginal tax rate" into account, this is the legal tax rate.

EBIT – Tc = NOPAT.

NOPAT means net operating profit after tax.

Revenues – COGS – SG&A – D&A – Tc = NOPAT.

Returns: Invested capital

Now that we have calculated NOPAT, we need to calculate "invested capital".

With invested capital we only look at the operations, so we basically take all operating fixed assets and we plus "net working capital" (account receivables + inventory – accounts payables, and also some more line items of the balance sheet can be involved, as long as they are operating).

And now that we have NOPAT and invested capital, we can calculate ROIC.

Return on invested capital.

We basically divide NOPAT by invested capital and we get to a percentage.

This is the return of the operating assets.

And this return should have a certain "hurdle".

As a matter of fact ROIC should be higher than the so called WACC (weighted average cost of capital).

So when ROIC > WACC a company is creating value, and you will get goodwill in M&A transactions.

When ROIC < WACC a company is destroying value, and you will technically get "badwill" in a M&A transaction.

End part 1

Valuation made practical ! Part 2

Enterprise value

In part 1 of this blog series I have talked about ROIC (return on invested capital).

And then I have said that when ROIC is higher than WACC, a company is creating value.

In for example a M&A transaction this would result in that the company can be sold with "goodwill".

This because the assets are making more return than they should above a certain "hurdle rate" (WACC).

Before we go any further let's talk about the concept "enterprise value" (EV).

Enterprise value (EV) is the economic value of the OPERATING assets minus the operating liabilities.

Later on I will explain clearly why I have highlighted "operating", because this a very important component of EV.

Calculation of EV

The EV generally is calculated by a multiplier of EBITDA.

EBITDA is mentioned in part 1 of this blog series, and the concept is very popular because the line items under EBITDA all have "issues".

D&A (depreciation & amortisation) are costs but no "cash outs", and they are set by the board, and although signed off by auditors, valuators do not like D&A.

Actually, later on with discounted cash flow valuation (DCF) we take up CAPEX (capital expenditures), so of course we understand that investments and re-investments in assets need to be made.

Further is "interest" also something that we do not like, because interest is the result of a capital structure.

And corporate tax is also something that we do not like, because there is the "marginal tax rate" (the legal tax rate), and the "effective tax rate" (what is really paid).

And companies/ boards have different perspectives on "tax optimization".

The EBITDA can be multiplied with a certain factor. I sell SMEs (small & medium sized enterprises) and my EBITDA multiples lie around 4 * EBITDA to about 12 * EBITDA.

And the EBITDA multiples can be taken from "look alike listed firms" (comparable company analysis). But they can also be taken from precedent transactions, the latter is what I use, because comparable listed companies are hard to find in the SME league.

When LTM EBITDA is for example 2 million, and the multiple 7, then we have an EV of 14 million.

Discounted cash flow (DCF) valuation

Another way to calculate the EV is DCF valuation.

What you basically need to do is estimating 5 future years of P&Ls until NOPAT.

Revenues – COGS = Gross Margin

Gross margin – SG&A = EBITDA

EBITDA – D&A = EBIT

EBIT – corporate tax (marginal tax rate) = NOPAT

After NOPAT we plus D&A again because D&A is a cost, but not a cash out.

And then we minus CAPEX + adjustments in NWC (net working capital).

The outcome then is "free cash flow", and this is basically the money that is available for the holders of equity and debt in a company.

Remember, interest is not taken into account.

When we have 5 years of free cash flows we discount them back to time is zero (now).

And the discount rate to be used is the WACC (weighted average cost of capital).

WACC

The WACC basically is a mixed return that the holders of equity "need" and what the holders of debt "need".

And then this needs to be calculated in a certain mix; the "capital structure".

The cost of equity is calculated with the CAPM (capital asset pricing model).

Please check my former blogs on "discount rates" since I have written lots and lots about discount rates here on linked.

But the CAPM basically says that equity holders need to be compensated with a "risk free rate" + the spread on what equity holders in general have made (in the past e.g. 100 years) above the risk free rate, multiplied with a variable for risk ("beta").

And the cost of debt is calculated by the yields of similar debt instruments.

And then it all comes together in WACC with a capital structure, and ideally a capital structure should be used that is "normal" in the industry (based on market values of equity and debt).

Huge companies can have a WACC of 5%, medium sized companies can have a WACC of 10%, SME's can have a WACC of 15% and scaleups can have a WACC of 35%. Just to give you some (very) rough direction.

Terminal value

When we discount back the 5 free cash flows (FCF), we are only partly done with the valuation.

We still have a "terminal value", and this is calculated by dividing the FCF of year 5 by the WACC, and then we still need to discount this outcome back to time is zero (now).

And in this terminal value often some growth is taken up, in the form of expected GDP (gross domestic product) growth of about 2%.

When we take the present values of the 5 FCFs, and the present value of the terminal value, then we have calculated the enterprise value of a company.

And then it is always good on comparing this EV out of DCF valuation with the EV calculated out of EBTIDA multiples (out of for example precedent deals).

This as a sanity check !!

Now that we have an EV we have calculated the economic value of the operating assets minus the operating liabilities.

So we still need to go from EV to "value of the equity", because we are not there yet.

The Valuation Football Field

The Valuation Football Field

With valuation we generally look at 4 different ways to value a company.

These methods are:

1. Comparable company analysis (CCA);
2. Precedent transaction analysis (PTA);
3. Discounted cash flow valuation (DCF);
4. Leveraged buyout analysis (LBO).

On top of that we use so called "M&A modelling" to check whether a deal is "accretive" or "dilutive".

The 4 ways to value a company provide us with ranges, and we put these ranges in a table which looks like a football field, that's why we talk about the "valuation football field".

Let's look at the different methods in a little more detail.

Comparable company analysis (CCA) + Precedent transaction analysis (PTA)

With CCA or popularly said "comps" we look at similar companies when we want to valuate a certain privately held target company.

So we basically compare our target company with lookalike companies listed on the stock exchange.

Because from these listed lookalike companies we can determine the "market cap" by multiplying their fully diluted number of shares times the market price of a share.

On top of that we can determine the market value of debt, basically the value of for example the term loans and bonds.

The market cap + market value of debt roughly equals: Enterprise value (EV).

And when we divide EV by the EBITDA cleaned for "one offs" (cleaned EBITDA), we then have the EBITDA multiple of a few "comps".

With PTA we roughly do the same, but then we study precedent M&A deals to get EBITDA multiples for valuation.

Discounted cash flow valuation (DCF)

With DCF we study the free cash flows (FCFs) of a target, these basically are the cash flows that are there for both the debt holders and the equity holders.

It basically is the EBIT -/- corporate tax + deprecation/ amortisation -/- CAPEX and working capital adjustments.

And then we discount these FCFs with a discount rate that represents the risk involved in the company.

Also this way we get to a EV of the company. This method is probably the most used method to value companies all over the globe.

Leveraged buyout analysis (LBO)

With LBO analyses we also look at FCFs, but then we "use" the FCFs to pay down the debt in the acquisition.

So with LBO analysis we also need to build a so called debt schedule to assess the level of debt in a company.

Maybe you remember that the EV is a multiple over EBITDA, and then we subtract the level of debt in the company to arrive at "value of the shares".

With LBO analysis we yearly measure the expected EBITDA, so yearly we can calculate the EV when we also estimate a EBITDA multiple.

On top of that we measure the level of debt in the company yearly, so also yearly we can take the expected EV and minus debt to get a value of shares.

When we have the value of the shares when we buy a company, and when we have the value of the shares in let's say 5 years, we can then calculate the "IRR" (internal rate of return) on "equity in" and "equity out" really easy.

So with LBO analysis we measure the IRR and credit statistics and we can calculate backwards what the value of the company is (the max price to pay), when we want to have an IRR on equity of for example 20%.

M&A modelling

After CCA, PTA, DCF and LBO analysis we want to know whether a deal is "accretive" or "dilutive".

A deal is accretive when the EPS (earnings per share) of the buyer goes up after the deal.

When a buyer buys a company for a higher EBITDA multiple than for which it is valued itself, then the deal is 100% for sure dilutive when it is financed "all equity".

This because the buyer needs to raise equity for a lower value than for which it buys the target. This because the target has a higher EBITDA multiple.

Of course this happens a lot, so the trick is then to use debt in the deal, this way a deal can still become "EPS accretive", because cheap debt can be used to increase the EPS after the deal. This is just the result of "financial leverage", so classic leverage.

Only remember that buyers can not raise debt without paying the price for it: A decreasing "credit statistic" (by Moody's/ S&P/ Fitch) because of the weaker balance sheet you create with adding debt.

Another trick to get a "dilutive deal", when buying a high multiple target company, to a "accretive deal" is to come up with "synergies" in the COGS, SG&A or even revenues after the deal.

This way you can increase the net profits after the deal (because of cost synergies or revenue synergies), and this obviously increases the EPS after the deal, which can make the deal EPS accretive.

To make a long story short, you use CCA, PTA, DCF and LBO analysis to come up with a EV to pay in a deal.

At last you check with a M&A model whether the deal is accretive when you pay the EV with a certain "debt & equity mix" + when you estimate certain synergies.

And deals really need to be accretive in the upcoming future, because financial markets do NOT like dilutive deals !

M&A and a Headline Price ! ("enterprise value")

The "Headline Price"

Companies are generally valued based on the operations of the business.

This for example with discounted cash flow valuation (DCF) and/ or EBITDA multiples based on precedent M&A deals.

Then most of the time the deal is done on a "cash & debt free" basis, which means that the company is purely valued on its operations in first instance.

The company valued purely on its operation is called the "Headline Price" of the deal.

Another word for this headline price is "enterprise value" (EV).

With this EV the seller is responsible for paying off the debt in the company.

And when, after paying back the debt, there is cash left, then the buyer will pay "euro for euro" for the cash in the company.

But when there is not enough cash for paying back the debt, then this shortfall in cash is deducted from the EV.

There is a big advantage for deals done this way cause then you can agree on a EV, and afterwards negotiate the LOI, perform the DD (due diligence) and negotiate the SPA or APA (share purchase agreement/ asset purchase agreement).

And then simply at the closing date of the deal you can look at the level of cash & debt in the business, in order to calculate the value of the shares out of the EV.

Net debt adjustments

Anything that the buyer in a M&A deal sees as debt will be deducted from the EV.

But there is a large grey area on what "debt" and "debt like items" are.

Common debt items are for example: Interest bearing loans, bonds and notes payable.

Unpaid dividends are also treated as debt.

Other debt items are for example:

Accrued interest, financial lease obligations, liabilities related to financial instruments, unfunded pension obligations, restructuring liabilities, past due payables to suppliers (stretched), income tax liabilities, payables to related parties etc.

And these last items are finally addressed in the DD.

But please do not mix these debt items with regular operating items like normal payables to suppliers, accrued payroll, accrued rent etc.

So when you want to buy a company, place your bid on:

- A certain times (cleaned) EBITDA;
- "cash & debt free";
- And then define your debt and debt like items !

Valuation & Real Estate in M&A

Valuation & Real Estate in M&A

Often companies are sold together with their real estate.

This real estate is sometimes held in the "limited company" of the activities, or sometimes this real estate is held in the "holding company" above the "operating limited company".

Concerning the valuation, it would mean that NO rent is inside the SG&A (sales general & administrative expenses).

Since when we valuate the holding with "consolidated" numbers, then the rent would be "consolidated" out of the numbers.

But the question is whether this way of valuation is correct ??

With valuation we valuate the free cash flows of a company, and we generally say that the present value of the future free cash flows of a company is the so called "enterprise value" of a company.

An enterprise value basically is the "economic value" of the operating assets of a company.

With adding the non-operating assets, and with deducting the non-operating liabilities, we then get to the economic value of the shares.

This step is done with the so called "equity bridge" or with deducting so called "adjusted net debt".

Another way of popularly mentioning this step is saying the price of the shares is calculated "cash & debt free".

But let's jump back to the "enterprise value" of a company again, to look at the issue with valuation including real estate.

When we get the economic value of the operating assets, this means that all the operating assets of a company are inside the "enterprise value".

And this also counts for the "real estate" !!

So with an M&A (sell side) we need to hand over all the operating assets, including the real estate, for a price that is often based on the "enterprise value".

But here we get to a problem, because when we have made a valuation of a company without rent inside, we have valued the real estate with a relatively low multiple !!

A too low multiple !

I can explain this the easiest with mentioning a simple valuation method, a so called "EBITDA multiple" in order to calculate the "enterprise value" of a company.

When the EBITDA of a company is: € 1,000,000 euro, then with a multiple of 7, the enterprise value is:

- € 7,000,000 (7 times 1 million).

But inside the EBITDA is NO rent because you can find real estate on the balance sheet of this specific company.

Let's say this real estate is on the balance sheet of the "consolidated numbers" of a holding limited.

Then the problem is that real estate has a larger multiple, than the multiple 7 of the company itself.

As mentioned I am active in M&A of SMEs in The Netherlands, and I do my deals for about 4 to 8 times EBITDA to get to an enterprise value.

But real estate is valued nowadays for 15 to 20 times the rent !

So when the rent of this specific company would be € 300,000, then the value of the real estate would be with a multiple of for example 17.5 times the rent:

· 17.5 times € 300,000 = € 5,250,000.

This would imply that an enterprise value of € 7,000,000 could never mean that real estate would be included in this value.

The reason is that companies, and real estate, have different multiples, especially in my league with the SMEs, because of the relatively low EBITDA multiples of 4 to 8.

The current valuation that needs to be made would be:

1. Take off rent from EBITDA: € 1,000,000 minus € 300,000 = € 700,000 clean EBITDA;

2. Cleaned EBITDA times company multiple: € 700,000 * 7 = € 4,900,000 enterprise value;

3. Enterprise value + value real estate = € 4,900,000 + € 5,250,000 = € 10,150,000;

4. This is € 3,150,000 more than the original enterprise value (of € 7,000,000), because real estate has a higher multiple.

So please take this into account !

At last, when real estate is part of the deal, real estate needs to be put for its fair value on the balance sheet.

So its value needs to be adjusted from book value to market value, and also the equity should be increased, after an adjustment for "deferred tax" is taken into account.

After that you can sell the shares of the company (the Holding Limited), taking the adjusted book value of equity of the holding limited into account. While you do not forget taking up the goodwill created in the operating limited company.

Business Valuation Football Field: The Full Story !

Source used: Investment Banking: Valuation, leveraged buyouts and mergers & acquisitions. Second edition (2013). Joshua Rosenbaum & Joshua Pearl. Wiley Publishing company. 9781118472200.

Comparable Companies Analysis (multiples-1)

Comparable Companies Analysis (CCA): An Introduction

CCA provides a benchmark against which a M&A consultant can determine a valuation for a private company, or analyse the value of a public moment at a given moment.

With CCA we basically assume that similar companies are a very good reference for valuing a certain target company.

And we use the information for a lot of different issues like M&As (mergers & acquisitions), IPOs (initial public offerings), restructurings, investment decisions etc.

Selection of the comparable companies

When we want to value a certain company; the target, we want to learn as much on this company as we can.

This is in general more easy for public companies since here we have access to the annual reports (10-Ks), consensus research estimates, equity and fixed income research reports, press releases, investor presentations etc.

For private targets this is in general more difficult. But a M&A consultant will often receive detailed business and financial information in an organised M&A sale process (in the form of a confidential information memorandum).

Once we understand the target company, we need to find good comparable companies. Good target companies share both a similar business profile and financial profile.

With a similar business profile we mean: Sector, products and services, customers and end markets, distribution channels, geography etc.

With a similar financial profile we mean: Size, profitability, growth profile, return on investment, credit profile etc.

Usually the best way to find good "comparables" (comps) is to start at the target's public competitors. Because these companies share key business and financial characteristics, and are susceptible to similar opportunities and risks.

The following sources can be used to get information on the "comps": 10-Ks, investor presentations, credit rating agencies reports (e.g. Moody's, S&P, and Fitch), equity research reports, fairness opinions, Bloomberg sector classification etc.

Locate the financial information

Financial information on the "comparable companies" (comps) of the target can be found on: Bloomberg, Bureau van Dijk (Amadeus, Reach and Zephyr), company.info, Factiva, MD info, MergerMarket, OneSource, Thompson one banker etc.

It just depend what kind of database-tools your bank, corporate finance consulting firm, M&A boutique or accounting firm has.

We basically want to know the historical performance of the comps (e.g. LTM financial data) and the expected future performance (e.g. consensus estimates for future calendar years).

Historical information can be found in the annual reports like the 10-Ks. This information is used for balance sheet data, basic shares outstanding, stock options/ warrants, and information on non-recurring items.

And for future performance you can use for example equity research. Research reports provide the M&A consultant with estimates on future company performance like sales, EBITDA and/ or EBIT, and EPS for future quarters and future two or three year periods.

Within this respect, initiating coverage research reports are more comprehensive. And consensus estimates (Bloomberg) are used as basis for calculating forward-looking trading multiples in trading comps.

Key statistics

For all the comps you need key financial statistics and ratios. So you need info on: Size of the company, profitability, growth profile, return on investment and the credit profile.

Size

The size of the comps can be calculated with multiplying the share price of the target times the "fully diluted shares outstanding" (FDSO). FDSO is the basic shares outstanding including the in the money options and warrants and in the money convertible securities.

When we have calculated this, then we have calculated the market value of equity.

When we take the market value of equity and add the (market value) of debt, preferred stock and non-controlling interest (NCI), minus the (excess) cash and cash equivalents, then we have calculated the famous "enterprise value" (EV).

Profitability

For the profitability we want to know the comp's sales and percentages of gross profit, EBTIDA, EBIT and net income in relation to sales.

Growth profile

Very important, we need to know how fast the comps has been growing in the past and what the expected growth rate is.

We do this by checking the "Compound Annual Growth Rates" (CAGRs). These CAGRs basically show the average growth per year over a certain amount of years.

Within this respect, it is very interesting to look bottom line at "diluted earning per share". And here fore historical EPS need to be cleaned for non-recurring items.

Return of investment

We also want to know the returns, like return on equity, return on assets and return on invested capital (EBIT/ (average net debt + equity)).

Credit profile

And we want to know what the leverage level of the "comp" is, so we need to know "debt over EBITDA" and debt as part of "debt + preferred stock + non-controlling interests + equity" (capital structure).

And we also need to know the "debt coverage", so for example the interest coverage ratio:

(EBITDA, (EBITDA – Capex), or EBIT)/ interest expense.

Supplemental financial concepts and calculations

For multiples we tend to look at LTM numbers in the income statement, so these are numbers from the last twelve months (LTM).

We also tend to "clean" these number for non-recurring items. These are items that most likely only took place once like for example: Inventory write downs and restructuring charges.

Key trading multiples

When we eventually have calculated the clean LTM EBITDAs and EVs (enterprise values) of the "comps", then we can calculate the EV/ EBITDA multiple of the comps.

Benchmark the comparable companies

When we have calculated all the financial statistics as mentioned above for all the comps, then we need to compare them with the target.

We now need to select the closest comparables in terms of business profile and financial profile. In the end, this is not a science but an art.

For the valuation of the target we in general focus on the two or three closes comparables to frame the ultimate valuation (for the comps).

When we have calculated the "comp-range" in EBITDA multiples this serves as an input for the "valuation football field".

After this we need to add more input to the "valuation football field" like:

Valuation through precedent transactions, discounted cash flow valuation (DCF) and leveraged buyout valuation (LBOs).

Source used: Investment Banking: Valuation, leveraged buyouts and mergers & acquisitions. Second edition (2013). Joshua Rosenbaum & Joshua Pearl. Wiley Publishing company. 9781118472200.

Precedent Transaction Analysis (multiples-2)

Precedent Transaction Analysis (PTA): An Introduction

PTA helps the M&A consultant to get a valuation range for a specific target company. And this valuation range is built through looking at prior M&A transactions and the prices paid. This of course can be of good help in cases like M&As and restructuring.

In order to find the precedent deals one needs to take a look at deals with similar companies involved, in similar market conditions, and they ideally took place recently.

Under normal conditions, the "transaction comps" have an higher multiple range than the "trading comps" for two reasons:

1) Buyers pay a "control premium" when they purchase another company;

2) Strategic buyers often have opportunities to realize synergies (so they can pay more).

So potential buyers and sellers look closely at multiples that have been paid in the recent past in comparable M&A deals.

How to select comparable deals?

You want to find as many relevant transactions as you can. For example you can:

-Review equity and fixed income research;

-Search M&A databases;

-Examine the M&A history of the target (or peers);

-Look in Merger Proxies for comparable acquisitions.

Concerning the databases, under here are some examples:

Bloomberg, Bureau van Dijk (Amadeus, Reach and Zephyr), company.info, Factiva, MD info, MergerMarket, OneSource, Thompson one banker etc.

Carefully study the "deal dynamics"

When you have found some deals that are potentially good to use, then it is time to look in the details. For example, what where the market conditions of the deal?

This since the market conditions have a big impact on a deal. Extreme examples are for example the height of the technology bubble in the beginning of 2000 when crazy prices were paid.

But this is not all, you also need to look at other considerations which we call "deal dynamics":

1) Was the buyer a strategic buyer of financial sponsor? Traditionally strategic buyers will pay more due to the ability to realise synergies;

2) What where the buyer's and seller's motivations for the transaction? E.g. strategic buyers are willing to pay more when the target fits in a strategic plan. And financial sponsors are willing to pay more when the target fits well within an existing portfolio company. And corporations in need for cash might sell non-core businesses relatively cheap when there is great speed of execution etc. etc. (use your common sense here).

3) Was the target sold through an auction process or negotiated sale? Auctions in general (when performed well) produce a higher price.

4) How did the buyer pay for the company, with cash or with stock? Stock in general results in a lower valuation.

Statistics, ratios and multiples

As with comparable companies analysis (comps) we put all the info of a precedent transaction into excel.

And here we want to have all the statistics and ratios as well in order to derive at a certain multiple.

First we start with multiplying the offer price times the target's fully diluted shares outstanding. Herewith all of the "in-the-money" options, warrants and convertible securities are converted (because of "change of control"). And then we follow the "equity bride" with debt (like) and cash (like) items to arrive at enterprise value.

We also want to know the purchase consideration. This refers to the mix of cash or stock that the acquirer offered to the shareholders of the target.

When an acquirer paid with cash, the acquirer can get the cash from its balance sheet, or by issuing equity and/ or by issuing debt in the markets. But they can also exchange their own shares for the shares of the target shareholders on a "fixed exchange ratio" or "floating exchange ratio". We need to know this info to assess the "deal dynamics" as discussed above.

When we have all the information, statistics and ratios, we can calculate the multiples. The most common multiple would be: (enterprise value/ LTM EBITDA).

On top of that we also like to know the premium that was paid = Offer price per share/ unaffected share price – 1 = premium paid.

And of course, we also like to know the synergies, we can even take the synergies up in the multiple: Enterprise Value/ (LTM EBITDA + synergies) = multiple with taking synergies into account. Again, we need to know this to assess the "deal dynamics".

Benchmark Comparable Acquisitions

For all the comparable transactions we want to produce the input sheet.

And then in the end we can produce the overview of all the comparable acquisitions.

When we eventually choose the few closest comparable transactions we can then take the valuation range up in the "valuation football field".

Together with DCF, comps and (sometimes) LBO analysis you have then a complete "valuation football field".

After that you only need to check whether a deal is expected to be "accretive or dilutive" with a "M&A model".

Source used: Investment Banking: Valuation, leveraged buyouts and mergers & acquisitions. Second edition (2013). Joshua Rosenbaum & Joshua Pearl. Wiley Publishing company. 9781118472200.

Discounted Cash Flow Valuation (DCF)

Discounted Cash Flow Valuation: An Introduction

Discounted cash flow valuation (DCF) is an important alternative to market-based valuation techniques like "multiples".

So DCF is very valuable when there are limited of no pure play peer companies of comparable acquisitions available.

With DCF valuation I basically look at the free cash flows of a company and we "discount these back" to get to an "enterprise value". I will discuss all these steps in more detail.

You can image that within DCF valuation we need to make a lot of assumptions, that is why "sensitivity analysis" is a very important component of this type of valuation. Here "Microsoft excel" comes in very handy, because excel is great for sensitivity analysis.

Determine key performance drivers

For DCF valuation you need to understand the target and its sector the best way possible. Think of the business model, financial profile, value proposition, end markets, competitors, key risks etc.

This way you can determine the key drivers of a company's performance, particularly sales growth, profitability and free cash flow (FCF) generation. This since we need to come up with projections of future free cash flows (FCFs). And here fore we need to have insight on the:

1. Internal value drivers: e.g. opening new facilities, developing new products, securing new customer contracts, improving operational and/ or working capital efficiency etc.

2. External value drivers: e.g. acquisitions, end market trends, consumer buying patterns, macro-economic factors, legislative/ regulatory changes etc.

Unlevered free cash flow

When we take a closer look at unlevered FCF then we mean the cash generated by a company after paying: cash operating expenses, associated taxes, funding of CAPEX, funding of operating working capital (OWC).

But prior to payment of any interest expense!!

This because FCF is independent of capital structure as it represents the cash available to all capital providers, so both debt and equity holders.

In order to estimate FCF we need to make a lot of projections, think of projections on:

1. SALES, EBITDA and EBIT;
2. COGS and SG&A;
3. TAX;
4. D&A (depreciation and amortization);
5. CAPEX;
6. Changes in OWC.

For the projections we study carefully the past growth rates, profit margins and other ratios. These are usually a reliable indicator of future performance, especially for mature companies in non-cyclical sectors.

The projection period is on average 5 years, but this depends on its sector, stage of development, and the predictability of its financial performance.

With DCF valuation is it very common (and wise) to use multiple scenarios. The "management case" is often received directly from the company and alongside different scenarios should be developed.

Sales, COGS, SG&A, EBITDA and EBIT projections

Top line projections in sales often come from "consensus estimates" (consensus among equity analysts around the world).

Equity research often provides projections for a two to three year period. For the time after that industry reports and studies of consultants can be consulted to estimate longer term sector trends and growth rates.

Of course these projections need to be "sanity checked" with historical growth rates as well as peer estimates and sector/ market outlooks.

With COGS and SG&A projections I often rely upon historical COGS and SG&A levels and/ or estimates from research in the projection period.

EBITDA and EBIT projections for the projection period are typically sourced from consensus estimates for public companies. Of course here it is wise to review historical trends as well.

TAX, D&A, CAPEX and OWC

EBIT typically serves as the start for calculating FCFs. To bride from EBIT to FCF, several additional items need to be determined, including "marginal tax rate", depreciation & amortization (D&A), CAPEX and changes in OWC.

First we need to take tax out of the EBIT in order to arrive at NOPAT (net operating profit after taxes). Here fore we use the "marginal tax rate", but the company's actual tax rate (effective tax rate) in previous years can also serve as a reference point.

After that D&A is added because these are "non-cash" items. CAPEX is deducted because this is a real cash out and this also counts for OWC. OWC needs to be carefully studied and largely consists out of the "delta" in two subsequent years between "current assets minus current liabilities".

When we have carefully made the above steps, this then results in for example 5 free cash flows (ideally in 5 different operating scenarios).

Now it is time to discount these FCFs with a discount factor which we also call the "WACC".

Weighted average cost of capital (WACC)

The WACC is broadly accepted as a standard for use as the discount rate to calculate the present values of a company its FCFs.

The WACC can be thought of as an opportunity cost of capital of what an investor would expect to earn in an alternative investment with a similar risk profile.

It basically represents the weighted average of the required return on the invested capital in a given company.

For the WACC you need to choose a target capital structure for the company that is consistent for its long term strategy.

In case you target company is not public then consider the capital structure of "public comparable companies". This since it assumed that their management teams have created right capital structures since they are seeking to maximize shareholder value.

The cost of debt in the WACC represents the company's credit profile. This is based on multiple factors like size, sector, outlook, cyclicality, credit ratings, credit statistics, cash flow generation, financial policy, acquisition strategy etc.

So for the cost of debt we can for example look at publicly traded bonds and then the cost of debt is determined on the basis of the current yield on outstanding issues. But with private debt we can also look at current yield on outstanding debt.

Cost of equity

To determine the cost of equity is a little more complex. In many cases we will use the Capital Asset Pricing Model (CAPM). With this model we will look at a suitable return for the equity of a company.

This return consists out of the risk free rate (the return that you can make while staying in bed), so for example the return on 10 year government bonds of The Netherlands.

On top of that investors want to be compensated for the "Market Risk Premium", this is the spread over the expected market return and the risk free rate.

At last this market risk premium is affected by a Beta. A Beta is a measure of the covariance between the rate of return on a company's stock and the overall market return, with for example the "Amsterdam Exchange Index (AEX)" used as a proxy for the market.

When the valuator has collected all info: Target capital structure, cost of debt and cost of equity the WACC can be constructed.

Terminal value

In DCF valuation we calculate the terminal value of all future cash flows of a company. In many case FCFs are estimated for 5 years and then we assume a company will be in a steady state.

So we can calculate the present value of the estimated 5 FCFs, but then we still have to deal with the value after these 5 years.

We can do this with two methods: the 1) Exit Multiple Method (EMM) or the 2) Perpetuity Growth Method (PGM).

With the EMM we take the EBITDA of for example year 5 and multiple it with an exit multiple. After that we need to discount back this "terminal value" to year 0 (now).

Or we can use the PGM and take the FCF year 5 and we divide it by the WACC to calculate the "perpetuity value" (with or without "growth"). Of course, this terminal value also needs to be discounted back to year 0 (now).

Eventually we discount al the FCFs of the estimation period (let's say 5 years) and we also add the present value of the terminal value. And the outcome of this calculation is the "Enterprise Value (EV)".

When we deduct all debt and debt-like items and add all excess cash and cash-like items we have then calculated the market value of equity.

And simply said, when this market value of equity is higher than the book value of equity, there is "goodwill".

Then we can add the EV from DCF in the "football field" next to EV calculations from for example "comparable companies", "precedent transactions" and a "Leveraged Buyout Analysis (LBO)".

Source used: Investment Banking: Valuation, leveraged buyouts and mergers & acquisitions. Second edition (2013). Joshua Rosenbaum & Joshua Pearl. Wiley Publishing company. 9781118472200.

Leveraged Buyout Analysis (LBOs)

Leveraged Buyouts

A leveraged buyout (LBO) is the acquisition of a company, division, business, or collection of assets ("target") using debt to finance a large portion of the purchase price. The remaining portion is financed with an equity contribution by a financial sponsor (private equity party).

Historically financial sponsors sought a 20% annual return and an investment exit of 5 years. In a traditional LBO, debt has typically comprised 60% to 70% of the financing structure, with equity comprising the remaining 30% to 40%.

Companies with stable and predictive cash flows, as well as substantial assets, generally represent attractive LBO candidates due to their ability to support larger quantities of debt.

Cash flow is primary used to repay debt during to time to which the sponsor acquires the target until the exit. The debt portion of the LBO consists a broad array of loans like bank debt, high yield bonds, mezzanine debt and equity.

LBO analysis is used to check whether the deal is interesting for a financial sponsor. The LBO analysis is used to check whether the sponsor can make the needed returns (e.g. 20%) with a certain financial projection (operating scenarios), purchase price, financing structure and exit multiple after a certain number of years (e.g. 5 years).

In sell side advisory I always make the LBO model of the deal because I want to check how the deal "looks" for a financial sponsor. In other words: Is the deal interesting for private equity?

Also in buy side advisory it is interesting to make this analysis. For example it is interesting for a strategic party who wants to buy a certain target to know what competitive bidders (like private equity) are willing to pay for the target. You will never know for sure, but at least you can make an "educated guess" when you build the LBO model.

LBO model

Income statements

Let's assume we want to build a model for a certain target. Here fore we need financial projections of the company, these can for example be obtained from a "Confidential Information Memorandum" (CIM) or from a "Discounted cash flow model" (DCF) if we have made the DCF analysis already.

We first need to build the historical and projected income statements (P&L's) through EBIT. You can first start with typing in the numbers you have received from the CIM and then later on you can add multiple operating scenarios. The different scenarios can be typed in in a separate tab in excel and with the "CHOOSE function", and a built in "toggle", you can easily switch between operating scenarios.

So in first in stance we build the model until EBIT, because we do not know yet how the deal will be financed. So we also do not know yet the interest payments that need to be taken up in the projected income statements. This does not matter for now since we get back to this later on.

Balance sheets

After a start of the estimated P&Ls we need to start building the projected balance sheets. The opening balance sheet is typically provided in the CIM and entered into the model. And you need to add extra line items for the new financing structure after the deal.

In order to build the balance sheet after the deal you need to add two adjustment columns in which you type in the sources (how the deal is paid) and uses (what is paid for) of the deal. And also add a column in which you give the "pro forma balance sheet", so actually this is the opening balance sheet after the deal.

Cash flow statements

Of course does a LBO model also need cash flow statements (CFSs). We build them through the indirect method starting with net income and adding depreciation and amortisation since these are "non-cash" items. The net income is still not correct, because the right interest expenses are not yet taken up, but this does not matter since for now we are just building up the model.

In the CFSs we also need to show the year on year (YOY) changes in the balance sheet, think about the property, plant and equipment (PPE) and also the working capital line items (e.g. accounts receivable, inventories, prepaid and other current assets, accounts payable, accrued liabilities and other current liabilities).

The amounts of the above line items are forecasted in the balance sheet also through a separate "assumption tab". Together with estimating the operating scenarios in the P&L, also estimates can be made for the line items in relation to the

working capital. And with the "CHOOSE-function" in excel and a built in "toggle" you can switch between scenarios and this also effects the working capital (and the investments in working capital in the CFSs).

Also CAPEX (capital expenditures = investments in assets) need to be taken off as a "cash out" in the CFSs. They are also the result of the delta on YOY line items in the balance (e.g. PPE). And this line item PPE is estimated again in the "assumptions tab", for example as a percentage of sales.

The financing section of the CFSs will be still left blanc, because we have not assessed yet how to finance the deal (in different financing scenarios).

Transaction structure

When we have built the estimated P&Ls, balance sheets and CFSs it is time to enter the purchase price assumptions. To calculate the price of the shares we for example take a LTM EBITDA (last twelve months) (earnings before interest tax depreciation and amortisation) times a certain "multiple", let's say for example a multiple of 8. Then we have calculated the enterprise value (EV).

In order to get from EV to the price for the shares we need to deduct "net debt", which consists out of total debt minus (excess) cash. Actually here we also need to take the "equity bridge" with "cash like" and "debt like" items into account, but I will not get into details about the "equity bridge" here.

Then in the LBO model we need to add the sources and uses. Uses is where we spend the money on for the acquisition, e.g.: equity purchase price + repayment of existing debt + call premiums (if any) + financing fees + transaction fees for the investment banker or corporate finance consultant.

These "uses" need to be financed with "sources", for example: a revolving credit facility + certain term loans + notes/ bonds + equity + cash on hand. It is common to fill the model with multiple "financing structures" since Microsoft excel enables us to run sensitivity analyses on these different financing structures.

When we have added the sources and uses we need to connect them to the balance sheet. Most likely goodwill will be paid in a transaction. This simply means that a buyer pays more than the book value of the "net identifiable assets". We need to make these adjustments in the balance sheet as well.

Debt schedule

After that we can start filling the model with a debt schedule. When all the different debt components are modelled we can then also finish the: P&Ls, balance sheets and CFSs. This since we then know the interest payments for the P&Ls, paying back of principal and heights of the debt components at the end of different years for the balance sheets and CFSs.

For the interest payments we can use the forward Libor Curve from Bloomberg as a starting point. On top of that a spread is added for the different debt components.

In a discounted cash flow model we speak of a "free cash flow", but you can also see this term back in a LBO model. In a LBO model the term "free cash flow" means: Cash available for debt repayments.

And in the LBO model it is common to build in a "cash sweep", which means that all excess cash, after the mandatory principal repayments, will be used to pay back debt. And of course it makes sense to model in a "minimum cash amount" that should stay on the balance sheet for "working capital" purposes.

Further more the debt schedule needs to be modelled like a "waterfall", so the cash needs to flow back to the lenders depending on the level of seniority, e.g. from the revolving credit facility to the term loans, to the notes/ bonds etc.

After that the P&Ls should be finished with the interest expenses and the balance sheets and CFSs with the principal repayments and new debt amounts at the end of the year.

Perform LBO analysis

When your model is complete we want to perform LBO analysis. First of all we need to know the credit statistics since the deal is highly leveraged. So your model needs to show insights on the main credit statistics like: EBITDA over interest, senior secured debt over EBITDA, net debt over EBITDA etc. Of course, this needs to be shown for all the years of your forecast.

We also need to know what the returns are for the investment. Here fore we need to take an exit into account. The common practice for an analyst for modelling practises is to take (in first instance when you build the model) a similar exit multiple on EBITDA as the EBITDA multiple on which you can buy the company. E.g. when you can buy the shares for 8 times EBITDA enterprise value, then also model an 8 times "EBITDA year 5" as exit enterprise value.

In most LBO models a "cash sweep" is modelled in as mentioned before. This way in most models you see an original equity contribution. This is the equity contribution the financial sponsor has put in at the date of the acquisition. Then we assume we sell the shares again at a certain EBITDA multiple at year 5. And then we need to deduct the "net debt" level at year 5 as well. What is left is the equity value after year 5.

Imagine you buy a firm with an equity contribution of 20 million euro (the rest is debt) at the date of the acquisition. And you then you sell it for 50 million share value at year 5 (enterprise value - net debt). Here you make a cash return of 2,5 (50 million/ 20 million).

This cash return is a number we always need to know. But a more elegant number is the IRR (internal rate of return). It basically is the honest yearly return the

investor makes. And it stands for a "discount rate" in which the present value is exactly zero, so it shows the honest return for an investor.

At the same way as we calculate the cash return we like to calculate the IRRs of the LBO model for a range of for example 10 exit years. And then the most important IRR is the IRR with an exit after year 5 since this is an average holding period for a financial sponsor.

Personally, I am a big fan of the LBO model and always like to calculate the IRR of an acquisition since it is so honest. And you can even take up the LBO "valuation" on the football field if wanted next to "comps" and "DCF".

Source used: Investment Banking: Valuation, leveraged buyouts and mergers & acquisitions. Second edition (2013). Joshua Rosenbaum & Joshua Pearl. Wiley Publishing company. 9781118472200.

The M&A Model to calculate accretion/ dilution

The M&A model – Accretion/ Dilution: An Introduction

The M&A model consists essentially out of two standalone financial models, one for the acquirer and one for the target. These models are summed up in order to form "pro forma combined financial statements".

As with a LBO model, historical financial data is entered into an "income statement (IS) tab" and "balance sheet (BS) tab" in Microsoft excel. And then assumptions like growth rates, margins, working capital assumptions etc. that drive income statements, cash flow statements and balance sheets are entered into "assumption tabs" in Microsoft excel.

And an offer price for the shares of the acquisition and acquisition structure (payment with equity vs debt, example 50%-50%) data are then entered into a "transaction summary tab" in excel.

After that the financing structure (how the debt part is built up), allocations of the purchase price premium (purchase price allocation (PPA)/ goodwill), assumptions around deal-related depreciation and amortization (because of asset write ups/ PPA) and estimated synergies are entered into a tab called "pro forma assumptions".

Concerning the financing structure, a special tab is created in which for each debt instrument key terms are typed in. This tab is called "pro forma debt schedule".

Once all the appropriate deal-related information is entered into the model, it should automatically update two tabs, 1 concerning the "pro forma credit statistics" and 1 concerning the "accretion or dilution" after the deal.

I will talk about accretion/ dilution later on in this blog, but first let's take a look at some more basics of this so-called M&A model.

Build in flexibility with Microsoft excel

As with the LBO model, a M&A model is constructed with the flexibility to analyze a given proposed transaction under "multiple financing structures" and "operating scenarios".

On the "transaction summary tab" in excel; basically the first tab, toggle cells allow the corporate finance consultant to switch amongst others between multiple financing structures and operating scenarios. Here for the "choose function" in excel is used, like I discussed in my blog on the LBO model.

This is just really handy, because it would be crazy to type in different operating scenarios and financing structures when your managing director or the client asks for this. It can now be done simply with building in a "toggle" with some choose functions. Excel is our best friend.

Financing structure and deal structure

An acquirer of a target company needs to choose among the available funds based on a variety of factors, think of cost of capital, flexibility on your balance sheet, rating agency considerations and speed and certainty to close the transaction.

Debt financing refers to the issuance of new debt or to use "revolver availability" to partially, or fully, fund a M&A transaction. Examples of debt instruments are: a revolving credit facility, term loans and bonds/ notes.

Equity financing refers to a company's use of its own stock as an acquisition currency. An acquirer can either offer its own stock directly to the shareholders of the target. Or they can first issue shares and then use the cash proceeds to pay the shareholders of the target.

Equity financing offers the issuers with greater flexibility as there are no mandatory cash interest payments, repayments of principal and no covenants (as all the case with debt).

Goodwill, purchase price allocation (PPA) and deferred tax liability

In modelling a stock sale transaction "Goodwill" needs to be taken into account. When the purchase price exceeds the "net identifiable assets" of the target, this excess is first allocated to the target's tangible and identifiable intangible assets. These are then written up to their "fair value" and we call this purchase price allocation (PPA).

These tangible and intangible asset write ups are then reflected in the acquirer's pro forma balance sheet. And they are then depreciated and amortized over their useful lives which reduces after tax earnings.

This transaction related depreciation and amortization is not deductible for tax purposes. And from an accounting perspective, this discrepancy between book value and tax value is resolved through the creation of a deferred tax liability (DTL) on the balance sheet. For example called: "deferred income taxes".

Goodwill is calculated as purchase price minus target's net identifiable assets after allocations to the target's tangible and intangible assets (PPA). Once calculated, goodwill is added to the asset side of the acquirer's balance sheet and tested yearly for "impairment".

Merger consequences analysis

Merger consequences analysis measures the impact on "earning per share" (EPS) in the form of "accretion/ dilution analysis". And it also measures the credit statistics after the deal because of balance sheet effects.

This analysis enables strategic buyers to fine tune the deal for ultimate purchase price, deal structure and financing mix. Of course, for this key assumptions need to be made regarding purchase price, target company's financials (operating scenarios), and deal structure and forms of financing.

A corporate finance consultant does this by first constructing standalone operating models (income statements, balance sheets and cash flow statements) in excel for both the target and the acquirer. As mentioned, these models are then combined into one pro forma financial model that incorporates all the transaction related adjustments.

Merger consequences analysis: Credit statistics

Acquirers of target companies are often guided by the desire to maintain key target ratios for the credit statistics in setting up their M&A financing structure.

Most widely used credit statistics are grouped into leverage ratios (e.g. debt to EBITDA and debt to total capitalization) and coverage ratios (e.g. EBITDA to interest expense).

Merger consequences analysis: Accretion/ Dilution

Accretion/ dilution analysis measures the effect of a transaction on a potential acquirer's earnings, assuming a given financing structure. It centers on comparing the acquirer's EPS pro forma (after the transaction) versus on a standalone basis (before the transaction).

If the "pro forma combined EPS" is lower than the acquirer's standalone EPS, the transaction is said to be "dilutive".

Conversely:

If the pro forma EPS is higher, the transaction is said to be accretive.

A rule of thumb for 100% stock transaction (100% paid with equity) is that when an acquirer purchases a target with a lower P/E ratio (Price/ Earnings), the acquisition is accretive. In this case, transactions where an acquirer purchases a higher P/E target are de facto dilutive.

The latter could be reversed do by "sizable synergies".

Accretion/ dilution analysis is a key screening mechanism for strategic buyers. Acquirers do not pursue transactions that are dilutive over the foreseeable earning projection period.

For modeling purposes, key drivers for accretion/ dilution are purchase price, projected earnings for buyer and target (operating scenarios), expected synergies, form of financing, debt/ equity mix and the cost of debt.

The most accretive M&A deals have (relatively) low purchase prices, cheap forms of financing (more debt) and significant synergies.

Source used: Investment Banking: Valuation, leveraged buyouts and mergers & acquisitions. Second edition (2013). Joshua Rosenbaum & Joshua Pearl. Wiley Publishing company. 9781118472200.

WACC, Cost of Capital & Discount Rates: The Full Story !

Source blog - Book: The real cost of capital: A business field guide to better financial decisions (2004). Prentice Hall Financial Times/ Pearson Education. Tim Ogier & John Rugman & Lucinda Spicer.

Article 1: Valuation & Betas (CAPM)

Introduction to the "Capital Assets Pricing Model" (CAPM)

An equity investor can eliminate his or her exposure to specific risk by holding a portfolio of many different equity investments.

These equity investors only bear to called "systematic risk", because "specific risk" of companies can be diversified away by holding stakes in different companies.

The most commonly used model for assessing "systematic risk", and calculating the "cost of equity capital", is the "Capital Asset Pricing Model" (CAPM).

The formula of the CAPM goes as follows:

Cost of equity (Ke) = risk free rate (Rf) + equity beta of investment (Be) * Equity market risk premium (EMRP).

In this blog I will shortly discuss the Rf and the Be extensively. The next blog after this one is purely devoted to the EMRP.

Risk free rate

The first component of the CAPM is the risk free rate. This represents the return an investor can achieve on the least risky asset in the market.

Ordinary government bonds are the securities used by most valuation practitioners when estimating the cost of capital.

Most cost of capital and valuation work is conducted in nominal terms (not corrected to "real terms" for inflation) and ordinary governments bonds provide a ready measure of the nominal risk free rate.

The maturity for the risk free instrument should match the profile of the cash flows in question.

With my own valuations in The Netherlands I use 10 year government bonds, but I will get back to this later on in this sequence of blogs on the "cost of capital".

Introduction to Betas

The second component of the CAPM is the beta, or more precisely the equity beta.

You can find the component below in the CAPM formula:

Cost of equity (Ke) = risk free rate (Rf) + equity beta of investment (Be) * Equity market risk premium (EMRP).

The beta is the factor in the CAPM by which the EMRP is multiplied in order to reflect the risk associated with a particular equity investment.

The EMRP is discussed in the blog after this one, and I will now zoom in further on the beta.

Beta and risk

Shareholders face two types of risk: Market (or systematic) risk and specific risk.

Specific risks are associated with events affecting cash flows that are specific to the company in question.

Market risks on the other hand are risks correlated with the stock market or general economy, such as the possibility of a rise in interest rates.

Equity investors do not need to bear specific risks, which due to their random nature, offset each other (you win some you lose some), and can be eliminated by holding a portfolio of diversified investments (this is "modern portfolio theory").

Market risks on the other hand can not be eliminated by diversification.

They represent the fundamental risks that shareholders have to bear, because they affect all stocks to a greater or lesser extent. And it is this level of market risk that beta seeks to measure.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Calculating beta

In practice the best way to estimate the beta of a firm is to calculate the historical covariance between the returns on the firm's equity and the returns from the stock market as a whole. And then use this as a proxy for the future beta.

The formula is: Equity beta (Be) = Covariance between returns on a certain stock and the returns on the market index / Variance of the market index.

To derive beta a least squares regression is performed, measuring the observed historic relationship between the change in a company's share price, plus the dividend income received (or without dividend), and the change in the value of the stock market.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Reasons for different values in betas

The average equity beta in the market must be one. But firms that expose their equity investors to greater systematic risks than the average firm in the market have betas in excess of one.

And those that expose their equity investors to lower systematic risks have betas below one.

A number of factors drive betas, these include:

1. Cyclicality of revenues;
2. Operational leverage;
3. Financial leverage.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Beta driver 1: Cyclicality of revenues

Beta measures the historic observed correlation of changes in the returns on a firm's equity with changes in the returns on the market as a whole.

While intuitively beta is associated with the overall volatility of a business, as measured by the volatility of earnings, this is not what beta actually measures.

If much of the overall volatility of a business is not correlated with the market as a whole, then beta will not be large.

This is as it should be since much of this volatility may be diversifiable at the level of the investor's portfolio, and beta only measures volatility that is undiversifiable.

What really matters to equity investors who hold portfolios of equities is the degree to which a company's cash flows are affected by factors systemic to all companies.

So for example: Changes in GDP, interest rates, inflation etc.

And this is what betas show.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Beta driver 2: Operational leverage

Operational leverage is defined as the level of fixed costs in relation to the total costs of a company.

And this level has an impact on the systematic (market) risk to which equity investors in a firm are exposed.

Fixed costs magnify the effect of underlying systematic risk.

Because if revenues were to fall due to systematic (market) factors, then the fixed costs of the firm would still have to be met out of the cash generated.

Variable costs would effectively provide a cushion to revenue cyclicality, whereas fixed costs "gear up" revenue cyclicality, and increase the systematic (market) risk of the free cash flows.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Beta driver 3: Financial leverage

Financial leverage also "gears up" the systematic (market) risk of the free cash flows (to equity providers).

This because debt service payments do not vary with the state of revenues and have to be met out of cash generated.

This is referred to as "financial risk" as opposed to "operational risk".

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Equity and asset betas

Betas provided by data-providers such as DataStream and Bloomberg are derived directly from historical market information on equities and are therefore known as equity betas.

These betas take into account the effects of financial leverage and operational risk.

Asset betas on the other hand are generally unobservable. They reflect only the operational risk of the underlying business assets. And these assets betas have to be calculated from equity betas by adjusting the gearing of the company in question.

So just to wrap up: Equity betas do include operational and financial risk. And asset betas only include operational risk.

The formula to calculate asset betas is as follows:

Asset Beta (Ba) or unlevered beta = equity beta (Be) / (1 + market value of debt (D)/ market value of equity (E)).

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

The difficulties in measuring Betas

Historic beta estimation presents some challenges like for example:

1. Over what period should we measure beta;

2. Frequency and number of observations used;
3. Is comparator or sector analysis useful.

Measuring Betas 1: Choice of period for measurement

It is desirable to have as many observations as possible in order to maximize confidence in the statistical reliability of the beta measured. This is measured by the standard error of the beta, the lower the standard error of the beta, the greater the confidence one can have in the estimate.

On the other hand it is important to recognize that corporate risk profiles can significantly change over the years.

In practice this trade-off is best solved by selecting a period that is long enough to capture sufficient observations to minimize standard errors, but not so long that it is likely that the corporate risk profile will have changed fundamentally.

It is common to use 5 years as a default duration.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Measuring Betas 2: Frequency and number of observations used

Five years of stock market information is typically considered appropriate for the purpose of beta estimation.

But should the share price and stock market index information used in the regressions be monthly, weekly or daily?

Generally speaking, regressions using monthly information have lower standard errors than regressions using either weekly or daily data.

This probably because monthly observations are less likely to suffer from "noise" in comparison to weekly or daily observations.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Measuring Betas 3: Comparator analysis, finding a peer

A practical solution to the problems of errors in beta estimation is provided by analysis of comparable companies.

This is also a very useful and practical technique for estimating betas for companies that are not listed on the stock market !! 😊

For comparator work it is needed to strip out the effects of different levels of leverage. Only this way one can make a true comparison.

This because different business in the same sector can have different levels of leverage, so equity betas need to be converted to assets betas (unlevered betas).

Asset betas (or unlevered betas) can be calculated with the formula mentioned above.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Source blog - Book: The real cost of capital: A business field guide to better financial decisions (2004). Prentice Hall Financial Times/ Pearson Education. Tim Ogier & John Rugman & Lucinda Spicer.

Article 2: Valuation & Equity Market Risk Premium (CAPM)

Introduction to the Equity Market Risk Premium (EMRP)

The Equity Market Risk Premium (EMRP) is the most significant number in cost of capital analysis.

The EMRP is the additional expected return that an investor demands for putting his or her money into equities of average risk, rather than a risk free instrument. The formula is:

EMRP = The expected return on a fully diversified market portfolio of securities – (minus) the expected return on a risk-free security proxied by the return on a government bond.

The EMRP can be calculated based on a:

-Historic approach;

-Forward looking approach.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Historic approach to determine EMRP

The most used method to determine the EMRP is the "historic approach". And within this method the EMRP can be calculated with "Arithmetic means" versus "Geometric means".

Historic returns achieved by a diversified market portfolio of equities are best proxied by the returns achieved from the stock market itself. And historic returns on government bonds (risk free rate) can then be subtracted to give an estimate for the EMRP.

And now is the question how these historic returns should be calculated. It can be done with arithmetic means or geometric means, and the resulting EMRP will differ depending on the type of mean that is adopted.

Arithmetic means suggest higher historic EMRPs than geometric means. This is because an arithmetic mean simply averages the individual annual returns over the period considered. But geometric means calculate the annual compound growth over the period.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Historic estimates of the EMRP

The historic EMRP also depends on the number of past years over which it has been calculated. This can result in a big variation in the level of the EMRP itself.

In the US, data going back to 1926 published by "Ibbotson" is widely used. Here they come up with a EMRP of 5.8% (geometric).

Within this respect it is interesting to note that when looking at the period 1926-1961 and 1962-1997 the EMRP is respectively 7,6% and 4.0% (both geometric). This means that the EMRP is going down.

Explanations could be that:

-From 1962-1997 stock markets were relatively stable and bond markets relatively unstable. This would lead to an increase in fixed income returns (bonds) which brings the EMRP down;

-From 1962-1997 a substantial increase in pension funds and other long term investors came to the market. And an increase in supply of capital leads to a reduction in the EMRP (ceteris paribus).

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Forward looking approaches: Bottom up model

Forward looking approaches estimate the EMRP on the basis of market forecasts rather than historic returns. Here for are two basic techniques: bottom up studies and top down reviews.

Bottom up models typically work by projecting future company dividends. And then the internal rate of return (IRR) is calculated that sets out the current market capitalization equal to the present value of the future expected dividends. (I will discuss this "dividend discount model" later in this sequence of blogs on the "cost of capital")

And a similar procedure can be applied to all companies in aggregate, in order to obtain a measure of the expected growth rate of the market.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Forward looking approaches: Top down approach

The top down approach uses a combination of the dividend yield model and long-term GDP growth to estimate expected returns.

The model takes the aggregate current dividend yield of the market and adds to this long term GDP growth as an estimate for growth in corporate dividends.

The rational for using GDP growth as an estimate for the growth of dividends is that it is a reasonable assumption that the share of profits in GDP will remain constant in the future. This would imply that GDP growth could be a satisfactory estimate for the growth of corporate dividends.

E.g. If the aggregate dividend yield in the market was 3% and estimated long term GDP growth 2,5% then the future equity returns are estimated 5,5%.

With a risk free rate of 2%, this would imply a 3,5% EMRP.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Summary on EMRPs to use

Depending on whether you look at historic (arithmetic or geometric) or future approaches to determining the EMRP one gets different numbers.

Under here I summarize the possible outcomes for EMRPs to use (in developed markets):

-EMRP historic: Between 4% and 8%;

-EMRP forward looking: Between 2% and 6%.

I believe that for every valuation professional it is very important to pick an EMRP in your models and valuation reports WITH a source, and explanation on how, and why, you think this EMRP is suitable for your valuation.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Source blog - Book: The real cost of capital: A business field guide to better financial decisions (2004). Prentice Hall Financial Times/ Pearson Education. Tim Ogier & John Rugman & Lucinda Spicer.

Article 3: Is the Capital Asset Pricing Model dead ? (CAPM)

Introduction: Reviewing the Capital Asset Pricing Model (CAPM)

In this blog I will talk about the CAPM and other competing models that are used to calculate the cost of equity.

The main approaches to calculate the cost of equity are:

-Explanatory models: These models use assumptions with statistics from market data to calculate the cost of equity. These models include CAPM, Arbitrage Pricing Theory (APT) and the Fama French Three Factor Model.

-Deductive models: These models deduce the cost of equity from current share prices and discount rates on estimated growth. An example of the deductive approach is the "Dividend Discount Model" (DDM).

Let's now look at these explanatory and deductive models in more detail.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Explanatory models of the cost of equity

Most cash flows will have an expected variation or volatility. And cash flows vary for two reasons.

First because of generic economic and market risk factors to which every business is exposed. And seconds, because of specific risk factors that relate to the operating environment of the particular project or company.

As mentioned before, "modern portfolio theory" suggests that the second type of risk, specific risk, can be "diversified away". So that in efficient capital markets portfolio equity investors are only exposed to market risk.

The explanatory models that will be covered here are all based on the hypothesis that equity investors hold diversified portfolios of equity investments. Therefore they only require returns for market (systematic) risk.

Let's now take a look at the CAPM, the Arbitrage Pricing Theory (APT) and the Fama French Three Factor model.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Explanatory model 1: Capital asset pricing model (CAPM)

CAPM is used all around the world. And CAMP is a relatively simple method for calculating the cost of equity in order to explain a complex world.

It tries to predict the future returns required by investors through the examination of historic returns. This since usually Beta and the Equity Market Risk Premium (EMRP) are estimated with reference to the past.

A number of studies have been carried out in order to test whether CAPM holds over time. These involve forming portfolios of securities ranked by beta and testing over long periods of time whether actual returns can be explained by the different portfolio betas.

Some work has supported CAPM. While other studies suggested that other factors seem to be useful in explaining the relationship between stock pricing and returns in addition to beta.

These factors are for example: Total capitalization, dividend yield and ratio of book value in relation to market value.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Explanatory model 2: Arbitrage Pricing Theory (APT)

In CAPM the beta is generated by regressing the movement in returns on a specific security against the returns on the market as a whole.

A beta of 1 means that the security is perfectly correlated with the market, and a lower or higher beta means movements are less or more correlated.

Within CAPM all that matters is the level of the beta since the risk free rate and the EMRP are common across all stocks (in the same geography).

So it does not matter what factors have driven the beta to a certain level.

Now APT introduces a range of coefficients and terms which play a similar role in capturing risk to that which beta does for CAPM.

But these terms are for fundamental economic variables which are considered to be important in determining how sensitive a stock is to market risk factors.

Some examples are: interest rates (long-term/ short-term), inflation and business outlook.

Depending on the variables chosen, some studies suggest that these models may give a better explanation of investment returns than CAPM in industries such as banking, oil and utilities.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Explanatory model 3: Fama French Three Factor Model

The Fama French Three factor model is built on the same principle as the CAPM and APT.

But as well as a measure similar to beta, this models adds extra factors like company size and the ratio of book value to market value.

The risk free rate is the same as within CAPM.

I will discuss the use of size adjustment in great detail later in the sequence of blogs on the cost of capital

And the inclusion of the ratio of book to market value implies that the cost of equity rises as a company's market capitalization falls.

The rationale for this appears to be that equity investors will require a higher return as a firm gets closer to being in state of financial distress.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

The output of explanatory models on the cost of equity.

Tim Ogier, John Rugman and Lucinda Spicer are showing in their great book "The Real Cost of Capital" of 2004 (see the source details at the end of this blog) the effects on outputs on taking a certain model (table page 90 of the book).

They show the costs of equity at the beginning of 1999 of major companies in:

Financial services, integrated petroleum and general companies.

The calculations come from US data sources and dollar interest rates are used.

Costs of equity (Average):

General Companies (e.g. Coca Cola, General Motors Group, McDonald's Corp, Proctor & Gamble, Walt Disney Company):

-CAPM: 10.50 %

-APT: 12.15 %

-Fama French: 9.53 %

Integrated petroleum companies (e.g. Chevron Corp, Exxon, Texaco):

-CAPM: 8.07 %

-APT: 10.81 %

-Fama French: 10.12 %

Financial Services companies (e.g. Citigroup, Morgan Stanley Dean, Wells Fargo):

-CAPM: 12.94 %

-APT: 14.93 %

-Fama French: 18.47 %

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Deductive models of the cost of equity

Deductive models seek from market available information what the cost of equity is.

An example is the "dividend discount model" (DDM).

This model takes the cost of equity from the current share price, combined with forecasts of future movements in dividends and growth estimates of a company or market.

In its simplest form the DDM uses a constantly growing cash flow in perpetuity. And a more sophisticated approach uses a formula which divides growth of dividend flows into various stages.

The advantage of this approach is that in the real world, forecasts of investment returns and growth expectations can be used to build up a forward looking picture of the cost of equity.

This does not mean we can forget for example CAPM, because the downside of this deductive approach is that forecasting of dividends and growth is very difficult.

Having said all this, CAPM is still very much used all over the world. Also more than APT and Fama French, probably because these methods are more complex to understand.

And because so many business decisions are made on CAPM, I do not dare to say CAPM is dead, although its shortcomings.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Source blog - Book: The real cost of capital: A business field guide to better financial decisions (2004). Prentice Hall Financial Times/ Pearson Education. Tim Ogier & John Rugman & Lucinda Spicer.

Article 4: Valuation & the cost of debt (WACC)

Introduction: The cost of debt

Essentially there are two sources of capital for a company: Equity and debt.

I have talked about equity before and when I have talked about debt, we can determine the weighted average cost of capital (WACC) of a company.

(in order to do that properly we need to take the right "capital structure" into account, this will be the topic of the blog after this one)

The WACC consists out of the cost of equity times the level of equity + the cost of debt (after tax) times the level of debt.

Characteristics of debt

Debt can take the form of loans, bonds and overdrafts.

In business applications when practitioners refer to the "cost of debt" they actually mean the "promised yield on debt".

This means that in the event that a business to which an investor has lent money is successful (due to specific risk factors), the debt investor simply receives the contracted interest payments and the repayment of the principal.

But with using the promised yield they do not take into account the possibility of default. The promised yield taking default into account is called the expected yield.

In general this is not a problem since with for example business valuation (this is what I do) we mostly value companies "going concern".

But technically we are overstating the true cost of debt and in the end the WACC.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Different types of debt

As mentioned, debt can take the form of loans, bonds and overdrafts.

Debt instruments have become much more complex in recent years and carry a variety of different terms.

The notes on the accounts of a company (from an annual report) will usually reveal a large array of debt instruments.

Treasury departments will use the money markets to raise short term funds or cover currency positions. And they use the bond markets to secure long term financing and cover cash flows in many currencies.

Some debt instruments are quite simple, but also more complex debt instruments are frequently used that include additional benefits like "options to convert" or subscribe for equity.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

The weighted cost of debt

When a company uses a wide variety of debt it is necessary to calculate the cost of debt for each individual instrument to establish the overall cost of debt.

This since you need to combine the costs of each individual instrument (proportionally), in order to calculate the weighted average cost of debt.

However, in practice it is easier to calculate an estimate of the "generic long term cost of debt" for a specific firm. And then consider whether any complex financial arrangements in place change the generic cost of debt.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Debt Margin

The pre-tax cost of debt can be expressed as:

Cost of debt = risk free rate + debt margin for default risk.

Investors providing debt to companies expose themselves to risk since companies can default on their obligations to lenders, whether they are banks or bondholders.

To compensate them for taking on this default risk lenders require a higher return for lending to a company rather than a government.

And this is known as the "debt margin", which is the difference in the redemption yield on a corporate bond and the yield on a government bond (risk free rate).

In time, as the risk of corporate default increases, the returns required by investors also rise.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Calculation the debt margin: Direct methods

Debt margins can be calculated using information on bonds traded in the market.

Debt margins are the observed difference ("spread") between the redemption yield on a government bond and the redemption yield on a traded corporate bond of comparable maturity.

For a company there are two direct ways in which debt margins can be calculated.

And later on indirect methods will be mentioned.

Direct methods:

First, you can look directly at the debt margins of traded corporate bonds issued by the company itself. Or you can look at first-hand information from the company itself about very recent borrowing margins on debt provided by third party banks.

Second, you can base the debt margins on other companies with traded debt, which are good close comparators to the company in question. Good comparators are companies in the same sector, equivalent size, financial health and gearing.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Calculation the debt margin: Indirect methods

Where debt margins cannot be directly measured from the market, then indirect methods can be used.

These estimate the cost of debt either by using credit ratings available in the market. Or by understanding the cause of default risk using financial analysis to estimate a "synthetic" credit rating.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Using a credit rating

Credit rating agencies analyse the projected financial performance of companies in order to assess their risks of default. And they provide a ranking from the safest to the least creditworthy.

Rating agencies examine complex quantitative and qualitative factors to assess their ratings for companies.

In some cases it is not possible to observe relevant corporate bonds directly.

For example, a business that has not yet started will not have issued bonds. Even if the business being examined has issued bonds these may not have the appropriate maturity dates.

In addition, it is sometimes more convenient to derive a broad benchmark of the cost of debt (a "generic cost of debt", as mentioned earlier) for a company.

This rather than going to all the trouble of calculating the yields and interest rates on each of the company's debt instruments separately. In order to combine them into a weighted average cost of debt.

In these cases it is possible to use credit ratings as the basis for evaluating a company's debt margin. This without the need to observe the yields on its debt directly.

Credit ratings are intended to reflect the probability of default, and spreads widen with a higher risk of default. So there is a relationship between the observed market spreads and credit ratings.

Here fore you can find back on tables the averaged spreads observed in the market, by rating (and by different industries), on bonds varying in maturity.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Using a synthetic rating

Where no credit rating is available for the specific company some financial analysis is needed.

Analysis of the financial ratios of the company and financial ratios associated with specific ratings can provide a shortcut to get a sensible rating.

So with some knowledge on the key financial ratios of a company and information on the average ratios for a specific rating, it is possible to get a credit rating for a company.

This in order to derive an estimate of the debt margin.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Source blog - Book: The real cost of capital: A business field guide to better financial decisions (2004). Prentice Hall Financial Times/ Pearson Education. Tim Ogier & John Rugman & Lucinda Spicer.

Article 5: Valuation & Capital Structure (WACC)

Introduction: Capital structure

In the previous blogs I have discussed the cost of equity and the cost of debt.

In order to complete the weighted average cost of capital (WACC) we need to know the weights for the cost of capital components (debt and equity), so we need to find a capital structure to use.

Of course we can start with the current capital structure of the company to value, but please be careful, you need to use "market values" here. So the market value of equity, and the market value of debt.

But this current capital structure is sometimes not representative for the future financing structure.

And with private companies, we do not know the "market value of equity" since this is what we are calculating with the WACC. So we have a "chicken & egg" problem here.

With using a target, or optimal, capital structure we remove the "circularity" between the cost of capital and valuation.

Because the market value of equity determines the capital structure (on market values), which in turn determines the equity beta and the cost of equity, which in turn determines the market value of equity.

Before we get into this in more detail, let's first discuss capital structure itself, and to what extent it influences the value of companies.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Does capital structure matter?

In the Nobel prize winning work of the famous Franco Modigliani and Merton Miller of 1958 (MM), the financial economists questioned whether the source of financing mattered.

They challenged the way of thinking at that time by suggesting that the value of an investment only depends on its expected cash flows and the cost of capital. And that this was entirely independent on how the investment was financed.

This does not sound very intuitive since debt is almost always cheaper than equity. So equity holders demand almost always a risk premium that higher than the margin debt holders require.

So why would MM have argued that when a firm increases its proportion of debt would not reduce the cost of capital, and subsequently increase its value ???????

The reason is that as a firm obtains more debt, both debt and equity become more risky, and the costs of both debt and equity rise.

In my previous blogs we found that financial leverage increases the size of an equity beta, so leverage increase the cost of equity calculated with CAPM.

And MM proposed that the expected return on (or cost of) equity rises in line with the debt to equity ratio.

In my last blog on the "cost of debt" we also found that debt margins are related to credit ratings. And credit ratings are calculated according to financial characteristics of an investment.

So an increase in the amount of debt in a company will result in worse "financial ratios", and this will lead to a lower credit rating. And a lower credit rating will lead to a higher debt margin, so a higher cost of debt.

Summarized, when a company gets more debt, cheaper debt replaces more expensive equity. BUT at the same time both the cost of equity and the cost of debt increase.

In the purest version of the MM theory, these two effects exactly offset each other, and the WACC is indifferent to the debt/ equity ratio.

After this theoretical discussion, now let's jump back to the real world.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Capital structure in the real world

In the real world, when tax is taken into account, the cost of capital falls as the debt/ equity ratio increases. This because in the real world, the more a company borrows, the more tax it saves.

When tax is taken up in the MM theory it shows that firms maximize their value by taking up as much debt as they can.

But this is also not possible in the real world, and this is also not how managers behave.

Managers need to carefully think out their levels of debt, and they might need some "slack", this for example to execute on opportunities or to act as a buffer when the economy is going down.

And in reality, as debt increases, the risk of bankruptcy will also become bigger. This risk is non-linear to the level of debt and difficult to measure.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Optimal capital structure

The relationship between the WACC and level of debt in the real world is as follows:

WACC falls with taking up more debt.

This because the lower cost of post-tax debt and despite the increases in the costs of both debt and equity.

But beyond a certain point (the optimal capital structure), the WACC will start to increase again, because of negative effects of the debt on the cost of equity and cost of debt.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Issues with an optimal capital structure

The key issues in choosing an optimal capital structure contain taking the effect of the level of debt on both the cost of debt and cost of equity into account. This by also taking the tax relief of debt into account.

But this is theory, and this is a little more complex in real life. Because the relationships between gearing with both the cost of debt and equity are not 100% clear and known.

So in practice, debt levels are set by management on several factors, and some of these factors have more to do with perception than actually hard numbers.

Some examples of these factors:

Example 1

If capital markets were efficient then a company that wishes to invest in a value enhancing new venture would be able to arrange financing for this.

But because of capital market imperfections, capital is not always available, so companies like to take up "slack" on their balance sheets in order to execute on opportunities that emerge;

Example 2

Managers may be reluctant to increase debt to a optimal level for a number of reasons. For example because this puts more pressure on them to deliver strong results (since debt payments need to be met, and dividends not).

Or because more debt increases bankruptcy of their companies, which would take away their jobs;

Example 3

When companies raise large amounts of debt, for example in a Leveraged Buyout (LBO), there is some evidence from US market studies from the '90 on "predatory pricing".

This means that competitors are fighting highly leveraged companies on price, in order to push them out of the market, because they have no "slack". For these "attacks" managers could decide to not gear up with debt to the optimum;

Example 4

On the other hand, if despite risk, management decides to take on extra debt, this might suggest to investors that managers are confident about the financial strength of the company.

And it may also suggest that this debt will discipline the managers (since payments of interest and principle need to be made). This is called "signalling theory".

The above examples just show the complexity of determining what the optimal capital structure is.

But we steel need to pick one! And we can do this with:

-Industry benchmarks, and,

-Fundamental analysis.

Let's take a look at both!

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Choosing capital structure with: Industry benchmarks

Within an industry it is likely that there is a certain range of debt levels for the companies in the industry.

It would be possible for a company in the industry to be temporary "under levered", but capital markets should provide incentives for these firms to "lever up" since they are failing to take advantage of opportunities to increase value.

And "over leveraged" firms will have an incentive to restructure to "normal levels" because they become to risky.

So often is believed, that for an industry, the average level of gearing is close to the optimal level.

This because there is a "cash flow variability" associated with a certain industry, so their capital structures must be are optimally built for that.

So it is important to pick the right industry benchmark as the level of debt in the capital structure vary widely across industries.

These differences of capital structure between industries can be attributed to:

-Different degrees of revenues cyclicality;

-Different growth potentials;

-Varying fixed costs of operations, etc.

And remember that companies in industries with less systematic risk, which shows from a low asset beta, can in general take on higher debt levels in their capital structure.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Choosing capital structure with: Fundamental analysis

The alternative to the average debt level of industry benchmarks is fundamental analysis.

Here you need to analyse projected cash flows of the business in order to check how much debt it can support.

Financial models can be constructed which can simulate the performance of a business at different levels of gearing, calculating the:

-Resultant cost of equity;

-Resultant cost of debt;

-Resultant firm value.

This in order to explore what level of debt in theory maximizes the value of the company.

Such models use hard market information on debt margins, the probability of bankruptcy etc.

But they may not fully reflect the effects of softer factors such as "signalling" and management desire to keep a little war chest for future instant opportunities.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Source blog - Book: The real cost of capital: A business field guide to better financial decisions (2004). Prentice Hall Financial Times/ Pearson Education. Tim Ogier & John Rugman & Lucinda Spicer.

Article 6: International WACC & Country Risk – Part 1

Introduction: Country risk

By country risk is meant the downward risks to cash flows, and more specific, the risk factors which have the potential to affect all investments in a country simultaneously.

These include political, economic, financial and institutional risks associated with a country.

It is very hard to adjust cash flows with country risks, because it is hard to estimate to what extent the risks above have an effect on cash flows.

For this reason, many practitioners add a "country risk premium" (CRP) to a CAPM based cost of capital.

The CRP for a country can be derived in a number of ways:

-Simply adding a premium of a few percentage points based on subjectivity;

-Examining the yield spreads on sovereign bonds.

In this blog the cash flows will not be adjusted for country risk factors, so then it is logical to include an "uplift" for country risk in the WACC calculations for international investments.

Although you need to be careful with adding a CRP (and where). More on this topic later on in this blog.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Country risk issues

The sovereign spread approach is often used to calculate the CRP as mentioned. The CRP estimated from the sovereign spread approach is a spread on debt. But the same CRP is frequently used in calculations of the cost of equity.

Let's now first take a look at the 5 main approaches to calculate a cost of equity in international markets. And later on we will look at the "international cost of debt" and "international WACC".

-Method 1: Global CAPM model;

-Method 2: Home CAPM model;

-Method 3: Foreign CAPM model;

-Method 4: Relative volatility model;

-Method 5: Empirical analysis basis on country credit ratings.

This this blog; "Valuation: International WACC & Country Risk – Part 1", I will discuss the cost of equity methods 1, 2 and 3.

And in part 2 of this blog (coming soon), I will discuss method 4 and 5, including the international cost of debt and international WACC.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Method 1: The global CAPM approach

This model measures all of the variables assuming there is a global supply and demand for all forms of capital.

The model is therefore based on a global risk free rate, a single global EMRP (equity market risk premium) and a global beta.

So it assumes that investors hold fully diversified international portfolios made up of stocks from around the world.

And it is common to implement the model in a particular currency. So for example, the US implementation of the global CAPM would be to use the US risk free rate.

And then use a "world equity index" measured in dollars in order to estimate beta.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Global beta

A source for a global market portfolio is the "Morgan Stanley World Capital Indices" (MSWCI).

Estimates of global betas can be sources from data provides such as Bloomberg, by using one of the MSWCIs as a benchmark index in the process to calculates betas.

Since most individual stock markets are not perfectly correlated with the world market, betas with respect to the MSWCI are often lower than betas calculated with respect to a home market.

The most likely explanation for lower global betas is that for example UK listed companies with significant parts of their business in the UK, are much more likely to be influenced by factors that affect the UK stock market, than factors that drive the global index.

Because betas are measured by correlating changes in company's share prices in relation to stock market indices, ceteris paribus, this would lead to higher measure home betas than global betas.

The phenomenon of global betas being lower than home betas is empirically validated by "Bruno Solnick". He demonstrated that adding international investments to a domestic portfolio usually reduced the standard deviation of portfolio returns through greater diversification.

For practitioners this would mean that in situations where a company's shareholder register is largely dominated by investors holding fully diversified global portfolios, then there are strong arguments for using the global CAPM.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Global EMRP

If it would be appropriated to apply a global model, then there would be a single global EMRP, which could be calculated in any country.

But even if capital markets are integrated the EMRP may vary, because of the composition of stocks in the specific market.

For example, a specific country might have a composition of stocks that are more skewed towards low risk sectors as the utility sector. And it is reasonable to expect that these stocks will generate returns lower than of average beta stocks.

In these circumstances the EMRP will vary from country to country because of different stock compositions. So countries with a lot of high systemic risk stocks will have relative high EMRPs, and countries with lots of low systematic risk stocks will have relatively low EMRPs.

This effect is larger in emerging markets where the local market index may be dominated by a few large companies.

Now the question comes up on how to calculate the global EMRP when individual country EMRPs vary due to a specific stock composition.

A practical approach offered by the famous research institute in valuation "Ibbotson Associates" is multiplying an EMRP that has been measure for a specific market with the correlation of that market with the world index.

So this means calculating a "beta" for individual world markets with reference to the global index.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Global risk free rate

If it is considered appropriate to apply a global CAPM, then this implies there is a single market for capital, and hence a single global risk free interest rate.

This only complexity arises where expected different inflation levels and currency movements mean that the nominal risk free rates (nominal = including inflation, real = excluding inflation) will differ between countries.

A way to derive a global risk free rate is to calculate the real (= excluding inflation) rate of return on government bonds of a country that is considered to be of top rated credit quality. And this "real figure" (excluding inflation) can then be converted into nominal terms (including inflation) in whatever currency required.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Method 2: Home CAPM approach

The home CAPM approach assumes that equity markets are segmented and calculates CAPM variables with respect to the home benchmarks. With "home" is meant the country where the investor is located.

The key feature of this approach is that it involves using all the variables in relation to the home market portfolio.

So if investors would hold a globally diversified portfolio, the situation would be best approximated by a global CAPM approach.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Home beta

The correct measure of "systematic risk" is given by a beta measured against the home portfolio.

So when a US company is going to invest in a UK electricity utility company, then the correct beta from the perspective of "home CAPM" is the beta of "UK electric companies" calculated by performing a regression against the US market.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Home EMRP

The EMRP for the home CAPM approach is estimated just as the standard CAPM approach.

But for investments in some countries, especially emerging markets, practitioners sometimes add a premium to the EMRP calculated on the home basis. This in the form of a CRP, as mentioned before.

But the question is whether taking a higher EMRP than in the home market EMRP would be appropriate ?

The home market CAPM is often adopted when the international investment is taken by an investor whose other investments are either concentrated in the home market, or only partially diversified internationally.

But evidence suggests that adding stocks from international countries to a home portfolio can actually reduce overall portfolio variability.

This undermines the case of increasing the EMRP. So maybe we better take up the CRP in the home risk free rate.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Home risk free rate

Concerning the risk free rate care needs to be exercised to that the "nominal rate" is used appropriate to the currency denomination of the cash flows.

And that a CRP is applied only if the cash flows have not already been adjusted for country risk.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Method 3: Foreign CAPM approach

It is also possible to estimate CAPM variables using foreign market information. By foreign we mean the country where the investment is located.

So an investment in India includes an Indian risk free rate, and Indian company beta (derived by regressing the company's stock with respect to the Indian market), and an EMRP based on Indian estimates.

But the problem with this method is that often it is very difficult to find sufficient or reliable financial information on developing markets.

When it is possible to use a foreign CAPM approach we might expect a cost of equity which is slightly higher than the home CAPM approach.

This because foreign EMRPs may be higher than home EMRPs, especially when the "foreign country" is an emerging market and the "home country" an OECD country.

Remarkably, a higher foreign EMRP may look consistent with adding a CRP to the home EMRP.

And remarkably, a higher foreign EMRP may look inconsistent with that additional diversification by investors should result in a lower EMRP.

The cost of equity from the foreign CAPM is applicable to cash flows denominated in the foreign currency in nominal terms (including inflation), and they should not have been adjusted yet for country risk. This because the foreign risk free rate implicitly includes a premium for country risk.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Source blog - Book: The real cost of capital: A business field guide to better financial decisions (2004). Prentice Hall Financial Times/ Pearson Education. Tim Ogier & John Rugman & Lucinda Spicer.

Article 7: International WACC –Part 2

International WACC & Country Risk – Part 2

In my last blog: Blog 6 - "Valuation: International WACC & Country Risk – Part 1", I have mentioned three ways to calculate the international cost of equity:

-Method 1: Global CAPM model;

-Method 2: Home CAPM model;

-Method 3: Foreign CAPM model.

And in this 7th blog I will continue on this topic with discussing two more methods to calculate the international cost of equity:

-Method 4: Relative volatility model;

-Method 5: Empirical analysis based on country credit ratings.

Moreover, after mentioning the additional ways to calculate the cost of equity, I will then show how to calculate the "international cost of debt" and subsequently the "International WACC".

Method 4: Relative Volatility Approach

Within this model two adjustments are made to the regular CAPM model:

-A country risk is added to the risk free rate. So cash flows should not be adjusted for country risk, because you adjust the cost of capital;

-An adjustment for the relative market volatility of the country in question.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Relative volatility factor

The adjustment for relative volatility is based on the ratio of the volatility of the foreign stock market (so the stock market of the country of the target) in relation to the volatility of the stock market of the home country.

So if the volatility of for example the Zambian stock market is three times higher than the US market, then the adjustment coefficient that a US investor would apply to a Zambian company would be three.

Because emerging markets are typically more volatile than further developed markets, the adjustment coefficient is usually greater than one when applied to emerging markets.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Relative volatility model and diversification

Criticism on this model is that it ignores the benefits of international portfolio diversification.

This since it suggests that the EMRP should be increased substantially for investments in some specific markets.

And like mentioned before (in part 1 of this blog), evidence actually suggests that adding stocks from international countries to a home portfolio can actually reduce overall portfolio variability.

Moreover, more practical criticism is that for the ratio of relative volatility, by which to adjust the EMRP, there should be sufficient data. And this is not always the case in emerging markets.

And even when there is sufficient data, when an emerging market is dominated by a relatively small amount of stocks, then the measure of overall volatility will dis-proportionally reflect the risk characteristics of these stocks.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Method 5: Empirical analysis based on credit scores

The fifth approach consists out of empirical analysis procedures based on country credit scores.

These procedures involve regressing observed equity returns against sovereign credit scores provided by rating agencies and other sources such as "Institutional Investor" or the "Economics Intelligence Unit" (EIU).

The idea behind this approach is that there is a direct relationship between equity returns and a country's credit score.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

International cost of debt

Now that we have looked at 5 methods to calculate the international cost of equity, we need to take a look at the international cost of debt.

The international cost of debt is the result of three underlying variables:

-A risk free rate;

-A (risk) premium for any country risk associated with the country of the investment;

-A relevant corporate debt premium, also called a margin or spread.

Concerning the second variable; country risk premium, this must always be included. This since debt investors can not eliminate country risk trough diversification, like equity investors can.

Remember however that if the "foreign CAPM model" is used for the cost of equity, than the used risk free rate is from the foreign country already, so than the country risk premium is inside already.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Estimation of an International WACC

Now we have all the information to calculate the international WACC.

We can just do this in the ordinary way with using all the different components calculated.

You only need to be careful with the currency that you want to use.

For example, when you calculate a WACC for a Vietnamese company with the "Home CAPM approach", the home currency of the investors can be used (e.g. US dollars), or the currency of the target company (in this case the Vietnamese Dong).

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Example: International WACC calculation

Let's assume the projected 10-year US inflation = 2.0 %

And the projected 10-year Vietnamese inflation = 8.0 %

Then a US WACC would look for example like this:

-US cost of equity = 5% (RFR) + 2.5% (CRP) + 1.1 (beta) * 5% (EMRP) = 13%

-US cost of debt = 5% (RFR) + 2.5% (CRP) + 1.5% (debt margin) = 9%

-US WACC = 13 * 0.5 (target capital structure) + 9% * (1 - 0.3) * 0.5 = 9.65%

(CRP = country risk premium)

9.65% is the discount rate that would be used to discount expected cash flows from the Vietnamese company expressed in US dollars.

And the discount rate that would be used to discount expected cash flow from the Vietnamese company expressed in Vietnamese Dong is:

1.0965 (US WACC) * (1 + 0.08) / (1 + 0.02) – 1 = 16.10%

This WACC is higher since it takes the relative high expected inflation on the Vietnamese Dong (in relation to the USD) into account.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Source blog - Book: The real cost of capital: A business field guide to better financial decisions (2004). Prentice Hall Financial Times/ Pearson Education. Tim Ogier & John Rugman & Lucinda Spicer.

Article 8: Present Values, Real Options, the Dot.com Bubble

The net present value: Introduction

Net present value (NPV) is the term given to the discounted present value of future cash flows less the value of the initial investment (so "net").

Any investment which offers a positive (expected) NPV adds to wealth and shareholder value.

This because the risk and time-adjusted expected future financial rewards associated with the investment, outweigh the initial investment cost.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Two rules for the NPV

NPV Rule 1:

When two investments have the same NPV (of course correctly calculated), and involve the same initial outlay, then they are equally attractive.

This is regardless of the amount of systematic risk or specific risk to which they expose the investor.

Sometimes it is expected that the project with the least variable cash flows would be favored, because we assume individuals are risk averse.

However, for an equity investor the only risks that (should) count are systematic risks.

And these are reflected in the cost of equity part of the discount rate used to calculate the NPV.

This since in a portfolio the variability in returns arising from specific factors are irrelevant. I have described this before in this sequence of blogs.

Actually, when adding an investment to a portfolio it could be the case that a more variable return is actually helpful in mitigating risk. This by offsetting variations in existing investments.

NPV Rule 2:

The relevant risk that should be taken into account when calculating the NPV is the risk of the investment itself. So not the risk of the company making the investment.

An investment in a venture which has a high degree of systematic risk is always risky.

This irrespective of the company or individual which is making the investment.

Also when a company that makes the investment is able to achieve cost savings or revenue enhancements (both "synergies"), then still the risk of the target should be taken into account.

This since then these synergies should be shown in more "bullish" (higher) cash flow forecasts and not in a lower discount rate.

So a discount rate at which a company assesses an investment opportunity should be calculated specifically for that opportunity.

And this discount rate will not (necessarily) be the same as the overall cost of capital of the investor.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Drawback of the NVP approach

A drawback of the NVP approach is that it is not well suited to deal with situations in which a "follow up investment" is linked to an initial investment.

And these situations are very common in business life!

Examples include (capital) expenditures in:

Research & Development (R&D), marketing positioning, product positioning, investments in the first stage of an investment program with the possibility of expansion later on. Etcetera.

Here "real options" can provide an answer! :-)

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Real options

Some cash flows are dependent on decisions that will only be made once various uncertainties affecting the asset value are resolved.

In these cases standard discounted cash flow (DCF) valuation is less appropriate, as mentioned!

Real option valuation provides here a basis for valuation of these opportunities (options).

This comes from the ability to make (or revise) decisions in response to changing circumstances.

So the term "real option" reflects the analogy between "financial options" and "management flexibility" to respond to events in an uncertain world.

Real option valuation is useful in looking at the value of for example start-up businesses with high, but uncertain, growth potential.

And for businesses with intangible assets such as trademarks, patents, or R&D portfolios, as well as businesses whose revenues are affected by volatile commodity prices.

So real option valuation is specifically relevant when you want to determine the value of high technology companies.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Decision three analysis

One approach for valuating real options is "decision three analysis" (DTA).

The decision analysis approach involves applying a DTA approach to calculating the NPV.

For example, an investor must choose whether or not to make the investment.

If no investment is made then the NPV is simply zero.

But if the first investment is made, then the investor faces for example a further decision on whether to take a subsequent investment or not.

And whether or not that subsequent investment should be made will depend on for example the prospects for this subsequent investment.

And this will become clear in a certain amount of years after the first investment.

Essentially DTA enables the investor to identify future actions which he or she will be able to take to minimize downside risk.

This means that real options can take into account that the subsequent investment (the second investment) will only be taken if the prospects look good.

And normal DCF cannot do this!

On the other hand, a problem with DTA is that the diagrams (decision trees) can become horrendous complicated, because in real life there are many options.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Source blog - Book: The real cost of capital: A business field guide to better financial decisions (2004). Prentice Hall Financial Times/ Pearson Education. Tim Ogier & John Rugman & Lucinda Spicer.

Article 9: Valuation: Different DCF & WACC techniques

Different DCF techniques

Most people who use the cost of capital are interested in valuing businesses or shares in a business. And by far the most robust and frequently used technique is the discounted cash flow valuation (DCF).

Concerning DCF there are three widely used methods to calculate the present value of a company:

1. The standard WACC approach;
2. The flows to equity method;
3. The adjusted present value approach.

Let's now take a look at these methods in more depth.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Standard WACC approach

The most commonly used method in the world of corporate finance is the standard WACC method. The first step of the WACC approach is to estimate the operating cash flows that would be available to the providers of capital to the business after corporate taxes are paid.

These cash flows are also called "free cash flows", a term you might have heard before. But be careful, these cash flows do NOT take into account any reductions coming from the "tax shields" from interest payments.

So we refer to the tax in the free cash flow calculation as: "Unlevered tax". This because the tax is estimated on the same basis as if the business was unlevered, so in this case the corporate tax is not reduced by any tax relief on interest payments.

It is necessary to asses the cash flows on this unlevered tax basis, because our standard WACC formula already includes an adjustment to the cost of debt. So this approach does not ignore the implications of debt financing.

This since all of the debt implications to the equity holders of the business are reflected in:

1. The gearing adjustment to equity betas. These capture the increased risk from the presence of debt;

2. The reflection of the tax benefit in the WACC (tax adjustment to cost of debt in WACC);

3. The impact of debt on the overall discount rate, where the cost of debt is weighted in the capital structure;

4. The deduction of debt (at its market value) from enterprise value to calculate the equity value.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Characteristics of a standard WACC approach

The approach assumes that the company adopts a single capital structure for the projection period and terminal value.

This assumption on the long-term capital structure is made with reference to actual data on both the company and peer group industry norms. I have discussed this in more detail in the previous blogs.

The approach typically uses the CAPM (capital asset pricing model) for the cost of equity calculation. I have discussed this before, but it means that equity providers

require a premium above the risk free rate that reflect the "systematic risk" (also called market risk) associated with the investment.

Also a "leveraged equity beta" is used and this beta reflects the riskiness of shareholders returns that arise as a result of fixed "debt service" commitments.

The conventional formula that is used to lever an asset beta (unlevered beta) to a levered equity beta is: Beta equity = Beta Asset * (1 + debt/ equity). This formula is called the: "Harris Pringle Beta Formula".

At last, a terminal value is most often calculated as a perpetuity. This is calculated as the annual free cash flow at the end of the projection period. And then plus one year's growth divided by the estimated long term WACC less the growth rate.

This growth rate is that for the sector in which the company or division operates. And normally it would expected to be the same as the economy growth rate to which the company is exposed (GDP).

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Flows to equity approach

A second DCF approach is the "Flows to equity" (FTE) approach. The FTE approach gets an estimate of the present value of the equity (market value of equity).

This based on a post-interest and post corporate tax cash flow of a business. So here you can notice that there is no debt component in the discount rate.

The cash flows are discounted using a "leveraged cost of equity", the same cost of equity that is used in a standard WACC. So the beta is here adjusted for the financial risk of debt.

This method does not require practitioners to deduct a market value of debt from the calculated present value. And this method is useful for valuing financial services firms where the company's funding structure is there to make money.

These companies make money on the spread between borrowing and lending, so debt financing is not a financial engineering decision, but becomes part of normal day-to-day business decisions.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Adjusted present value approach

A third approach to DCF valuation is the adjusted present value (APV) approach. It basically claims that the value of an asset is dependent on two factors:

-The fundamental value from the operation of the asset;

-The value associated with the finance structure (basically interest tax shields).

The method treats a company like it is debt free in order to calculate the fundamental value of the business. And then it looks at the value that comes from the debt financing in a separate calculation.

For the value of the operations, post-tax unlevered cash flows are discounted using an unlevered cost of equity. This implies that the assumption is made that there is no debt.

And then there is the value from the interest tax shield. The discount rate that should be used to calculate the present value of the interest tax shield, should reflect the risk associated with obtaining the tax deductions.

Fixed level of debt financing (irrespective of enterprise value)

If a company is able to maintain a fixed level of debt financing, which will never need to vary in response to changes in the market value of equity (and enterprise value), then the risk to the interest tax shield arises from the risk to the company's tax rate and the risk to the company's existence.

These risk factors are probably the best reflected in the "cost of debt", as they are similar to the risk that bond holders in a company face.

So with this assumption (begin able to maintain a fixed level of debt, irrespective of enterprise value) the "cost of debt" is probably the right discount rate for the present value of the interest tax shield.

Constant gearing ratio (depending on enterprise value)

When a company needs a constant gearing ratio then the level of debt financing will vary to the variation in enterprise value.

As we know, the "unlevered cost of equity" estimates the discount rate that investors use to calculate enterprise value, when the company is entirely financed with equity.

But as the interest tax shield will vary in line with enterprise value (when there is a constant gearing ratio assumption), this suggests that the unlevered cost of equity is the right discount rate to use to value the interest tax deductions for such a business.

In practice …

The freedom of a company to control its capital structure will lie between the two extremes mentioned above: fixed level of debt and constant gearing ratio.

For example, let's assume a company faces pressure to maintain the gearing ratio broadly in line with the "target ratio". But it does not need to change it's gearing ratio instantly in response to a change in enterprise value.

Then the appropriate discount rate would lie in between the "unlevered cost of equity" and "cost of debt".

And judgement is still needed from the practitioner!

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Source blog - Book: The real cost of capital: A business field guide to better financial decisions (2004). Prentice Hall Financial Times/ Pearson Education. Tim Ogier & John Rugman & Lucinda Spicer.

Article 10: Valuation of a company abroad

International valuation

In an international environment when applying DCF (discounted cash flow) valuation to companies in different countries there are additional things to take care of.

First we need to think about how to calculate the cost of equity and the WACC (weighted average cost of capital).

And second, we need to think about what to do with complexities of dealing with cash flows affected by differences in relative inflation and exchange rates.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Treatment of cash flows in international valuation

We have looked already in earlier blogs on how do deal with the cost of equity and the WACC internationally.

So let's now take a look at how deal with cash flows in international valuation.

There are two basic options for performing international valuations. Both start with cash flows stated in the foreign currency. So the currency of the foreign company that we want to value.

Method 1

This method converts the foreign currency cash flow into familiar domestic currency values. And here for future exchange rates need to be forecasted.

After that a familiar home discount rate is applied to calculate a home currency NPV (net present value). And as we know NPV stands in the end for the enterprise value.

For the discount rate a country risk adjustment is made, assuming that the cash flows to which the discount rate is to be applied, have not yet already been adjusted for country risk.

Method 2

This method applies a foreign currency discount rate to the foreign currency cash flows to estimate a foreign currency NPV.

This foreign currency NPV can then be converted into a home currency NPV at the prevailing spot exchange rate between the two currencies.

Implicitly is assumed within this method that the cash flows have not been adjusted for country risk either.

Since the foreign currency cost of capital already includes a country risk premium component in the local currency risk free rate component of the calculations.

Now let's take a look at these two methods in a little more detail.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Method 1: Currency conversion

Method 1 requires forecasts of the future exchange rate between the currency of the investor's home country and of the country where the investment (e.g. company) is located.

The best way to do this is by using the forward exchange rate quoted in the market. But in practice these do not usually cover a period more than a couple of years.

Although, longer forecasts can be produced by assuming that "purchasing power parity" (PPP) holds.

PPP states that because of the possibility of arbitrage, the prices of products should be the same internationally.

This implies that if inflation is higher in one country than in the other, then the value of its currency should depreciate in relative terms to offset the differential inflation.

So when you know the spot rate and expected inflation of the two countries, then you can calculate the expected exchange rates. This in order to be able to translate future cash flows in the home currency.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Method 1: Currency risk

Another issue in method 1 is the question whether a premium for currency risk should be added to the discount rate?

Some practitioners argue that a currency risk premium is unnecessary.

This because with exchange rate forecasts there is an equal probability that the outturn exchange rate will exceed the forecast exchange rate as that it will fall below. So these currency risks should be diversifiable.

By holding a portfolio of overseas investments, investors can diversify the risk of adverse exchange rate movements in one country against another.

This sounds intuitive and is practical.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Method 2: Foreign currency NPV

The foreign currency discount rate used here in the DCF takes into account inflation in the country where the investment (e.g. a company) is located.

Assuming that inflation is higher in the foreign country than in the country of residence of the investor, then this implies that the nominal discount rate used in method 2 is higher than in method 1 due to the inflation rate differential.

The effect is that:

1. Future cash flows in foreign currency are discounted back with a foreign currency discount rate;

2. Then this foreign currency NPV is converted with the spot exchange rate to the NPV in the currency of the investor's country of residence;

3. So the exchange rate of the foreign currency implicitly gets depreciated with the "inflation rate differential", because the foreign currency discount rate takes inflation into account;

4. This implicitly equals the PPP methodology under method 1.

So in the end the outcomes of method 1 and 2 should be the same.

It just depends on which method the valuator and/ or M&A consultant finds the most practical.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Source blog - Book: The real cost of capital: A business field guide to better financial decisions (2004). Prentice Hall Financial Times/ Pearson Education. Tim Ogier & John Rugman & Lucinda Spicer.

Article 11: Valuation: Illiquidity discounts, control premiums and minority discounts

Premiums and discounts

A valuator needs to take potential premiums and discounts into account.

The most common ones are:

1. Discount for a lack of marketability;
2. Premium for control;
3. Discount for small companies.

In this article I will talk about the "discount for a lack of marketability" (1) and the "premium for control (and discount for minority shareholdings)" (2).

And the topic "discount for small companies" will be discussed in the next article later this week.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Discounts for lack of marketability (1)

The first adjustment I will consider is the lack of marketability, or liquidity, of an investment.

While an equity investment in a publicly traded company is highly liquid, this is not the case for an investment in a closely held company.

These investments are worth less, because it may take longer to sell the asset, it may be sold at a discount, or there are costs involved in finding a buyer.

There are three key factors which influence the extent of marketability of an investment:

A. Whether the asset is privately held or publicly traded;
B. Whether there are restrictions on the sale of the investment;
C. Whether the market for the investment is "thin" or "active".

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Factors influencing the illiquidity discount

The most liquid type of investment is one in an unrestricted publicly traded stock, traded on an active market.

An example would be to purchase a minority holding of the common stock of a company traded on a well-established and liquid stock market such as the New York Stock Exchange or London Stock Exchange.

If the value of such an investment is used to benchmark the value of an investment where liquidity is impaired (e.g. because of "thin trading" (C), stock sale restrictions (B) or stock is privately held (A)), then it is necessary to make adjustment to the value to reflect this lower level of liquidity.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Quantifying the discount for illiquidity

There have been numerous studies which have attempted to estimate the reduction in value as a result of an investment being illiquid.

These studies have looked at evidence relating to the three key sources of the impairment to value:

- Studies examining discounts in the value of restricted stock (B);
- Studies examining the lower value attributed to closely held stock as opposed to publicly traded stock (A);
- Studies relating discounts to thin trading (C).

Let's now take a look at these three sources in more depth.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Discounts for restricted shares (B)

Restricted stock issued by a public company is identical in all respects to its freely traded stock with the exception that it is restricted from trading on the open market for a certain period.

Such restricted stock is generally issued when a company is making an acquisition or raising capital, because of the time and costs associated with registering the new stock with the SEC.

Many studies have been conducted on the difference in value between restricted trades and public and public market trades in the US on the same date.

For trades which took place before 1990 the studies came up with average discounts on the value of restricted stock of around 30% to 35%.

Since 1990 a loosening of rules relating to restricted stocks in the US appears to have reduced the size of the average discount, and later studies discounts of about 20% to 30%.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Estimating the discount for closely held stock (A)

A purchaser of closely held stock has no established market in which he or she can eventually trade the stock.

Studies in seeking to estimate the discount in value for closely held stock have concentrated on the difference in the transaction prices between IPOs and private transactions conducted immediately before an IPO.

The size of the illiquidity discount of closely held investments depend on whether the investment represents a majority or minority interest.

For a majority interest there is still some discount, courts in the US have allowed discounts for a lack of marketability on controlling interests of 3% to 33%.

But for minority interests the potential size of the discount is likely to be higher, perhaps up to 60%.

But there is a wide range for this discount, and its level depends on the particular circumstances affecting the marketability of the minority interest.

For example, whether there is a near or medium term prospect of a sale, whether dividends are paid etc. So here a range of 20% to 60% is typically applied.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Evidence on discounts of thin trading (C)

PWC looked in 1997 with research at three UK markets in which shares are publicly traded.

They ranked the shares listed on these markets according to turnover percentage and concluded that LSE was by far most liquid, AIM (alternative investment market) the next most liquid, and the Ofex market being the least liquid.

The PWC team examined companies which switched exchanges, and looked at the effect on share price of the announcement of the switch.

PWC found no evidence of a discount for illiquidity between LSE and AIM, but they found evidence of a 10% discount on value for companies quoted on the Ofex market compared to both LSE and AIM.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Discounting enterprise value of equity value ?

Value discounts for lack of marketability could affect the EV (enterprise value) of a business.

So the value of both debt and equity since all investors will attach less value to investments which are illiquid.

But in practise all the evidence presented by valuation practitioners on these discounts apply the discount to share value.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Discounts for a lack of marketability (in summary)

The biggest reduction in value for a lack of liquidity is associated with holding a minority stake in a closely held company. Empirical studies show discounts of in between 20% and 60%.

Value is also reduced when you hold an investment in a shareholding in a publicly quoted company, when restrictions are placed on the disposal of shares. Here empirical studies suggest a reduction of 15% to 35% in such situation in the US.

And value is reduced where the stock is publicly quoted, if there is a lack of marketability in the market. PWC found a value of around 10% in a certain market.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Control premium (2)

It is generally recognized by valuation practitioners that an investment which gives an investor control of a business is worth more than a minority stake.

So there is a "control premium" and a "minority discount".

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

The sources of extra value in control

First source, there is control over the distribution of cash generated by the enterprise. An individual with a controlling stake can have a direct influence on matters like timing of the dividends, the payment of a director, and the liquidation of the business.

Second source, there is an effect on the actual amount of cash generated by the enterprise. Since controlling shareholders will be able to direct the company's policy in a way which will enhance value to them. For example by obtaining "synergies".

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Evidence on the size of the control premium

Typically estimates of the size of the control premium are based on data relating to the analysis of premiums paid by companies which acquire majority stakes in other companies (so "controlling stakes").

When you have reasons to believe that securing control will boost company value while you are conduction a business valuation. Then it is preferable (and ideal) to analyse the source(s) of this increased value objectively by modelling the cash flows.

Nevertheless, valuation practitioners often calculate a value in the standard way (DCF or a multiples) and then adjust the resulting valuation for a controlling stake.

So there would be a "control premium" when a strategic controlling stake is valued giving access to synergies. And there would be a "minority discount" when a minority stake is being valued.

Concerning the typical premiums paid in the market when investors acquire control, this can be as high as 40% above the value of a minority stake.

And with a minority stake, very rough guidance on the discount is in between 10% and 15%.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Benefits of control depend on minority shareholder rights

To adjust the effects of a minority stake in a privately held company it is necessary to understand what rights the shareholder enjoys.

The most important factors that affect the discount for lack of control are:

-Election of directors;

-Ability to select management;

-Control over dividend policy;

-Ability to establish compensation and benefits;

-Ability to set corporate strategies;

-Ability to acquire or liquidate the assets;

-Control to compel the sale of the company;

-Ability to liquidate, dissolve, or recapitalize the company;

-Establish buy/ sell agreements;

-Revise the articles of incorporation and bylaws;

-Restrictions on an initial public offering;

-Ability to affect future earnings;

-Control efforts for growth potential.

And as always, the best approach is to understand the implications of the size and structure of the shareholding agreements on the cash flows between shareholders!

At last, when there are benefits of controlling a company it should boost the entire value of a company (EV). However, the evidence on the size of the control premium (or minority discount) is based on equity values, so in general the control premium (or minority discount) is based on equity values.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Source blog - Book: The real cost of capital: A business field guide to better financial decisions (2004). Prentice Hall Financial Times/ Pearson Education. Tim Ogier & John Rugman & Lucinda Spicer.

Article 12: Valuation: Small firm premiums

Premiums and discounts

A valuator needs to take potential premiums and discounts into account.

The most common ones are:

1. Discount for a lack of marketability;
2. Premium for control;
3. Discount for small companies.

In the last article I have talked about the "discount for a lack of marketability" (1) and the "premium for control (and discount for minority shareholdings)" (2).

And the topic of this article is the "discount for small companies".

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Small company discount

A large number of studies of historical data have shown that the returns actually achieved by investing in small companies have been relatively high.

Relatively high in a sense that what would be expected by the application of CAPM (capital asset pricing model) analysis.

So it looks like investors require an additional return for the risks of investing in small companies.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Operational leverage

In practice the CAPM generally suggests that the required returns on investments in small companies are higher than of larger companies.

When we look at betas of groups of companies of different sizes, we see that the betas are higher for small companies.

A likely explanation for this is that these companies are exposed to a larger degree of "operational leverage".

This means that the portion of fixed costs is relatively high in relation to turnover.

And this implies that the "free cash flow" fluctuates by a large portion as revenue moves up and down with the state of the economy.

But the increase in the cost of equity due to these relatively high betas can not explain the overall high returns historically achieved by small companies.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Evidence on the small company risk premium

To determine the level of a "small company risk premium" we need to look at empirical studies on the returns of small companies.

One study was done by two PWC consultants (Roger Grabowski & David King) in 1999. They looked at evidence from historical returns over the period 1963 until 1998.

They divided up the companies on the New York Stock Exchange into 25 equally sized portfolios.

This based on eight different measures of company size, like:

- Market value of common equity;
- Book value of common equity;
- Five year average net income;
- Market value of invested capital;
- Total assets;
- Five year average EBITDA;
- Sales;
- Number of employees.

To the 25 portfolios for the NYSE companies Grabowski & King added companies from the American Stock Exchange and the NASDAQ.

Herewith they increased the number of small companies in the survey.

They found that the level of equity beta is inversely related to the size of the company.

For example, companies with the largest market capitalization (average of 65 billion USD) had an average equity beta of 0.91.

And the portfolio with the smallest companies (average market cap of 44 million USD) had an average equity beta of 1.39.

Similarly, the achieved arithmetic average return over the period 1962-1998 also appears to be inversely related to firm size.

The largest firms had an average of 14.2% and the smallest firms an average of 22.9%.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Example of small firm premium according to Grabowski & King

It is clear that the higher returns (e.g. 22.9%) achieved by smaller companies are in excess of those that would be suggested by the standard CAPM.

So let's take a look at an example:

From the Grabowski & King research we can find that the group of smallest companies ("group 25" with an average market cap of 44 million USD) had an average equity beta of 1.39.

We then combine this with a large stock equity market risk premium of 6.2% and a risk free rate for 1963-1997 of 7.6% (the figures used by Grabowski & King).

This gives an estimate of the cost of equity based on CAPM of:

7.6% + 1.39 * 6.2% = 16.2%

But the actual historical arithmetic average return for the "portfolio 25" was 22.9%.

So according to Grabowski & King 6.7% (22.9% - 16.2%) could be added to the standard CAPM calculation to a company with a (relatively) small market cap of about 44 million USD.

(Tim Ogier, John Rugman, Lucinda Spicer, 2004)

Source blog - Book: The real cost of capital: A business field guide to better financial decisions (2004). Prentice Hall Financial Times/ Pearson Education. Tim Ogier & John Rugman & Lucinda Spicer.

End

Thanks for reading !

And feel free to contact me for M&A deals and Valuations.

And/ or keynotes, training sessions & presentations on M&A, financial modelling and Valuation all over the globe.

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