ISMA CENTRE - THE BUSINESS SCHOOL
OF THE FINANCIAL MARKETS

UNIVERSITY OF READING
ENGLAND

IFID Certificate Programme

Credit Analysis and Products

Corporate Credit Analysis

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1. Overview

Corporate credit rating: an indication of how likely a company is to default - i.e. not make a payment of either coupon or principal when due.

In this section we outline how to assess a **corporate credit rating** (**CCR**) and it is important to note that a CCR does not take into account the expected loss in a default – only its probability[1].

As we mentioned in module Introduction to Credit Analysis, credit analysis requires us to look at 2 set of risk factors: **financial** and **non-financial**. In this module we outline the key areas to explore in both of these risk factors, starting with financial factors where we look at:

1. Balance sheet ratios
2. Earnings ratios
3. Cash flow analysis

Credit analysis should always focus on cash flow because cash is ultimately what services debt.

Learning Objectives

By the end of this module, you will be able to:

1. Explain how balance sheet gearing affects the company's credit risk
2. Explain how creditors' exposure may be affected by factors such as:
   - The borrower's participation in associated companies or joint ventures
   - Performance guarantees made by the borrower
3. Define and interpret the following indicators of company cash flow:
   - EBITDA
   - EBITDAR
   - Gross cash flow
   - Retained cash flow
   - Operating cash flow
   - Free cash flow
   - Cash generated
4. Define and interpret the following debt protection ratios:
   - Interest cover
   - EBITDA / Interest
   - EBITDAR / Interest
   - Operating cash flow / Interest
   - Operating cash flow / Debt service
   - Debt outstanding / Operating cash flow
5. Identify the main sources of a company's liquidity
6. Identify typical internal and external non-financial factors that affect a company's credit rating

[1] However, as we shall explain, a corporate credit rating usually is the same as the senior unsecured rating of a company (see module Credit Ratings).

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2. Balance Sheet Ratios

The balance sheet is a summary snapshot of the assets that a company owns on a specific reporting date and how these assets have been financed – i.e. with equity or debt and, in the latter case, what type of debt.

It is important for the credit analyst to study the company's capital structure because different sources of funds have very different terms and conditions attached, with important consequences for the company's ability to service its debt. In particular:

- Debt typically has a compulsory interest and repayment schedule, so it is a liability for the company
- Equity is repayable after all debt and has no mandatory dividend, so it represents residual risk capital

Key Ratios

There are some key **debt protection ratios** used by analysts to show how other people's money is used. The most commonly applied ratios are:

Leverage = $\frac{\text{Debt}}{\text{Book capital}}$

Adjusted leverage = $\frac{\text{Adjusted debt}}{\text{Adjusted book capital}}$

Debt/EBITDA = $\frac{\text{Debt}}{\text{Earnings before interest, tax, depreciation and amortisation}}$

Where:

Book capital	**= Book value of debt & equity**
Capitalised lease	**= 8 x Lease rental**[2]
Adjusted debt	**= Book value of debt + Capitalised leases**
Adjusted book capital	**= Adjusted debt & equity**

Normally, the higher the leverage and the higher its debt/EBITDA ratio, the weaker is the company's credit rating because debt interest and principal repayments represent obligations that have to be met regardless of business conditions and failure to meet them when due gives creditors the right to demand the liquidation of the company's assets.

Companies in different industry sectors typically operate with different credit protection ratios.

It is important to appreciate that these ratios cannot be assessed in isolation of the sector in which a company operates in:

- Commercial banks and long term investment funds typically operate with much higher ratios than non-financial companies because for banks interest expenses and revenues (most of which are interest income) correlate very highly: their balance sheets are duration matched (see Bond Market Risk – Using Duration)
- Heavy equipment users typically operate with higher ratios than service sector companies because most of the heavy capital equipment is typically financed with operating leases or loans that are secured on the assets themselves

[2] The multiple of 8 that is typically applied to annual lease rentals, in order to capitalise them, is just a 'rule of thumb' and the analyst is free to apply a different multiple in specific cases.

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3. Exercise 1

Using the balance sheet below, calculate the values of the key balance sheet ratios introduced in this section. Assume an annual lease rental of 100, a capitalised lease multiple of 8 and an EBITDA of 600.

Assets		**Liabilities**	
Plant	1,000	Overdraft	500
Stock	1,000	Bonds	1,500
Cash	2,000	Equity	2,000
Total	**4,000**		**4,000**

a) Enter your answers below in the units specified, rounded to one decimal place.

Debt / Book capital (%)	
Adjusted debt / Adjusted book capital (%)	
Debt / EBITDA (multiple)	

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4. Capital Structure

Of course, neither the debt liabilities nor the equity capital of a company are homogeneous categories and the analyst needs to understand the exact composition of these two broad types of capital in order to assess their potential impact on the company's cash flow. In particular:

- Different debt instruments have different repayment seniority
- Some debt is **secured** with the collateral of specific assets of the company while other debt is not (i.e. it is **unsecured**)
- Putable or callable bonds may be repaid before their scheduled maturity, resulting in previously unplanned demands on the company's cash flow (see module Callable Bonds)
- Convertible bonds start their life as debt liabilities but with the potential to convert into equity (see module Convertible Bonds)
- Like straight bonds, **preferential shares** (or **prefs**) typically pay a fixed dividend but they are irredeemable and a failure by the company to make preferential dividend payments when due does not represent an event of default[3]

Details of the types of instruments that make up the company's debt and equity as reported on its balance sheet are typically given in the notes to the accounts, but there may be other aspects of the company's capital structure that are less obvious, as the next section explains.

4.1. Health Warnings

What you can't see can't hurt you?

The credit analyst needs to be sensitive to the implications of accounting standards on the reported assets and liabilities and make the appropriate adjustments. Issues that require particular attention include:

Interests in associates and joint ventures

A company can take a subsidiary entity off its balance sheet by owning 50% or less of its common shares, but many questions still remain for the analyst when assessing the credit rating of the company that owns a share in the associate:

- Who actually controls the management of the associate company's business? Is the relationship between the associate and its parent an arm-length one or does the shareholder exert a strong influence which may affect the responsibility that the shareholder actually takes on for for the associate's liabilities?
- Does the shareholding company assume any liability for the associate's debt?
- Are there any contingent liabilities, such as debt guarantees, or deeply in the money options purchased by the shareholding company from the subsidiary as a method of financing the associate's business[4]?

[3] In **cumulative prefs**, the dividends owed are typically accumulated until such time as the company is able to pay them.

[4] In the section on KMV model we see how a company's debt can be interpreted as a put option…perhaps we can link that point with this one here.

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Non-recourse finance

Debt where the lender's only recourse is to a defined set of assets or a specific project of the debtor's company and not to the rest of the debtor's assets or businesses.

Examples of non-recourse finance include:

- Bankers acceptances, where the accepting bank assumes the risk on the underlying commercial bill of exchange on the borrower's behalf
- Secured borrowing, used extensively in vehicle, shipping and aircraft finance, where the loans are secured on the assets that they finance
- Asset-backed securities, where the securities issued are collateralised by a pool of assets held by a special purpose vehicle that is legally independent from the originator of those assets

Especially for companies that rely heavily on non-recourse financing, the exact definition of non-recourse in these instruments needs to be clarified in order to determine exactly is the extent, if any, of the company's liability:

- Are there any trigger events that may give rise to cash calls on the user of the non-recourse finance?
- Are there any contingent guarantees made by the user of non-recourse finance?

Even where the non-recourse clauses turn out to be water-tight, the analyst needs be aware of the potential **reputation risk** that companies which rely repeatedly on non-recourse finance may suffer in the event of a dispute with their lenders, as a result of which their ability to continue issuing non-recourse finance may be temporarily hampered.

Residual value guarantees

Residual value guarantees are particularly common in the capital goods sector, where a finance company provides an **operating lease** with a residual value guaranteed by the manufacturer.

The equipment manufacturer takes on the risk that the market value of the leased asset may fall below its guaranteed residual value, and therefore typically operating leases which include such guarantees are relatively more expensive.

To reduce the cost of such operating leases, some companies have set up their own in-house financing subsidiaries which themselves self-insure the residual values of the leased equipment, in place of the manufacturer. Although this may reduce the cost of the operating leases to the parent company, clearly this exposes the financing subsidiaries to possible cash short-falls, so the credit risk remains inside the group.

Liquidity is key

The credit analysis should always focus on cash because cash is ultimately what pays debt service.

The question is whether the company has enough liquidity to continue servicing its debt obligations in a down-cycle and in credit analysis liquidity typically includes two components:

- Cash at hand and in the bank
- Unused bank lending facilities

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In this context, one of the key factors is whether the bank facilities are **revocable** or **committed** – i.e. does the bank have the right to withdraw those facilities at short notice, as in the case of most bank overdrafts, or not. Good liquidity typically involves good cash balances and committed long term-bank facilities. Good liquidity can mitigate weak debt protection credit ratios.

5. Interest Cover

5.1. Revenue Measures

A company's willingness to take on debt may not match its ability to service it out of revenues. Given the importance attached to cash in credit analysis, not surprisingly the focus is on operating revenues before non-cash charges such as depreciation and amortisation. In theory this revenue is available for interest and principal repayments.

The key revenue indicators used in credit analysis are:

EBIT = Earnings before interest and taxes
EBITDA = EBIT before depreciation or amortization
EBITDAR = EBITDA before operating lease rentals

The example below summarises the relationship between these indicators.

Sales	1,000	
Cost of goods sold	(200)	
Gross profit		**800**
Administrative expenses	(100)	
EBITDAR		**700**
Operating lease rentals	(100)	
EBITDA		**600**
Depreciation	(100)	
Amortisation	(100)	
EBIT		**400**
Interest	(100)	
Pre-tax earnings		**300**

5.2. Key Ratios

The most commonly used interest cover ratios are:

$$\textbf{Interest Cover} = \frac{\textbf{EBIT}}{\textbf{Interest}}$$

EBITDA / Interest

EBITDAR / Fixed charge

Fixed charge = Interest + Operating lease rentals

As with balance sheet ratios, the size of the ratios that companies are able to sustain depend very much on the industry sector in which they operate, and in particular on the quality (i.e. stability) of their earnings.

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6. Exercise 2

Using the income statement below, calculate the values of the interest cover ratios defined in this section.

Sales	1,000	
Cost of goods sold	(200)	
Gross profit		**800**
Administrative expenses	(100)	
EBITDAR		**700**
Operating lease rentals	(100)	
EBITDA		**600**
Depreciation	(100)	
Amortisation	(100)	
EBIT		**400**
Interest	(100)	
Pre-tax earnings		**300**

a) Enter your answers below in multiples, rounded to one decimal place.

Interest cover	
EBITDA / Interest	
EBITDAR/ Fixed charge	

7. Health Warnings

EBITDA is at the heart of credit analysis, but all is not always what it may seem!

Quality of earnings

As with balance sheet ratios, the size of the ratios that companies are able to sustain depend very much on the industry sector in which they operate, and in particular on the quality (i.e. stability) of the earnings. For example:

- Utilities and some property companies whose incomes are backed by rental streams have stable cash flows and can support weaker ratios
- Bulk chemicals and home builders operate in very cyclical business environments, so their ratios need to be stronger
- Cash flows of companies operating in emerging markets have considerable exchange risk and therefore their ratios need to be stronger

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Moreover, when analysing the quality of a company's earnings, the analyst needs to ask whether the reported revenues are:

- Recurring or do they include **exceptional items** (i.e. one off)?
- Earned from third parties or intra-group?
- Linked to offsetting contracts, on whose performance they depend?
- Recognized only when the cash comes in?
- Accrued on a pro-rate basis over the life of a project (even though the cash may not come in until completion)?

Exceptional items

Corporate earnings often include exceptional items which analysts should exclude from EBITDA, as by definition these are not meant to be recurring. But are the items really exceptional or do they recur every year? Analysts should look out for any factors which could distort or mislead in the company's own EBITDA calculation.

In equity and bond offering circulars, issuers often include pro-forma EBITDA estimates. But are there various assumptions about future cost savings or synergies that are not yet concrete? If so, these should be excluded from the analyst's own pro-forma EBITDA estimates.

Capitalised interest

Another common reporting standard that leads to a distortion in the calculation of true cash flows (especially among construction companies and those with long term capital expenditure cycles) is where interest payments are capitalised. Cash interest payment is what can make or break a company, so we need to add back the capitalized interest – as we should lease payments, debt repayment (bank and bond) and mandatory preference share payments.

Equity reserves

Distortions to profits can occur as a result of adding to and releasing equity reserves. Since the use of reserves is discretionary and arbitrary, reported figures should be scrutinised carefully for these effects.

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8. Cash Flow Analysis

A company's income statement is a useful summary of its operational performance during the reporting period and how its costs have evolved in relation to its revenues. But EBITDA is not identical to cash flow, as some spectacular corporate failures have recently reminded investors[5].

From EBITDA to Cash Flow

The cash flow statements included within a company's reported financials would normally include the information listed below. Beside some of the items are some of the questions that the credit analyst should be asking herself in order to get a better sense of the true cash flows of the business.

EBITDA		
-	Cash interest paid	
-	Tax paid	
+/-	Change in working capital	*Is this sustainable?*
+/-	Other non-cash items in income statement	*If any*
=	**Operating cash flow**	
-	Capital expenditure (**capex**)	*Compare with depreciation*
+/-	Other investing activities	*E.g. acquisitions & disposals*
=	**Free cash flow**	
+/-	Change in debt outstanding	
+/-	Change in equity outstanding	
=	**Cash generated**	*If negative, does the company have sufficient liquidity reserve?*

[5] Enron reported double-digit earnings growth figures in 2001 but the company was cash flow negative for each of the prior 3 years!

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8.1. Modelling Cash Flows

Historic cash flow analysis gives the analyst a good feel for a company's financial performance, but more important for a potential lender is to get a sense of how the company's future cash flows will look like, given its current plans and making assumptions about future revenues and expenses. The example below shows a company's forecast of cash flows for the year 2004, by quarter, and compares this with the historic 2003 figures.

	Q1 04F	Q2 04F	Q3 04F	Q4 04F	FY 03F	FY 04F
EBITDA	24.6	27.9	27.0	27.0	87.3	106.5
Interest	-15.7	-14.6	-15.2	-15.2	-73.7	-60.6
Tax	1.0	1.0	-1.0	-1.0	7.6	0.0
Changes in working capital	-13.1	0.0	-5.0	-5.0	37.0	-23.5
Capex	-2.6	-7.0	-8.0	-8.0	-28.9	-25.6
Acquisitions / disposals	0.0	0.0	0.0	0.0	+67.2	0.0
Change in equity	15.2	0.0	0.0	0.0	34.5	15.2
Debt repayment	-12.0	-8.3	0.0	-8.3	-64.5	-28.6
Cash generated	**-2.6**	**-1.1**	**-2.2**	**-10.4**	**79.5**	**-16.3**
Gross debt	661.0	652.7	652.7	664.4	669.2	644.4
Liquidity	46.7	37.3	35.1	16.4	61.2	16.4
Net debt outstanding	614.3	615.4	617.6	628.0	608.0	628.0

Notice how the table analyses the company's position in terms of its generated cash flow after anticipated new equity issues and scheduled debt repayments, but before the issue of new debt or draw-downs on its cash and liquidity facilities. This sources-and-uses of funds approach helps the credit analyst assess whether the company is inherently cash flow positive or not and, if not, whether it disposes of the necessary liquidity and debt issuing capacity to sustain it.

Corporate liquidity sources:

- Cash generated
- Cash at hand and in the bank
- Liquid money market securities held
- Note issuing facilities (NIFs) and revolving underwriting facilities (RUFs)
- Bank letters of credit and loan facilities (committed and revocable)

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9. Summary Guide

9.1. Ratio Analysis

Having analysed some key financial ratios, we may well ask... so what?

Financial ratios are an important component of credit analysis. For example, for companies where EBITDA does approximate operational cash flow, we can use the key ratio statistics assembled by the rating agencies to assess what credit quality we should assign to a particular company.

The table below, compiled by Standard & Poor's, shows the median values of some of the key ratios that we discussed in this module, for companies with different credit ratings.

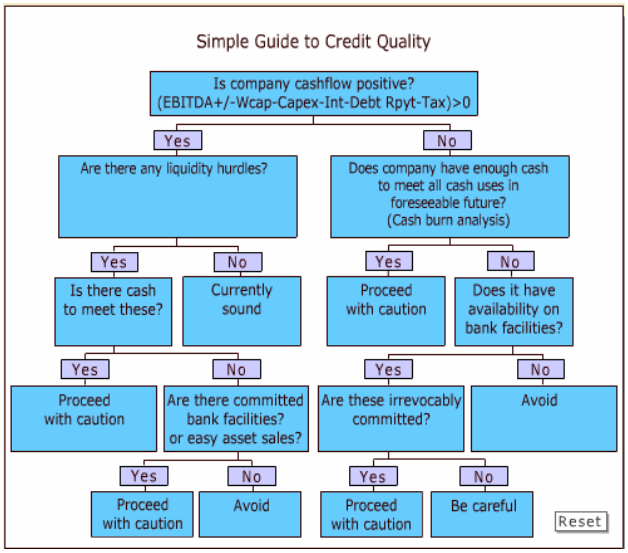
	AAA	AA	A	BBB	BB	B
Debt/EBITDA	0.0	1.4	2.0	2.5	3.2	3.8
EBITDA/Interest	8.7	7.4	5.2	3.6	2.2	1.3
EBITDAR/Fixed charge	7.2	6.0	4.4	2.9	1.9	1.2
Debt/Book capital	0.0	34.0	42.0	50.0	57.0	72.0

These figures help the analyst rate a company purely on the basis of its financial ratios but, as with all statistics, they must be treated with caution:

- Medians as neither 'standard' nor 'optimal' ratios – they are simply observed ratios
- The statistics group all types of issuers in all industry sectors into the same rating categories. However, we know that each industry has a different business environment which makes companies in some sectors able to operate with quite different sets of credit ratios

9.2. Cash Flow Analysis

We can summarise the process of assessing a company's cash flow credit quality with a sequence of questions shown in the decision-tree below:



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9.3. Early Warning Signals

One of the problems with financial analysis is that the figures on which projected credit ratios and cash flows are based are typically out of date, while business conditions evolve rapidly. Below are some of the signals that have been associated with companies going into trouble, which the credit analyst should always be alert to:

Changes in information flow

One of the most commonly observed signals of trouble are delays in the publication of financial information or reduction in the amount of detail disclosed.

Another sign is a restructuring of the company into different divisions, which is less common when things are going well.

Repeated profit warnings or forecast revisions

This reflects a situation where management is either barely able to keep up with rapidly deteriorating business conditions, or perhaps cannot admit to itself or its backers that things are as bad as they are.

Covenant breaches

The company's financial performance deteriorates to the point where some of its key ratios (e.g. leverage and interest cover) and approach the minimum levels specified in some of its debt covenants. Debt covenants are there for a reason, so when a company approaches the breaching levels this spells real financial trouble, as well as putting the company under risk of liquidation by its creditors.

Focus shifts to cash preservation

Corporate actions by the company's senior management reflect its desire to reduce costs and/or restore liquidity. This includes:

- Tighter working capital management (delaying accounts payable and shortening trade credit terms)
- Capex reduction
- Asset disposals
- Headcount reductions

Debt pre-payments or buy-backs at distressed prices
This is a defensive strategy aimed at restoring the company's deteriorating debt to equity position, as the market value of its equity declines, but of course the strategy can only be implemented by companies that have the cash to do so.

Rating triggers

The rating agencies place the company on credit watch with possible negative implications. This provides bond investors with a useful early warning but it can also worsen things for bond investors as the event has a negative effect on the price of the company's issued bonds and its future cost of borrowing, which worsens its cash flow position.

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10. Non-Financial Analysis

Having completed a quick overview of the financial analysis, we can turn our attention to the less quantitative yardsticks. The focus of this section is on the more subjective elements of the non-financial analysis. There follows a thorough, albeit not necessarily exhaustive, list of those factors which will ultimately impact on a company's credit rating.

Non-financial analysis involves a study of both the internal operations of a company and its external drivers.

Internal Analysis

A good example of a framework for internal analysis is that provided by McKinsey's **7S** model, which assesses a company in terms of the 7 characteristics listed below.

Structure	Team-based vs. 'dictatorial'. Flat vs. hierarchical
Strategy	Risk vs. reward balance. Shareholder value maximisation vs. debt protection
Systems	Leveraged companies especially need very tight working capital controls. Are the systems in place to facilitate this?
Staff	Does the board have wide-ranging experience – e.g. legal, finance, accountancy, marketing and industry?
Skills	Is there a balanced mix of strategic thinkers, communicators, negotiators and people with marketing and IT skills?
Style	Are staff empowered to allow sustainable competitive advantages?
Shared values	Does the company promote share options or economic value added (EVA) employee reward schemes? Is its senior management product development driven?

10.1. External Analysis

A good external analysis will include an investigation of a number of key areas impacting on a company's performance, such as the ones summarised in the table below.

Legal	Will EU try to regulate services? Possibility of US anti-trust? Any major litigation?
Economic	Impact of global economic cycles on earnings and product roll out?
Political	Impact of terrorism, GATT etc
Environmental	Any pollutants that may need to be cleaned up?
Social	Any change in demographic/social behaviour that could impact the credit?
Technological	Technology risk, product obsolescence, Internet threat to distribution?

In addition, the analyst needs to understand how the industry in which the company finds itself operates, and how effectively the company functions within that industry. One widely used model is Michael Porter's competition analysis diagramme shown below. The model forces an assessment of the company's standing in the market-place after a review of its bargaining position versus suppliers and buyers, the barriers to entry, and the extent to which substitutes may be available within the industry, thereby undermining the strength of the various parties.

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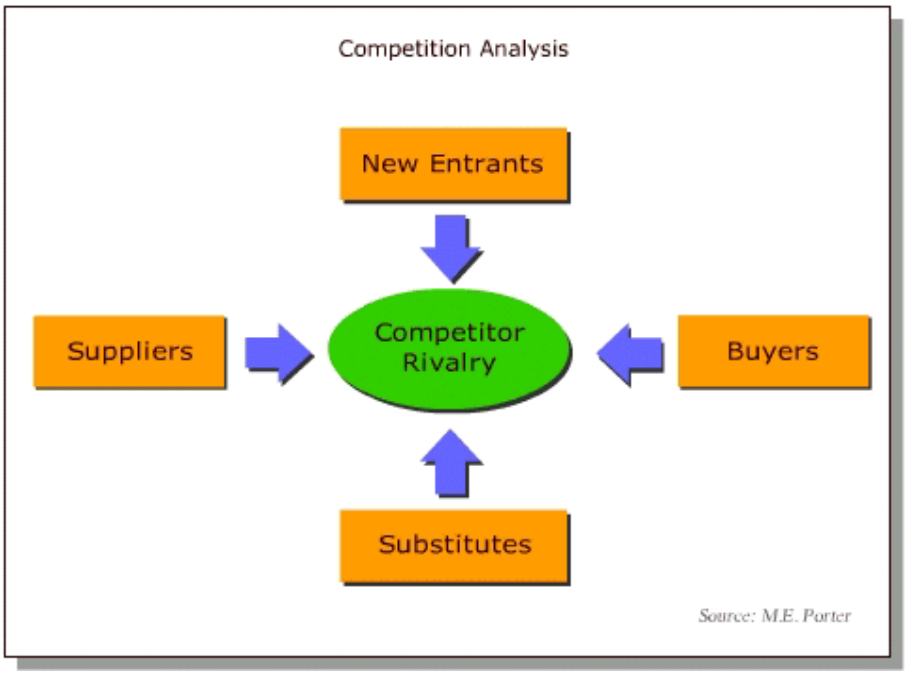
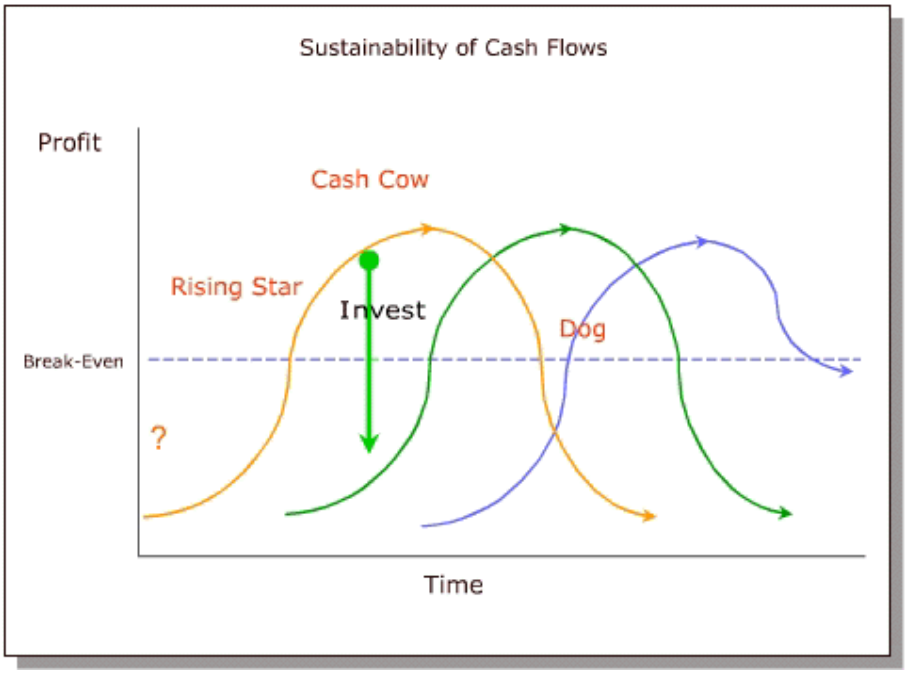


The sustainability of future cash flows is important for forecasting purposes, and an understanding of macroeconomics and the life cycle of a business or product idea is required for an analyst to effectively perform this type of analysis. Whilst a detailed description of these topics is beyond the scope of this text, it may be said that a typical product life-cycle will require a period of early investment, leading to breakeven at some later stage as the product becomes a “rising star” in the eyes of the consumer, eventual maturity as investment is fully paid back and the product becomes a 'cash cow' to its producer, eventually resulting in decline as new technologies and substitutes take over.



An understanding of where the company is in the life cycle will offer an insight into the sustainability of cash flows and the ability to service debt at different points going forward.

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10.2. Strategic Analysis

Finally, the analyst needs to analyse the company's strategy in respect of new product and new market development. One such model is Ansoff's *Model for Strategic Analysis*, which points to the risk of pursuing various strategies at various stages.

	Present Product	**New Product**
Present Market	- Do nothing - Withdrawal - Consolidation - Market penetration	- Product development
New Market	- Market development	- Related diversification - Unrelated diversification
	Integration	**Diversification**
Local expansion	- Low risk	- Medium risk
Foreign expansion	- Medium risk	- High risk

11. Summary

Essentially, there are 5 steps that a credit analyst needs to follow in order to assess a company's credit risk:

1. Perform financial ratio analysis, and compare the company's ratios with the norm for that sector
2. Assess the strength of the company's market position
3. Consider the company's business strategy and assess its likelihood of success
4. Decide how effective the company's management is, both now and in the future (i.e. how will the succession of current management be organised?)
5. Take into account the fact that, however good a company may be, overiding political concerns may cap its credit rating to that of the country in which it is domiciled (i.e. the sovereign rating)

In following these steps, the credit analyst will be doing effectively what the rating agencies themselves do!

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11.1. Example

Let us take the following example and follow the 5-step process described above to assign a credit rating to UK retailer *Marks & Spencers* (M&S).

1. Financial ratio analysis:

   Debt/EBITDA 3.0
   EBITDA/Interest 5.7X

   This is compatible with a A/A- credit

2. External analysis:

   Market position: strong brand name has re-established brand (positive)
   Competitive position: increasing competition (negative)
   Sovereign: no concerns that suggest that M&S's rating should be capped by that of the UK

3. Internal analysis:

   Management: new senior management appointed, offsetting earlier concerns raised by overseas expansion (neutral)

? What credit rating should be assigned to M&S?

Answer

- Moody's: A3
- Standard & Poors: A

This is a **split rating** - one where the rating agencies differ in their opinions. It may well be that S&P has given greater weight to the M&S market position turnaround story.

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12. Exercise 3

Situation:
Below are the key yearly financials for two independent companies.

	Company A	Company B
EBITDA	500	100
Interest	100	50
Debt	1,000	500
Equity	2,000	500
Bond yield (Treasury +)	100 bps	400 bps

Company A has agreed to acquire Company B for 1 x EBITDA and will continue to service its existing debt obligations.

In the questions below we explore the impact of this acquisition on the key credit ratios and cost of debt for the combined group.

a) Calculate the following financial ratios for each company before the acquisition. Enter your figures rounded to the nearest integer:

	Company A	Company B
Debt/ EBITDA (multiple)		
EBITDA/ Interest (multiple)		
Debt/ Book capitalisation (%)		

b) Calculate the same financial ratios for the combined group after the acquisition, assuming:

- No netting of each company's financial totals
- Company A pays for the acquisition by issuing new debt at 10% interest

	Group A+B
EBITDA	
Interest	
Debt	
Equity	
Debt/ EBITDA	
EBITDA/ Interest	
Debt/ Book capitalisation	

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c) Below are the yield spreads over treasuries paid by A and B on their bonds, before the planned acquisition.

	Spread
Company A	100 bps
Company B	400 bps

Ignoring any non-financial factors, what in your opinion would be the appropriate yield spread for any new debt issued by the combined group?

- ☐ Less than 100 bps
- ☐ 100 bps – the same as A's, which will own B
- ☐ Between 100 and 400 bps
- ☐ More than 400 bps

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