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FINANCIAL ACCOUNTING AND FINANCIAL STATEMENT ANALYSIS

FINANCIAL PROJECTIONS

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FINANCIAL ACCOUNTING AND FINANCIAL STATEMENT ANALYSIS

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* final level

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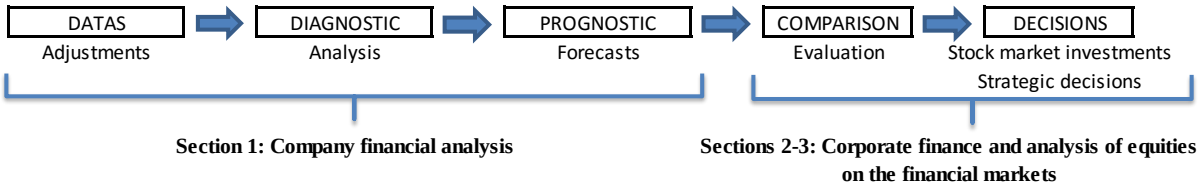
1. Financial projections*

We have reached the end of the section on the analysis of historical profitability trends and the observation of the business environment. The investor must now set about estimating the future wealth creation of the company. The projections phase precedes the evaluation phase, which we will discuss in the chapters on corporate finance and analysis of financial markets.



1.1 Different projection formats*

Projections can be made in several formats, ranging from the simplest, which covers the company as a whole, to the most complicated, which include various value drivers and results by division.

*1.1.1 Comprehensive format**

Enterprises are usually disclosing their own projections, but analysts need to use these numbers with care because the underlying assumptions used by the management in developing such scenarios are often not disclosed. Therefore many analysts are using the firm's pro forma financial statements as a starting point and by correcting assumptions they arrive at their own projection of the future financial performance of the enterprise. It is important to remember that pro forma financial statements are not "scientific measurements", but more realistic assumptions about what is going to happen in the future. Rather than being 100% accurate, analysts should place more emphasis on making realistic assumptions.

Projecting financial performance can be done only after evaluating the past performance of the enterprise. This may provide a strong basis for forward-looking analysis. From the enterprise's previous financial statements, ratios may be computed over a period of time in order to determine the trend. When determining the trend used in analyst's projections, non-recurring items should be removed from the analysis. However, for start-up companies or for companies that have recently gone through a major restructuring or acquisition program, past performance may be less relevant. In these cases it is more difficult to make future projections and analysts generally rely more on the company's own projections. Data from similar firms may also be used in projecting future financial performance.

An important decision that analysts need to take is on the base financial statements. These can be either the current year's financial statements or the projected financial statements for the first year of operation. For start-up companies or for companies that have recently gone through a major restructuring or acquisition program the second choice could be more appropriate.

Pro forma financial statements generally include at least projections of the balance sheet, the income statement and the cash flow statement. Analysts often take a top-down approach. Before putting together a pro forma income statement, it is important to have a good projection of sales.

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Based on the growth rate of sales, projections of manufacturing costs, royalties, freight-in, title subsidies, salaries and benefits, operating expenses, interest expense, etc. are made. After completing the pro forma income statement and its supporting forecasts, it becomes possible to construct the balance sheet based on assumed relationships between the variables. At this stage, analysts need to decide on some factors that cannot be directly fitted into the model. In other words, some parameters may be held constant (e.g. the share capital). Finally the cash flow statement is put together.

Care should be taken to avoid circularity problems. Such problems may arise because the balance sheet, the income statement, and the cash flow statement are related. For example, the interest and the debt are related. Unless we know the level of debt we cannot calculate the interest expense. But, we cannot find out the level of debt, unless we know the net profit and the interest expense. However, this can be circumvented by taking an approximate figure for debt or for interest expenses. Such problems can be automatically solved by using spreadsheets solutions that have facilities for iteration.

Sales forecast represents the critical starting point in developing pro forma financial statements. The quality of the financial performance projections directly depends on the quality of the future growth rate projection of sales. Historical trends are often used in order to predict future levels.

Once the sales are projected, analysts can choose between various methods for forecasting financial statements. Depending on the purpose of the analysis, the best-suited method should be chosen. The choice of the method depends on the level of detail needed. For example, separate projections may be done for individual expenses or the same assumptions may be used for all the expenses. There are two popular models which are often used and analysts need to choose the best-suited method. These methods are:

- the common size percentage method;
- the growth rates method.

*1.1.2 Common size percentage**

The **common size percentage method** is the simplest method: it assumes that all items vary proportionally to sales. All expenses are thus considered variable. This is a simplistic assumption, but such an approach gives some insight on the future operations of a company. Sometimes it is more realistic to consider that some items vary proportionally to sales (net working capital, variables costs, etc.) and that some items are constant or follow different growth paths.

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Example:
On the next pages you can find the financial statements for adjusted figures of Novartis for the year 2013. Assuming a growth rate of sales of 5 percent per year, and using the **common size percentage method** we draw up the pro forma financial statements for 2014, 2015, 2016 and 2017.

All items from the income statement vary proportionally. Therefore, we will simply multiply the current year's numbers with a coefficient of 1.05. Below you can find the pro forma income statement:

Common Size Percentage

Financial statements Novartis (mios USD) - Adjusted figures

		----------Pro Forma----------				
Income statement	**2013**	**2014**	**2015**	**2016**	**2017**	**CAGR 14-17**
Sales	58'831	61'773	64'861	68'104	71'509	**5.0%**
Cost of good sold	16'673	17'507	18'382	19'301	20'266	5.0%
Gross margin	42'158	44'266	46'479	48'803	51'243	5.0%
Depreciation expense	1'835	1'927	2'023	2'124	2'230	5.0%
Sales, General and administ	25'838	27'130	28'486	29'911	31'406	5.0%
Operating income	14'485	15'209	15'970	16'768	17'607	5.0%
Financial income/loss	258	270	284	298	313	5.0%
Income before taxes	14'743	15'480	16'254	17'066	17'920	5.0%
Income taxes	2'210	2'320	2'436	2'558	2'686	5.0%
Net income & Minorities	12'533	13'160	13'818	14'509	15'234	5.0%

In a second step we will start constructing the balance sheet. The assumption is made that all items (except the cash and cash equivalent line marked with *) will maintain their relation to the sales and therefore the current year's numbers were multiplied with a coefficient of 1.05.

Common Size Percentage

Financial statements Novartis (mios USD) - Adjusted figures

		----------Pro Forma----------				
Balance sheet	**2013**	**2014**	**2015**	**2016**	**2017**	**CAGR 14-17**
Assets	135'020	150'775	167'318	184'688	202'926	10.4%
Current assets	29'783	150'775	167'318	184'688	202'926	10.4%
Cash and cash equivalent *	9'222	18'687	28'626	39'061	50'019	38.8%
Inventories	7'267	7'630	8'012	8'412	8'833	5.0%
Receivables	9'902	10'397	10'917	11'463	12'036	5.0%
Other current	3'392	3'562	3'740	3'927	4'123	5.0%
Non current assets	105'237	110'498	116'023	121'824	127'916	5.0%
PPE	18'197	19'107	20'062	21'065	22'119	5.0%
Intangibles	67'633	71'014	74'565	78'293	82'208	5.0%
Other non current	19'407	20'377	21'396	22'466	23'589	5.0%
Liabilities & Equities	135'020	150'775	167'318	184'688	202'926	10.4%
Current liabilities	26'318	27'634	29'016	30'466	31'990	5.0%
Short term debt	6'776	7'115	7'471	7'844	8'236	5.0%
Accounts payable	6'148	6'455	6'778	7'117	7'473	5.0%
Other current liabilities	13'394	14'064	14'767	15'505	16'280	5.0%
Noncurrent liabilities	25'593	26'873	28'216	29'627	31'108	5.0%
Long term debt	11'242	11'804	12'394	13'014	13'665	5.0%
Provisions & other NIBLICS	14'222	14'933	15'680	16'464	17'287	5.0%
Minorities	129	135	142	149	157	5.0%
Equity	83'109	96'268	110'086	124'594	139'828	13.2%
Share capital & other reserv	1'001	1'001	1'001	1'001	1'001	0.0%
Retained earnings *	82'108	95'267	109'085	123'593	138'827	13.4%

Let's have a closer look at the items marked with *. First, it is reasonable to assume that share capital and other reserves are kept at the same level. In other words there are no distributions to/contributions from the owners. If this hypothesis does not hold, numbers should be corrected consequently.

Second, the retained earnings follow the basic accounting equation. Therefore, the end of the period retained earnings equals the beginning of the period retained earnings plus the net income (taken from the pro forma income statement).

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Finally, the cash and cash equivalents at the end of the period are taken from the cash flow statement. Alternatively, the cash and cash equivalents may be adjusted based on the accounting equality assets equals equity plus liabilities. Computing the cash in both ways represents an important check-point that no errors were made.

Let's now turn to the pro forma cash flow statement.

	----------Pro Forma----------					
Cash flow	**2013**	**2014**	**2015**	**2016**	**2017**	**CAGR 14-17**
Net income & Minorities	12'533	13'160	13'818	14'509	15'234	5.0%
Depreciation expense	1'835	1'927	2'023	2'124	2'230	5.0%
Change in working capital		-51	-53	-56	-59	
Operating cash flow		15'035	15'787	16'577	17'405	5.0%
Investing cash flow		-7'189	-7'548	-7'925	-8'322	5.0%
Financing cash flow		1'618	1'699	1'784	1'874	5.0%
Total cash flow		9'465	9'939	10'436	10'957	5.0%
Cash and cash equivalents beginning		9'222	18'687	28'626	39'061	61.8%
Cash and cash equivalents end		18'687	28'626	39'061	50'019	38.8%

The net income and the depreciation expense are taken from the pro forma income statement.

The working capital is computed as the difference between non-cash current assets and current liabilities. The negative sign is explained by the fact that the enterprise will have to invest cash in its working capital.

The investing cash flow is computed as the increase in noncurrent assets adjusted (minus) the depreciation expense. Finally, the financing cash flow represents the change in noncurrent liabilities.

All items used in the construction of cash flow (net earnings, NWC, fixed assets, debt, other liabilities) have increased at an annual rate of 5 percent. FCF has therefore also increased by 5 percent. This no longer applies if one of the parameters is changed, for example if a decision is made to pay a dividend on annual earnings, as we will see in the following example.

*1.1.3 Growth rates method**

Theoretically, the **growths rates method** should yield the best results as it considers a different growth rate for each item. The growth rates may therefore vary for income, expense, fixed assets, current assets, current liabilities, etc. These rates are either taken from budgets or from the past trends. Some items will be held constant. However, this method is difficult to use in practice: many assumptions will have to be made and the results will not automatically be more accurate.

Example:
Using the **growths rates method** draw up the pro forma financial statements (adjusted figures) of Novartis for 2014-2017. Following assumptions are made:
- net sales will grow at 8 %;
- cost of sales will grow at 7 %;
- a constant depreciation rate on property plant and equipment is used;
- sales, general, and administrative expenses will grow at 5 %;
- financial expenses will represent 3 % of the long term debt;
- tax rate remains the same as in the current year;
- the enterprise is paying dividends at 30 % of the share capital;
- inventories grow at 5 %, while all other current assets/liabilities (except cash) grow at 8 %;
- property, plant and equipment grow at 4 %, while other noncurrent assets remain constant;
- long term debts grow at 7 %
- all other items, except retained earnings remain constant.

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Solution:

As many assumptions are made, the construction of the pro forma financial statements presents multiple circularity problems. The financial statements with the growth rates method are presented below.

Common Size Percentage

Financial statements Novartis (mios USD) - Adjusted figures

	----------Pro Forma----------							
Income statement	**2013**	**2014**	**2015**	**2016**	**2017**	**CAGR 14-17**		
Sales	58'831	63'537	68'620	74'110	80'039	**8.0%**		
Cost of good sold	16'673	17'840	19'089	20'425	21'855	**7.0%**		
Gross margin	42'158	45'697	49'532	53'685	58'184	8.4%		
Depreciation expense	1'835	1'908	1'985	2'064	2'147	4.0%	Constant depreciation rat	10.08%
Sales, General and administ	25'838	27'130	28'486	29'911	31'406	**5.0%**		
Operating income	14'485	16'659	19'060	21'710	24'631	13.9%		
Financial income/loss	258	361	386	413	442	5.0%	3% of long term debt	3.00%
Income before taxes	14'227	16'298	18'674	21'297	24'189	14.1%		
Income taxes	2'210	2'531	2'900	3'307	3'757	14.1%	Same tax rate	15.53%
Net income & Minorities	12'018	13'767	15'774	17'990	20'432	14.1%		

Different growth rates are used for some items. In order to compute the depreciation expense, first the PPE is computed. A constant rate of 10.08 % is applied to this amount.

A constant tax rate of 15.53 % is used.

Let us turn now to the balance sheet. As in the previous example, the share capital and other reserves are kept at the same level. However, when computing the retained earnings the ending balance is adjusted with the dividends paid (30% of the share capital). The rest of the items are adjusted with different growth rates. The cash and cash equivalents at the end of the period are taken from the cash flow statement.

Common Size Percentage

Financial statements Novartis (mios USD) - Adjusted figures

	----------Pro Forma----------						
Balance sheet	**2013**	**2014**	**2015**	**2016**	**2017**	**CAGR 2014-2017**	
Assets	135'020	148'155	162'967	179'624	198'306	10.2%	
Current assets	29'783	148'155	162'967	179'624	198'306	10.2%	
Cash and cash equivalent *	9'222	20'203	32'728	46'956	63'059	46.1%	
Inventories	7'267	7'630	8'012	8'412	8'833	**5.0%**	
Receivables	9'902	10'694	11'550	12'474	13'472	**8.0%**	
Other current	3'392	3'663	3'956	4'273	4'615	**8.0%**	
Non current assets	105'237	105'964	106'721	107'509	108'327	0.7%	
PPE	18'197	18'925	19'682	20'469	21'288	**4.0%**	
Intangibles	67'633	67'633	67'633	67'633	67'633	**0.0%**	
Other non current	19'407	19'407	19'407	19'407	19'407	**0.0%**	
Liabilities & Equities	135'020	148'155	162'967	179'624	198'306	10.2%	
Current liabilities	26'318	27'881	29'570	31'393	33'363	6.2%	
Short term debt	6'776	6'776	6'776	6'776	6'776	0.0%	Constant
Accounts payable	6'148	6'640	7'171	7'745	8'364	**8.0%**	
Other current liabilities	13'394	14'466	15'623	16'873	18'222	**8.0%**	
Noncurrent liabilities	25'593	27'528	29'610	31'850	34'260	7.6%	
Long term debt	11'242	12'029	12'871	13'772	14'736	**7.0%**	
Provisions & NIBLICS	14'222	15'360	16'589	17'916	19'349	**8.0%**	
Minorities	129	139	150	163	176	**8.0%**	
Equity	83'109	92'745	103'787	116'380	130'683	12.1%	
Share capital & other reserv	1'001	1'001	1'001	1'001	1'001	0.0%	
Retained earnings *	82'108	91'744	102'786	115'379	129'682	12.2%	30% payout ratio

Let's now turn to the pro forma cash flow statement. The same principles are applied as in the previous example. The only difference is that the financing cash flow is adjusted (minus) with the dividends paid by the enterprise (30 % of the share capital).

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Common Size Percentage

Financial statements Novartis (mios USD) - Adjusted figures

	----------Pro Forma----------					
Cash flow	**2013**	**2014**	**2015**	**2016**	**2017**	**CAGR 14-17**
Net income & Minorities	12'018	13'767	15'774	17'990	20'432	14.1%
Depreciation expense	1'835	1'908	1'985	2'064	2'147	4.0%
Change in working capital		136	158	182	209	
Operating cash flow		15'812	17'917	20'236	22'788	13.0%
Investing cash flow		-2'636	-2'742	-2'851	-2'965	4.0%
Financing cash flow		-2'195	-2'650	-3'157	-3'719	19.2%
Total cash flow		10'981	12'525	14'228	16'103	13.6%
Cash and cash equivalents beginning		9'222	20'203	32'728	46'956	
Cash and cash equivalents end		20'203	32'728	46'956	63'059	

Whatever the method used, it is necessary to compute various financial ratios to analyse the plausibility of the assumptions made. Such ratios include the ROA, the asset turnover ratio, the debt to equity ratio, etc. They should highlight whether the assumptions are realistic or not. Furthermore, a projection should include sensitivity analysis related to these main assumptions.

*1.1.4 Projections based on value drivers**

The value drivers method is a special type of growth rate method. It is more accessible as it seeks to make complete projections using a minimum number of variables. We talked about the value drivers that are used to estimate the main flows used in the evaluation. The ones we use in projections are as follows:

Value drivers internal to the company

- 1. Sales growth
- 2. Gross margin
- 3. Net working capital / Sales
- 4. Capital expenditure / Sales
- 5. Payout ratio

Value drivers external to the company

- 6. Interest rates
- 7. Exchange rates
- 8. Tax rate

With these various parameters, we are able to calculate all the accounts in the annual report, including FCFF. This is one of the advantages of this method, which clearly illustrates the interdependence of the three types of accounts in the annual report.

At the end of this section, we will give a detailed example for Novartis based on this method.

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1.2 Estimated value drivers of the company*

The estimated value drivers of the company, including estimated sales, are closely linked to the economic and political environment of the business. The sector in which the company operates has a primary influence on its ability to grow. Even if a company is gaining considerable market share over its competitors, it will be difficult for it to grow rapidly if the industry as a whole is in difficulty.

*1.2.1 Sales forecast**

*1.2.1.1 Analysis of past trends**

*1.2.1.1.1 Analysis of the economic cycle**

We propose a brief macro-economic analysis here. We will have the opportunity to discuss the influence of the economy in more detail in the chapter on analysis of financial markets.

Paul and Carole Huebotter have suggested dividing the business cycle into four phases, with the objective of optimizing industry allocation. Their theory applied to the U.S. equity market, but it could well be extended to all the developed markets.

Phase 1

This phase starts at the bottom of a recession. People who are still working – probably 90% to 93% of those who want to – are not much afraid of losing their jobs. Family purchases deferred during times of uncertainty start being made again. Sales of big-ticket items such as cars and major appliances pick up. Interest rates are at their lowest, so it's a good time to buy or build a house. With growing confidence, families go out more, travel more, and indulge in entertainment more. For different reasons, the energy industries are also doing well. It is clear to business leaders that a new cycle has begun, and that the energy needs for the new cycle will exceed those of the previous one.

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Phase 2

The economy is growing too fast. At this point, the Federal Reserve begins to raise interest rates to prevent overheating and an upsurge of inflation. During such periods, interest-sensitive industries such as utilities and financials do poorly, as does the bond market. The consumer cyclical group falls out of investor favour as higher interest rates start putting pressure on housing starts and big-ticket purchases. At this stage of the economic recovery, manufacturing is operating at close to full capacity and raw-material inventories are low. The metals, chemicals, paper and forest products industries are now producing flat-out to restock the finished-goods industries. Higher prices start appearing on these building-block materials, and their producers have the best of all possible worlds – strong demand and higher prices. As full-capacity utilization nears, efficiency and productivity begin to be emphasized. At that point, the industry invests in computers, software, automation equipment and communications in an effort to meet demand with existing plant capacity.

Phase 3

Interest-rate hikes during phase 2 finally have their intended effect on the economy, and the desired soft landing is achieved. GDP growth declines, though it remains strongly positive. Transport industries thrive due to the brisk pace of commerce and the large volume of goods being shipped. Capacity expansion benefits the capital-goods industry. Interest rates, though high, are now stable. This helps the financial industries, which cash in on strong loan demand and reliable margins.

Phase 4

This phase begins with a sharp decline of the growth rate. Inflation fears are now subordinate to fears of recession. At this stage, the Fed tries to stimulate the economy with a series of interest-rate cuts. Despite layoffs and less job security, the demand for utility services and food and other consumer noncyclicals is relatively unaffected.

Comments:

This analysis is somewhat biased in the current economic climate, which is unique in that it features quantitative easing programmes introduced by various central banks. We are between phases 1 and 2. In the United States, the growth rate is almost back to normal, although the production capacity of the economy is far from being fully utilised. The considerable liquidity that exists in our economies prevents long rates from rising, while encouraging investment by households and businesses.

*1.2.1.1.2 Organic sales**

The company grows mainly by having products/services that are in heavy demand among consumers. An analysis of sales growth is therefore the basis for the sustainable growth of future cash flows.

A very useful measure, especially for companies with international exposure or which acquire other companies. It measures sales growth excluding the impacts of acquisitions, divestitures and foreign exchange. This gives investors a better understanding of the underlying sales trend and provides a solid basis from which to make projections.

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Indeed, given that it is hard to forecast currency movements and a company's potential acquisitions, most analysts will primarily forecast organic sales growth, adjusting the estimates as the year evolves to take into consideration new information. We show below Procter and Gamble's reconciliation to US GAAP.

Procter and Gamble (USA)

	Net Sales Growth	Foreign Exchange Impact	Acquisition/ Divestiture Impact*	Organic Sales Growth
Q1 '09	9%	-5%	1%	5%
Q2 '09	-3%	5%	0%	2%
Q3 '09	-8%	9%	0%	1%
Q4 '09	-11%	9%	1%	-1%
Q1 '10	-6%	7%	1%	2%
Q2 '10	6%	-2%	1%	5%
Q3 '10	7%	-3%	0%	4%
Q4 '10	5%	-1%	0%	4%
FY '10	3%	1%	-1%	3%
FY '11 (Estimate)	2 to 4%	3%	-1%	4 to 6%

Source: Procter & Gamble

*1.2.1.1.3 Price effect, product mix**

Once organic growth has been determined, the components must then be deciphered. There are three of these:

1. Growth in volumes
2. Variation in prices
3. Variation in product mix

Growth in volumes measures, at Apple for example, the increase in smartphones of the same model sold during the year.

The price increase is a sign that the company is competitive, especially given the current low inflation environment. We can compare this variation with those made by competitors.

The variation in product mix shows the impact of new product launches and their potential cannibalisation of older products. The technology sector is particularly sensitive to this phenomenon.

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Example:

Let us assume that a new product, the 'Super-Smart phone', is launched in the second quarter of the year.
The prices and quantities sold of the old and new models respectively are shown in bold.
We want to estimate the effect of the product mix as well as the effect of replacing older products with new ones.
It is assumed that the 'natural' growth rate of the old smartphone models is zero.

		Q1	Q2	*% Change*
Smartphones	Amount (mios)	**500'000**	**400'000**	*-20.0%*
	Price (USD)	**500**	**450**	*-10.0%*
	Sales (mios USD)	250.0	180.0	*-28.0%*
"Super-Smart" phones	Amount (mios)		**150'000**	*n/s*
	Price (USD)		**600**	*n/s*
	Sales (mios USD)	0.0	90.0	*n/s*
TOTAL	Amount (mios)	500'000	550'000	*10.0%*
	Price (USD)	500	491	*-1.8%*
	Product -mix			*-0.2%*
	Sales (mios USD)	250.0	270.0	*8.0%*
	% of substitution			*66.7%*

The launch has triggered an 8 percent rise in turnover, which breaks down into +10 percent volume effect, -1.8 percent price effect and -0.2 percent product-mix effect. The sum of the last two components represents the difference between sales growth and quantities.
The substitution percentage is estimated at 66.7 percent (i.e. the reduction in old models divided by the number of new devices). Two-thirds of buyers of the 'Super-Smart phone' are buyers of the old model.

*1.2.1.2 Analysis of leading indicators**

*1.2.1.2.1 New orders, backlog, book-to-bill**

New orders (orders received)

A company books and reports new orders when a contract is considered legally effective and binding. The company then recognizes the total value of the new order. The value of orders received during a period represents the sum of the value of all the orders.

Order backlog

The order backlog is the amount of open orders, either incomplete or in the process of completion, that a company has on hand. It is calculated by adding the new orders of the current period to the balance of the order backlog from the prior period and subtracting the revenue recognized in the current period.

It is mainly disclosed by manufacturing companies and semiconductor companies. The level of backlog is usually specific to the business. For instance, highly customized products might need to be ordered well in advance. Also, some projects (for instance, power plants) will need several months or years to complete.

The backlog level can be used to give an idea about future revenue, but it must be noted that orders can be cancelled or delayed.

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ABB: order, backlog and book-to-bill ratio

	2008	2009	2010
Orders	38'282	30'969	32'681
Order backlog at December 31	23'837	24'771	26'193
Revenues	34'912	31'771	31'589
Book-to-bill ratio	1.10	0.97	1.03

Source: ABB

Book-to-bill ratio

The book-to-bill ratio measures the relationship between orders received (booked) and the amounts of products shipped and billed.

$$\text{Book} - \text{to} - \text{Bill ratio} = \frac{\text{Orders received}}{\text{Products shipped and invoiced}}$$

A book-to-bill ratio of more than one indicates that the company has received more orders than it has billed which is a sign of strong demand. A book-to-bill of less than one would imply weaker demand. This ratio is commonly used by semiconductor investors.

*1.2.1.2.2 The pipeline of pharmaceutical products**

For companies such as Novartis, whose growth largely depends on its ability to develop new drugs, it is essential to have an overview of the latest research and development advances. The top 10 Novartis products represent about USD 20 billion, of a division total of USD 32 billion. The top 20 account for over 80 percent of pharma sales.

There are several stages of development for new drugs. Phase 1 is a very early stage of development. In Phase 2 the drug is tested on a larger population of patients. Phase 3 involves the statistical analysis of results on a very large population. This last phase requires significant resources from the company. The drug is then approved and finally released on the market. This procedure can be extremely lengthy and varies depending on the country. Some health authorities might refuse a new product even though an authority in another country has already approved it. Novartis provides this information on page 52 et seq. of its 2013 annual report.

Analysts use a combination of projections and probability of success. A drug is first evaluated in terms of its market potential. Future cash flows from sales are estimated with a standard profitability based on the information available. All cash flows are discounted at a rate that takes into account the therapeutic or competition risk for this category of drug. This gives an estimated value of the approved drug. Finally, analysts apply the probability of approval relative to the stage of development of the drug.

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An example of a Novartis drug:

Novartis has more than 200 projects in clinical development, including 144 for its pharma division. The company mentions 47 of these in its annual report. Among them, buparlisib (or BKM120), a PI3K inhibitor designed to fight breast cancer, has completed phase 3. This product is in the approval stage and according to some analysts, is expected to generate peak sales in the region of USD 1 billion by 2020. The estimated FCF margin is around 40%.

The discounted cash flow is calculated as for an industrial project. The probability of market entry based on current information is estimated at 35 percent. We can see that the value of this product is approximately USD 0.15 per share. This approach can be used to measure the importance of announcements relating to the product pipeline.

	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Sales	0	0	100	300	600	900	1000	800	500	300	200	100
FCF	0	0	40	120	240	360	400	320	200	120	80	40

Cash flow margin	40%	
NPV	991	mios USD
Actualisation rate	10%	
Probability of success	35%	
Probability weighted	347	mios USD
NPV per share	**0.15**	**USD**

*1.2.2 Investment projections (net working capital and capital expenditure)**

The increase in turnover corresponds to better use of existing production lines, or more often an increase in production capacity requiring capital expenditure. We come back to the growth equation mentioned earlier:

Growth in FCFF = Reinvestment rate of NOPAT* IRR of new investments

A company that reinvests 60 percent of its cash flows in investments whose rate of return is 30 percent will see an increase in cash flow in the region of 18 percent[1].

In practice it is rare for companies to report on this subject. They usually just provide IRR targets for their internal and external investments, as well as the expected payoff period for such investments. Experience shows that these figures should be looked at with hindsight, not because companies do not keep their word, but because they report the 'ex ante' IRR of their investments optimistically, as the general management would present it to the board of directors. In reality, the important rate in this analysis is 'ex post' IRR, the rate actually achieved with all the macro or micro-economic influences (such as competitors being unexpectedly aggressive).

We have selected the following value drivers:

- working capital requirement expressed as a function of sales;
- capital expenditure requirement expressed as a function of sales (which includes capacity investments, productivity investments – fall in manufacturing costs – and investments through acquisitions).

[1] According to Aswath Damodaran, in 'Return on Capital (ROC), Return on Invested Capital (ROIC) and Return on Equity (ROE): Measurement and Implications', Stern School of Business, July 2007, the FCF reinvestment rate is measured with the formula (capex + ΔNWC – amortisation/depreciation)/NOPAT. If we use net profit, this formula becomes (capex + ΔNWC – amortisation/depreciation – ΔDebt)/Net profit.

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Working capital requirement is a function:

- of sales growth (net working capital/sales);
- of the stability of NWC management efficiency ratios. Companies are still more likely to introduce management software like SAP to optimise operating cash flows.

NWC is sometimes seen as an investment, sometimes as an inherent operating cost. NWC effectively has a twofold function, because the company cannot grow its sales without increasing its NWC (this is a consequence of sales and not a prior investment, like capex).

NWC becomes even more significant the higher the added value of the product is. The difference between the selling price (debtors) and the purchase price (creditors) is a determining factor of NWC.

NWC increases during periods of high inflation, and declines during periods of low inflation.

The investment requirement (capex) is calculated relative to sales or depreciation. A company that invests more than it depreciates is clearly in the development phase.

Investment and productivity capacity are estimated from:

- historical data;
- future sales forecasts (capex/sales ratio);
- investment of competitors.

External growth investments are estimated based on:

- historical data;
- the historical trend in the management's ability to rapidly integrate acquisitions
- the amount of cash available in the balance sheet and debt ratios.

*1.2.3 Other internal value drivers**

- Gross margin:
- Gross margin is estimated based on the competitive situation and efforts made internally to improve the profitability of transactions. The management of Novartis has endeavoured for several years to rationalise its sales network, particularly in the United States, while maintaining relatively high research and development expenditure. The strategy is thus to respond to pressure on margins through improved competitiveness.
- In the Novartis projections, we maintain constant fixed costs, although it is clear that fixed costs are only constant over a short period. Beyond a certain increase in sales, fixed costs also increase.

- Payout ratio:
- The payout ratio and dividend policy will be discussed in the chapter on corporate finance. We have not included share buybacks.

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- Non-cash charges and other reserves:
- These two elements include the impact of charges not linked to a cash inflow or outflow, described in previous sections. A series of revaluation entries or foreign exchange gains/losses are transferred directly to comprehensive income. The figures for previous years generally represent a decent estimate of future amounts. Failing this, the figure should be left as zero.

*1.2.4 External value drivers**

*1.2.4.1 The influence of exchange rates**

A company has very few ways of forecasting or fighting against currency fluctuations.

In principle, a company in a country with a weak currency should not take into account continuing currency depreciation in its future budgets unless it is able to take into account the rising cost of raw materials or various production costs that will have to be imported to achieve such a result.

Novartis and Nestlé generate around 2 percent of their turnover in Switzerland. Due to the strength of the Swiss franc, they have recorded asset impairments and poor sales growth for some time. Novartis decided a few years ago to adopt the United States dollar as its reporting currency, given that the USD zone represents its largest geographical area. Earnings per share must be converted from dollars to Swiss francs for shareholder calculations.

The impact of exchange rates is generally complex if we want to take these into account at each level of forecasts. It is better to have a general idea of the company's operating results and adjust margins and value drivers accordingly.

On page 169 et seq. and 242 et seq. of its 2013 annual report, Novartis describes the impact of the various financial risks, including exchange rates.

	% Constant currencies	Currency impact	Change in USD %
Sales	4	-2	2
Operating income	5	-8	-3
Core Operating income	3	-5	-2

The group also gives the geographical distribution as a percentage of its sales and production costs. We have supplemented the table with our own estimates.

	USD	EUR	CHF	JPY	Other DM	EM
Sales	36	26	2	8	3	25
Operating expenses	40	25	12	4	5	14
Currency change		3%	1%	-18%	-2%	-5%

Based on these figures, how do we reconstruct the negative currency effect of 8 percent on operating profit?

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The weighted average impact of each currency on sales and operating expenses is calculated.

	USD	EUR	CHF	JPY	Other DM	EM	
Sales	36	26	2	8	3	25	
Operating expenses	40	25	12	4	5	14	
Currency change		3%	1%	-18%	-2%	-5%	
Impact on sales		0.8%	0.0%	-1.4%	-0.1%	-1.3%	**-1.95%**
Impact on operating expenses		0.8%	0.1%	-0.7%	-0.1%	-0.7%	**-0.65%**

A rule of three allows us to verify that the impact on operating profit is indeed 8 percent.

	cc	in USD	Change
	Year-end	Year-end	in USD
Sales	100.0	98.1	-1.95%
./. Operating expenses	81.2	80.7	-0.65%
Operating profit	18.8	17.4	-7.56%

*1.2.4.2 Inflation and interest rates**

Inflation is included in growth forecasts for three reasons.

- Inflation automatically increases sales as long as the company is able to replicate this inflation through price increases.
- Inflation has an impact on margins. Countries where central banks are strict in terms of inflation see their companies subject to enforced discipline, with a lack of inflation to increase its sales and generally a strong currency which penalises exports. There is a permanent incentive to maintain competitiveness at a high level.
- Inflation affects interest rates and therefore influences financial expenses.

Inflation affects historical comparisons. Average sales growth over the past 15 years includes periods of high inflation.

In the absence of detailed information, we recommend assuming that current inflation will continue.

*1.2.4.3 Tax rate**

Multinationals face very different national tax rates and generally have teams in charge of fiscally optimising the group's revenues. It is therefore difficult for an external observer to determine the appropriate tax rate. In addition, the total amount of tax includes current taxes and changes in provisions for deferred taxes.

The information contained in the annual report varies considerably from one company to another. Novartis provides useful information on the breakdown between Swiss and foreign taxes.

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2012	Switzerland	Foreign	Group
Income before taxes	5059	5866	10925
Taxes	530	1806	2336
Tax rate (current)	10.5%	30.8%	21.4%
Defered taxes	267	527	794
Tax rate (global)	5.2%	21.8%	**14.1%**

2013	Switzerland	Foreign	Group
Income before taxes	5516	5059	10575
Taxes	507	1764	2271
Tax rate (current)	9.2%	34.9%	21.5%
Defered taxes	157	671	828
Tax rate (global)	6.3%	21.6%	**13.6%**

On page 203 et seq. the group also publishes the reconciliation between its expected tax rate (12.1 percent in 2013) and its effective tax rate (13.6 percent).

The expected tax rate includes the use of tax credits grouped under deferred taxes in the balance sheet. There is some information on the maturity of the various tax credits, but these elements do not determine with sufficient certainty the date of use of these credits.

The analysis of the deferred tax account also reveals the complexity of the entries:

- Deferred tax assets (net), beginning of year 2013: USD 79 million

- Amounts debited:
  a. deferred tax transferred to profit and loss: USD 828 million (CH + abroad)
  b. deferred tax transferred to equity: USD 311 million

- Amounts credited:
  a. deferred tax transferred to comprehensive income: USD 666 million
  b. deferred tax transferred to other: USD 78 million

- Deferred tax assets (net), end of year 2013: USD 474 million

Without clear guidance from the management, we advise using the same tax rate as the previous year.

1.3 Recurring/non-recurring entries*

Financial statements include a certain number of entries classified as non-recurring by companies. This phenomenon is symptomatic of a more widespread problem: classification of good and bad news refers to the behaviour of firms in reporting good news as a part of operations, and bad news as an exceptional event. This, though, cannot be done too frequently. In most cases careful analysis of the annual report reveals the true story.

From an analytical point of view, entries considered as non-recurring should not be included in future earnings projections. This issue is not addressed by IAS or US GAAP rules. To judge whether an entry is recurring, we must apply common sense:

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*1.3.1 Recurring accounting entries**

The majority of entries related to the product life cycle are considered recurring in principle, including:

i. Transitional income/expenses, adjustment accounts
ii. Impairment losses (change of value) on assets/liabilities of the company
iii. The tax effect of these entries
iv. Restructuring costs
v. Foreign exchange gains and losses related to the operating cycle (NWC)

*1.3.2 Non-recurring accounting entries**

The following are considered non-recurring **in principle**:

i. Discontinued operations, closures, upcoming disposals by the company
ii. Changes in estimates and accounting policy
iii. Extraordinary expenses (i.e. a totally unpredictable event)
iv. Upward and downward value adjustments of long-term assets and liabilities, including foreign exchange gains and losses on these assets/liabilities. Most of the time, these changes are taken through comprehensive income and so are not included in the earnings calculation.

However, if one of these entries is present at least three times during the previous five financial years, then it must also be classified as recurring. This frequency means that the company has a business model that produces this type of income. For example, gains on recurring asset disposals can indicate a willingness to consider the management of an asset portfolio from a financial or more opportunistic viewpoint.

*1.3.2.1 Income, gains and losses from discontinued operations**

Income, gains and losses from discontinued operations are a special case of non-recurring items; here a part of the business is discontinued. IFRS 5 classifies an operation as discontinued at the date it meets the criteria to be classified as held for sale or when the enterprise has disposed of the operation.

A non-current asset must be classified as held for sale if its carrying amount will be recovered principally through a sale transaction rather than through continuing use. For this to be the case, the asset must be available for immediate sale and its sale must be highly probable. Such assets are presented separately in the balance sheet. They are carried at the lower of carrying amount and fair value less costs to sell and no longer depreciated.

IFRS 5 also specifies that the results of discontinued operations are to be shown separately in the statement of comprehensive income. Analysts should nevertheless be very careful in dealing with this situation. They must exercise appropriate caution to ensure that the effects of the discontinued operations are clearly identifiable.

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*1.3.2.2 Significance and implications of alternative accounting policies on the financial statements**

The implications of alternative accounting policies on financial statements are dealt with in IAS 8, which relates to accounting policies, changes in accounting estimates and errors. These changes may relate to one or more of the following items:

- methods of inventory valuation;
- accounting for long-term contracts;
- employee benefits plans;
- accounting for affiliates;
- changes that take place as a result of changes in accounting standards; etc.

Of these the first four are voluntary actions by the firm, while the last one is a legal requirement imposed from outside. Analysis of the effects of these changes is, however, the same.

*1.3.2.3 Definitions**

IAS 8 makes a distinction between:

- changes in accounting policies,
- changes in accounting estimates.

This distinction must be clearly understood because the treatment of these two categories is different.

Changes in accounting policies are defined as '*changes in the principles, bases, conventions, rules and practices applied by the enterprise in preparing and presenting its financial statements.*'

Examples of changes in accounting policies are:

- the abandonment of the LIFO convention for the FIFO method in the valuation of inventories;
- the decision to capitalise borrowing costs in the cost of eligible assets whereas these costs were previously recognised as expenses;
- the replacement of the proportionate consolidation by the equity method for the treatment of interests in joint ventures; etc.

Changes in accounting estimates are adjustments of the carrying amount of an asset or a liability resulting from a reassessment of its expected future benefits.

An enterprise makes a change in an accounting estimate when it modifies the amount of an existing provision or the depreciation period of an asset, based on new information regarding the risk concerned or the useful life of the asset.

A change in accounting policy should be made only:

- if required by a standard;
- or if it will result in a more relevant presentation of events or transactions.

By contrast a change in an accounting estimate must be made as soon as previous estimate are no longer valid.

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*1.3.2.4 The treatment of changes in accounting estimates**

Any change in an accounting estimate is recognised **prospectively**, i.e. in the period of the change (and future periods if the change affects both). It has no impact on previous financial statements.

Example:
An asset was acquired for CU 100'000 at the beginning of year N-3. At the date of acquisition, the estimated useful life was 10 years and the residual value was 0. In year N, the remaining useful life is re-estimated to 3 years because of rapid obsolescence.

The depreciation expenses will be calculated as follows:

N-3: 100'000 / 10 =	10'000
N-2:	10'000
N-1:	10'000
N: (100'000 – 30'000) / (3+1) =	17'500
N+1:	17'500
N+2:	17'500
N+3:	17'500
	100'000

*1.3.2.5 The treatment of changes in accounting policies**

Any change in accounting policy must be applied **retrospectively**. This means that the comparative information for the prior periods is restated using the new policy, as if the new policy had always been in use.

The cumulative effect of this change is given as an adjustment to the retained earnings at the beginning of the year. All other information of prior periods is also restated.

Let us take an example to understand this treatment.

Example:
In the year N, ABC company decided to shift to the percentage-of-completion method of accounting for its long-term contracts. Till then it had used the completed-contract method of revenue recognition. Below are the details of income and retained earnings.

	Year N-1	Year N
Profit from operating activities	150'000	100'000
Income taxes at 30%	-45'000	-30'000
Profit after taxes	105'000	70'000
Dividends	-40'000	-30'000
Retained earnings beginning	135'000	200'000
Retained earnings end	200'000	240'000

The effects of changes in accounting policy are:

- prior to year N-1: increase of 30’000
- during N-1: decrease of 10’000

Adjustments to periods prior to N-1:

Increase in retained earnings, net of taxes = 30’000 · 0.70 = 21'000

Adjustment to the statement of comprehensive income of year N-1:

Decrease in profit net of taxes = 10’000 · 0.70 = 7’000

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Statement of comprehensive income for year N-1 restated:

Profit from operating activities	140'000
Income taxes at 30%	- 42'000
Profit after taxes	98'000
Dividends	40'000
Retained earnings beginning:	156'000 (retained earnings at the beginning are increased by 21'000 to take care of the prior period adjustments)
Retained earnings end:	214'000

Adjusted statement of comprehensive income for year N:

There is no change as the statement has been prepared with the new accounting policy.

Adjusted statement of retained earnings for N:

Retained earnings in the beginning	214'000
Retained earnings at the end	254'000

Necessary notes to accounts will contain an explanation about the impact of the change in accounting policy.

We find that the analyst thus has to look carefully at the notes to accounts. He has to evaluate the impact of changes in accounting policies on the financial statements. This is essential to make the financial statements of different periods comparable. Similar adjustments need to be made to the financial statements when different companies are compared. Once the impact is known the corresponding financial statements, including those of the previous years, need to be reworked on a pro forma basis. Only then will any analysis of financial statements be meaningful.

Unfortunately some companies continue to make such changes without providing all the information necessary to adjust accounting figures accordingly. The analyst should thus be very watchful and pay particular attention to the possible impact of such changes on ratios, and on any other indicators he uses in his analysis.

Most accounting changes do not normally have an effect on cash flows. It is this feature of cash flows that has made cash flow statements such an important tool of performance analysis. So much so that it has become a mandatory part of the financial statements.

1.4 Additional information (quarterly, divisions)*

Aggregate forecasts can be refined by the use of quarterly results and results by division of the company.

Analysts generally estimate consolidated results from estimates of sales and operating profit of the various group divisions. The transparency of the figures by divisions has improved somewhat in recent years. This makes it easier to assess the allocation of invested capital in the strategic group analysis.

Quarterly data are used to verify that full-year projections are consistent with the guidance issued by the management every three months. This is also when most analysts revise their forecasts.

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*1.4.1 Projections based on interim reporting**

Most organisations report their performance in the form of financial statements once a year. As these financial statements are prepared after the year is over, they relate to past data. This delay is not acceptable to the analyst and other users. Most countries therefore require that listed firms make interim performance reports, such that most organisations do so. Owing to the importance of this requirement the IASB has developed a standard (IAS 34).

An interim financial report is defined by IAS 34 as, "a financial report containing either a complete set of financial statements (as described in IAS 1) or a set of condensed financial statements (as described in IAS 34) for an interim period."

An interim period is defined as' *"a financial reporting period shorter than a full financial year"*. In most countries, the interim financial reporting period covers 3 or 6 months.

The objectives of interim financial reporting are:

- to provide timely and frequent information to users such as analysts and creditors;
- to provide a basis for projecting annual performance;
- to provide an ongoing basis for adjusting estimates of projected performances.

It must also be noted that as the time period reduces, errors become magnified. Annual events like tax credits, taxes, projections of expenses, the effects of future issue of bonds or stocks, annual maintenance periods or shut downs cannot be projected accurately from such interim reports. Projections based on interim reports may not allow for seasonality of earnings or temporary market conditions. Providing the analyst makes allowances for such things, interim reports can be a useful tool in financial forecasting and analysis.

Two distinct views exist on this issue. In the US interim reports are viewed as an integral part of annual reporting, while in Europe, preparing annual financial statements and interim reports are considered as distinct activities. The integral approach requires an estimation of the full year's performance and hence is prone to forecasting errors. Because views on this are so divided IAS 34 takes a combined view.

IAS 34 does, however, stipulate that interim statements be prepared in accordance with the accounting policies adopted in the most recent full year financial statements. The same standard specifies the items that are to be disclosed in these statements. The main thrust has been on the reporting of events and circumstances that have occurred after the publication of the latest annual report. It discourages repeating the information already given in past annual reports.

There are three important aspects of interim financial reporting. They are:

- A firm can provide a condensed form of reporting, but there is no prohibition on providing detailed financial statements.
- Even in condensed form, the firm is free to add items it considers significant.
- The standards of disclosure and accounting principles apply to the complete set of interim financial statements as they apply to the condensed version.

An interim report contains at least the following components:

- a condensed or detailed balance sheet;
- a condensed or detailed statement of comprehensive income;

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- a condensed or detailed statement of changes in equity;
- a condensed or detailed statement of cash flows;
- a selected set of footnote disclosures;
- disclosure of EPS (both basic and diluted);
- interim reports of the parent company as well the consolidated report for the group if such items have been included in the more recent annual financial statements.

It is here that we will find detailed information on any change in accounting policies, annual effects as mentioned in the previous paragraphs and some idea of seasonality and temporary events.

IAS 34 also mandates reporting of comparative performance, i.e. the firm has to present information for the comparative period of the previous year as well as data to date. An interim income statement will therefore have four columns:

- current period data;
- year to date data;
- data for the corresponding interim period in the previous year;
- year to date data for the corresponding period in the previous year.

The balance sheet, however, will only have the data as at the end of the present interim period and as at the end of the corresponding period in the previous year. The same principle applies for cash flow statements and statements of changes in equity.

Some firms also report on a rolling 12-month period basis to eliminate the effect of seasonality.

So we may conclude that interim financial statements are extremely useful for financial analysts in forecasting the performance of firms, as well as in evaluating current performances on a reasonably up-to-date basis.

*1.4.2 Projections based on segment reporting**

We know that the main purpose of financial reporting is to provide a ‘true and fair view’ of the operations of a business. It is in this regard that segment reporting assumes significance.

Prior to 2009, the IASB standard on segment reporting was IAS 14. It required the disaggregation of the enterprise's activities into segments based on products and services, and on geographical areas. This approach was criticized for not providing information reflecting the firm's internal organisation that could enhance the user's ability to predict management's actions.

IAS 14 was thus replaced by IFRS 8 that adopts a management approach. This new standard is applicable for periods beginning on or after 1 January 2009.

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*1.4.2.1 Segment identification**

IFRS 8 defines an operating segment as a component of an enterprise:

- that engages in activities from which it may earn revenues and incur expenses;
- whose operating results are regularly reviewed by the company's chief operating decision maker (CEO, chief operating officer...), i.e. the person who makes decisions about resource allocation and performance assessment;
- for which financial information is available.

A company must report information about each operating segment that exceeds any of the following thresholds:

- revenue (including inter-segment sales) ≥ 10% of combined revenue of all reporting segments;
- profit or loss ≥ 10% of combined profit or loss of all reporting segments;
- assets ≥ 10% of combined assets of all reporting segments.

Two or more operating segments may be aggregated into a single operating segment if they have similar characteristics with regard to:

- the nature of the products and services,
- the nature of the production processes,
- the type or class of customers,
- the distribution methods,
- the regulatory environment.

However IFRS 5 specifies that the total external revenue reported by operating segments cannot be less than 75% of the firm's revenue. Otherwise additional operating segments should be identified until the 75% threshold is reached.

*1.4.2.2 Disclosure requirements**

For each reportable segment, a company must report:

- a measure of profit and loss,
- total assets,
- a measure of liabilities (if regularly provided to the chief operating decision maker),
- revenues from external customers,
- revenues from transactions with other operating segments,
- interest revenue,
- interest expense,
- depreciation and amortization,
- income tax expense,
- material non-cash items.

A company must also disclose the following general information:

- factors used to identify reportable segments (for example whether management has chosen to organise the firm around differences in products and services, geographical areas, or a combination of factors);
- types of products and services from which each reportable segment derives its revenues.

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The segment information provided by Novartis both in its published figures and recalculated figures (core earnings) contrast with those of Apple, which publishes very little segment information and concentrates on regional results to avoid disclosing its product profitability.

*1.4.2.3 Using segment information for the analysis**

It is clear from the above paragraphs that segment information can be put to a number of uses. Various uses of segment information are:

- comparison of performance of various divisions;
- comparison of performance of various products;
- comparison of performance of various managers in charge of different geographical locations;
- decisions regarding the sub-division of major activities and the discontinuing of non-viable activities;
- comparison of performance with companies in the same product line.

While comparing performances, it should be borne in mind that only comparable items should be compared. For example, the pharmaceutical division of one firm should be compared with the farm divisions of other companies. Similarly, comparing the performance of farm products in the USA, say, should be done with the products of other farm companies in the USA.

Segment data can be used for trend analysis. One of the main uses of segment data is to forecast future performances. We know that for a multi-product company, the overall performance is the aggregate of the performances of its units after adjusting for inter-segmental transactions. Thus, once we have the segment data, then this is projected into the future. The overall picture is projected from the projections of individual divisions or segments, and that picture is then adjusted for inter-segmental transfers. The resultant figures give us a good idea of the expected future performance.

In addition, accounting standards demand enterprises to disclose information to enable users of its financial statements to evaluate the nature and financial effects of the business activities in which it engages and the economic environments in which it operates. In most companies, the various activities are grouped in divisions (segments). Enterprises have to disclose, among other information, the net operating income, the sales and the assets for every segment.

Novartis offers a high level of segment transparency, since it publishes virtually the entire profit and loss and balance sheet for each division. By taking into account all the elements present in the annual report and by making a few extrapolations, we can estimate the FCFF statement by division as well as invested capital[2]:

[2] These figures are estimates. The data from the annual report alone cannot be used to reconstruct these.

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2013	Pharma	Alcon	Sandoz	Vaccines	Consumer	Corporate	GROUP
Net working capital	1'052	1'274	940	773	379	-244	4'174
PPE & long term assets	13'774	4'000	4'896	2'303	982	10'890	36'845
Invested capital out of intangibles	**14'826**	**5'274**	**5'836**	**3'076**	**1'361**	**10'646**	**41'019**
Goodwill & Intangibles	6'099	37'133	12'640	2'176	786	33	58'867
Invested capital	**20'925**	**42'407**	**18'476**	**5'252**	**2'147**	**10'679**	**99'886**

2013	Pharma	Alcon	Sandoz	Vaccines	Consumer	Corporate	GROUP
Operating income "Core"	9523	3694	1541	65	298	-636	14485
Tax rate estimated	12.0%	20.0%	20.0%	20.0%	20.0%	15.0%	13.4%
NOPAT	8380	2955	1233	52	238	-541	12318
Depreciation	822	319	307	150	47	110	1755
Non cash charges	659	256	107	5	21	-44	1003
Capex	-1775	-523	-500	-182	-79	-126	-3185
Change in NWC	-479	-186	-77	-3	-15	32	-760
FCF "Core"	**7608**	**2821**	**1069**	**21**	**212**	**-569**	**11131**
FCF by division published by Novartis	8332	2755	1055	104	208	-783	11671
FCF return with intangibles	36.4%	6.7%	5.8%	0.4%	9.9%	-5.3%	11.1%
FCF return without intangibles	51.3%	53.5%	18.3%	0.7%	15.6%	-5.3%	27.1%

These figures are fairly close to the FCFF by division, as indicated by Novartis at the beginning of each segment analysis in the annual report.

One of the central points of the strategic analysis that we will conduct in the corporate finance chapter will be to establish the merits of the allocation of the company's capital. For this we will talk extensively about segment profitability. We can already see, based on the figures calculated above, that there are considerable differences in profitability between divisions and that these figures can vary significantly depending on whether or not the intangible assets of Novartis are taken into account. The difference is particularly dramatic for Alcon due to the significant acquisition goodwill that Novartis had to report in its balance sheet at that time.

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1.5 The Novartis case*

Variable growth and value drivers

PROFIT AND LOSS (Analytical View - Adjusted figures)

	Variable growth scenario						Value Drivers for variable growth				
	2011	2012	2013	2014E	2015E	Gr.13-15	2013	2014E	2015E	Type	Explanations
Sales & Other revenues	59'492	57'505	58'831	59'125	60'603	1.5%	2.3%	0.5%	2.5%	Variable	Sales growth - Pipe-line by probabilities
Cost of goods sold	15'653	15'658	16'673	16'851	17'393						
Gross profit	43'839	41'847	42'158	42'274	43'210	1.2%	71.7%	71.5%	71.3%	Variable	Gross profit margin
Fixed costs out of depreciation	25'789	25'262	25'838	25'838	25'838						
EBITDA	18'050	16'585	16'320	16'436	17'372	3.2%					
Depreciation on PPE	2'141	1'743	1'835	1'971	2'084		9.23	9.23	9.23	Fixed	Number of years by asset class
EBIT	15'909	14'842	14'485	14'465	15'288	2.7%					
Taxes on operations	2'566	2'330	2'210	2'242	2400		15.3%	15.5%	15.7%	Variable	Tax rate
NOPAT	13'343	12'512	12'275	12'223	12'888	2.5%					
Non-operating income after tax	779	755	877	921	967	5.0%		5.0%	5.0%	Fixed	Historical rate 5%
Total invested capital contribution	14'122	13'267	13'152	13'144	13'854						

Novartis (adjusted figures)	2011	2012	2013	2014E	2015E	Gr.13-15					
Net interest expense after tax	632	691	642	642	618	-1.9%					
Interest on interest bearing assets	699	655	664	685	721		3.7%	3.8%	4.0%	Variable	If no precise ideas, today's interest rates
Income on interest bearing assets	-59	92	35	54	117		0.38%	0.50%	0.80%	Variable	If no precise ideas, today's interest rates
Other financials	5	-257	-129	-129	-129						
Net income	13'490	12'576	12'510	12'502	13'237	2.9%					
Minorities	132	113	117	117	117	0.0%					
Net income shareholders' stake	13'358	12'463	12'393	12'385	13'120	2.9%					
Total invested capital distribution	14'122	13'267	13'152	13'144	13'854						

BALANCE SHEET (Analytical view - Adjusted figures)

	Variable growth scenario						Value Drivers for variable growth				
	2011	2012	2013	2014E	2015E	Gr.13-15	2013	2014E	2015E	Type	Explanations
Net Working Capital	2'235	1'779	1'019	946	946	-3.6%	1.73%	1.60%	1.50%	Variable	Net Working capital / Sales
Trade receivables	10'323	10'051	9'902	9'193	9'193						
Inventories	5'930	6'744	7'267	6'746	6'746						
Other current assets	2'756	3'090	3'392	3'149	3'149						
Trades payables	4'989	5'593	6'148	5'708	5'708						
Other current liabilities + taxes	11'785	12'513	13'394	12'435	12'435						
Property, plant and Equipment	15'627	16'939	18'197	19'241	20'187	5.3%					Year -1 + Capex - Depreciation
Intangible assets	65'325	67'513	67'633	67'633	67'633	0.0%					
Other assets	418	505	525	525	525						
Investment in associated comp.	8'622	8'840	9'225	9'686	10'171	5.0%		5.00%	5.00%	Fixed	Historical rate 5%
Deferred taxes, asset for sale	5'857	7'365	8'134	8'134	8'134	0.0%					
Invested capital	98'084	102'941	104'733	106'165	107'595	1.4%					

	2011	2012	2013	2014E	2015E	Gr.13-15
Financial net debt	14'178	10'490	7'285	3'402	66	-90.5%
Current debt	6'374	5'945	6'776	6'776	6'776	
Cash and equival., mark.securities	5'075	8'119	9'210	13'093	16'429	33.6%
Long term debt	13'855	13'781	11'242	11'242	11'242	
Other long term financial assets	976	1'117	1'523	1'523	1'523	
Other liabilities / NIBLICS	7'792	9'810	7'268	7'268	7'268	
Minorities	96	126	129	129	129	
Shareholders'equity	69'257	75'229	83'097	87'789	92'087	5.3%
of which share capital	1'016	1'001	1'001	1'001	1'001	
of which retained earnings	68'241	74'228	82'096	86'788	91'086	
Deferred taxes liabilities, liab.for sale	6'761	7'286	6'954	6'954	6'954	
Invested capital	98'084	102'941	104'733	106'165	107'595	1.4%

Internal value drivers are in grey, external in burgundy. These figures are based on management information and estimates of the principal sell-side analysts in March 2014.

Cash has grown at a much faster rate than earnings. This indicates the need for management to find growth investments that can be financed using this cash, otherwise the company's balance sheet would become increasingly cash-intensive with the corollary of a fall in return on assets.

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FREE CASH FLOW (Analytical View - Adjusted figures)

Novartis (adjusted figures)	2012	2013	2014E	2015E	Gr.13-15	Value Drivers for variable growth 2013	2014E	2015E	Type	Explanations
Gross margin	41'847	42'158	42'274	43'210	1.2%					
Fixed cost out of depreciation	25'262	25'838	25'838	25'838						
EBITDA	16'585	16'320	16'436	17'372						
Non cash charges		0	300	500		-	300	500	Variable	Manual input (by default zero)
Operating taxes	2'330	2'210	2242	2400						
EBIDA	14'255	14'110	13'894	14'472						
Trade receivables	272	149	709	0						
Inventories	-814	-523	521	0						
Other current assets	-334	-302	243	0						
Trades payables	604	555	-440	0						
Other current liabilities	728	881	-959	0						
NWC	456	760	73	0						
Operating economic Cash Flow	14'711	14'870	13'967	14'472	-1.3%					
Intangible assets	-2'188	-120	0	0						
Capex		-3'093	-3'015	-3'030		5.26%	5.10%	5.00%	Variable	Capex PPE / Sales ratio
Net buildings and PPE	-1'312	-1'258	-1'044	-946						
Depreciation on PPE	-1'743	-1'835	-1971	-2084						
Other LT assets	-87	-20	0	0						
Investing	-5'330	-3'233	-3'015	-3'030	-3.2%					
FCF to the Firm (Operating)	9'381	11'638	10'952	11'442	-0.8%					
Investments in associates	-218	-385	461	484						
Contribution of associates after taxes	755	877	921	967						
Deferred assets, asset for sales	-1'508	-769	0	0						
Δ Non Operating	-971	-277	1'382	1'451						
FCF to the firm (assets side)	8'410	11'361	12'334	12'893	6.5%					
Novartis (adjusted figures)	**2012**	**2013**	**2014E**	**2015E**	Gr.13-15					
Interest expense after taxes	-691	-642	-642	-618						
Current debt	-429	831	0	0						
Cash and Marketable securities	-3'044	-1'091	-3'883	-3'336						
Long term debt	-74	-2'539	0	0						
Other long term financial assets	-141	-406	0	0						
Other liabilities / NIBLICS	2'018	-2'542	0	0						
Net debt	-1'670	-5'747	-3'883	-3'336						
Debtholder remuneration	-2'361	-6'390	-4'525	-3'954						
Minorities contribution	-113	-117	-117	-117						
Minorities	30	3	0	0						
Dividends	-6'030	-6'089	-6192	-6822		49.1%	50.0%	52.0%	Variable	Payout ratio
Other reserves	-446	1'564	-1'500	-2'000			1'500	2'000	Variable	Manual input (by default zero)
Share Capital	-15	0	0	0						
Shareh.& min. remuneration	-6'574	-4'639	-7'809	-8'939	38.8%					
FCF to the Firm (Financing)	-8'935	-11'029	-12'334	-12'893	8.1%					
Deferred taxes, liabilities for sales	525	-332	0	0						
Δ Non Operating	525	-332	0	0						
FCF to the firm (liabilities side)	-8'410	-11'361	-12'334	-12'893	6.5%					

Projections based on segment reporting

To check whether our estimated consolidated operating profit is correct, we will estimate earnings for each operating segment. Analysts use both approaches to see which is the most plausible outcome and adjust their estimates accordingly. The quarterly results can be used as a cross-check for other methods. Investors thus have a whole series of indicators of future earnings that enable them to maintain 'credible' forecasts at all times.

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Forecasts by division (April 2014)					
	2013	**2014**	**2015**	**2016**	**Explanations**
PHARMA					
Sales	32'214	32'536	32'536	32'211	
Growth		1.0%	0.0%	-1.0%	Patent expiration
"Core" EBIT	9'523	9'435	9'435	9'341	
Margin	29.6%	29.0%	29.0%	29.0%	Restructuring plans
ALCON					
Sales	10'496	10'706	11'027	11'468	
Growth		2.0%	3.0%	4.0%	
"Core" EBIT	3'694	3'640	3'804	4'014	
Margin	35.2%	34.0%	34.5%	35.0%	Launch/ marketing costs
SANDOZ					
Sales	9'159	8'884	9'773	9'968	
Growth		-3.0%	10.0%	2.0%	
"Core" EBIT	1'541	1'599	1'857	1'894	
Margin	16.8%	18.0%	19.0%	19.0%	
VACCINES					
Sales	1'987	1'590	1'669	1'753	
Growth		-20.0%	5.0%	5.0%	Sale of blood products to Grifols
"Core" EBIT	-165	79	150	210	
Margin	-8.3%	5.0%	9.0%	12.0%	Grifols deconsolidation
CONSUMER					
Sales	4'064	4'470	4'783	5'118	End of manufacturing problems
Growth		10.0%	7.0%	7.0%	
"Core" EBIT	298	447	717	1'024	
Margin	7.3%	10.0%	15.0%	20.0%	
CORPORATE & OTHER INCOME					
Sales	888	***888***	***888***	***888***	Stable as no further explanation
Growth					
"Core" EBIT	-636	***-636***	***-636***	***-636***	Stable as no further explanation
GROUP					
Sales	58'808	59'074	60'676	61'406	
Growth		0.5%	2.7%	1.2%	
"Core" EBIT	14'255	14'565	15'328	15'847	
Margin	24.2%	24.7%	25.3%	25.8%	

NB: Forecasts are underlined

The conclusion is that it is possible to obtain a decent approximation of Novartis estimates without the need for dozens of different variables. Investors can be warned against the dangers of forecasting earnings with the utmost precision. This leads to the phenomenon of 'number crunching': when the estimated income at the end of this process is too high, many investors are tempted to reduce their projections on several minor variables to arrive at a figure they find more 'correct'. Doubtless the result obtained is more satisfactory, but it tends to obscure the many uncertain individual forecasts to which they resorted. The key is not to increase the number of uncertain estimates, but to reduce estimates to a small number of variables over which the investor has conviction. Without this conviction, the market consensus will be used, as discussed in the evaluation section.

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