Forecasting in Equity Research

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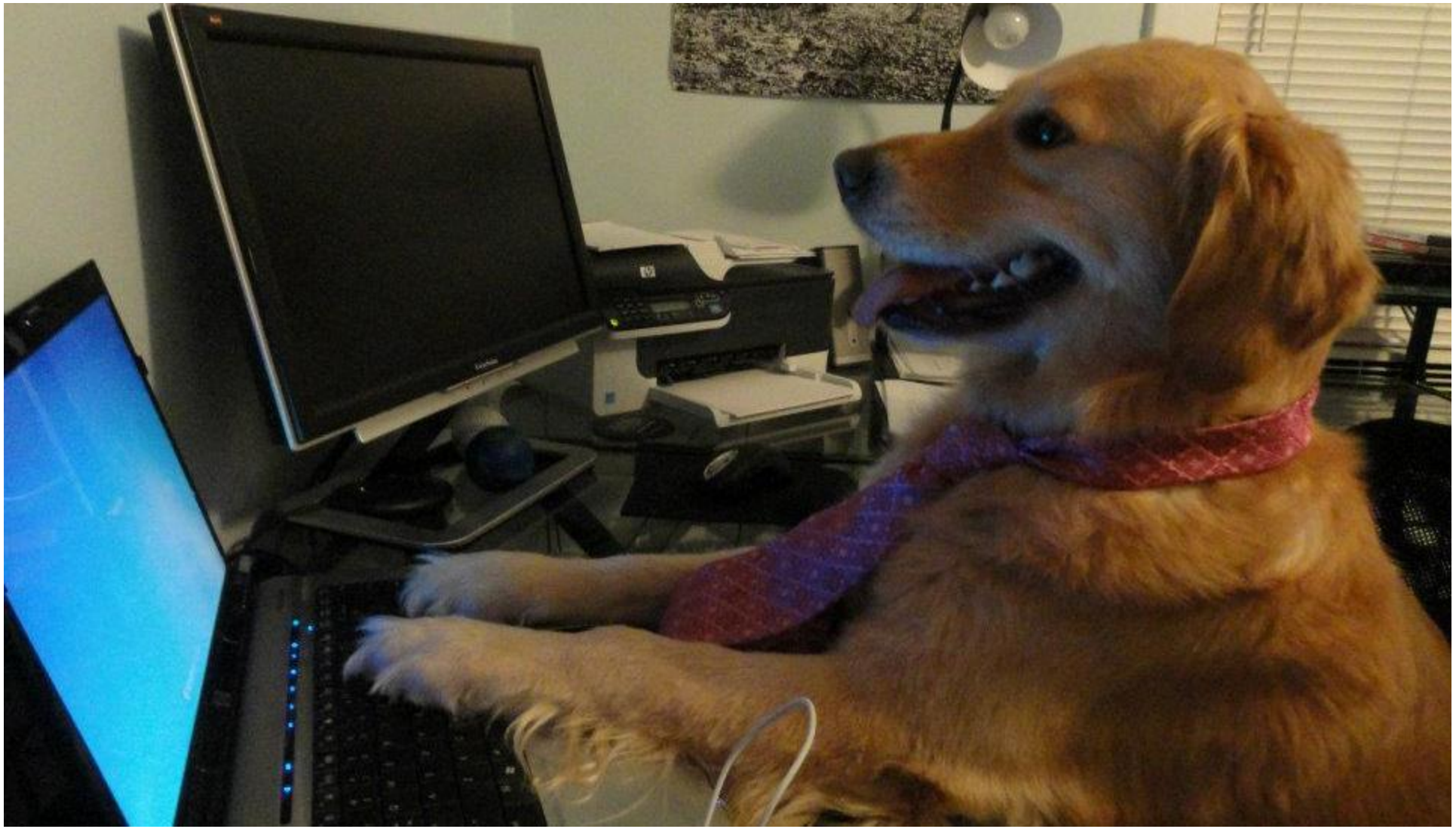
Forecasting



Agenda

1 Basics of forecasting

A few subjective views on forecasting

Forecasting in equity research is **NOT** about statistical tools

It is about making assumptions and drawing conclusions based on **hard facts**

It is also **NOT** about being perfectly correct about the future

Forecasting needs to reflect the story you develop

Good forecast shows that you understand

The business, its environment as well as internal and external value drivers

How commercial and strategic elements translate into financial figures

What probable set of events may occur and how to assess these occurences

Some basics: types of forecasts

Simple forecast

	2021	2022	2023	2024E	2025E	2026E
Other current assets	145	191	225	225	225	225

Constant relation

	2021	2022	2023	2024E	2025E	2026E
CAPEX	229	247	265	268	289	301
CAPEX as % of revenue	*7%*	*7%*	*7%*	*7%*	*7%*	*7%*
Revenue	3,278	3,529	3,783	3,829	4,126	4,306

Specific growth rate, e.g. inflationary growth

	2021	2022	2023	2024E	2025E	2026E
Employee cost per FTE per annum	80.0	82.2	84.0	85.0	85.8	86.8
growth in %		*2.8%*	*2.1%*	*1.2%*	*1.0%*	*1.1%*

Hardcode

	2021	2022	2023	2024E	2025E	2026E
Investment projects						
New Facility 1	100	150	200	50		
New Facility 2		125	250	150	75	
New Facility 3				200	195	200

Based on historical tendencies

	2020	2021	2022	2023	2024E	2025E	2026E
Days of payables outstanding	110.0	105.0	117.0	114.0	112.0	112.0	112.0
Rolling 3-year avg.			*110.7*	*112.0*	*112.0*	*112.0*	*112.0*

2 Understanding and forecasting revenues

Step by step guide to forecasting revenues

Understand the business – how revenues are generated?

Is growth in the business driven more by volume or price?

What factors impacted the business most heavily in the past? – understand the value drivers

Once you understand how the company generated revenues historically, do your research on individual value drivers: What may change? How it may change? How did the company react in the past?

Draw conclusions and build a scenario – it is not about precision of forecast, but rather correctly recognising the impacts of potential occurences and making a directional estimate

How to think about revenue generation – make it simple

Internal determining factors:
- Product differentiation capabilities (quality, associated service, customer relationships)
- Costs of production & targeted margin
- Company objectives and strategy

Internal determining factors:
- Production capacity
- Capacity utilisation (potential spare capacity available for growth)
- Planned capacity expansion
- Outages – probable production stops

Revenue = Price x Volume

External determining factors:
- Price setter or a price taker
- Growth in demand
- Growth in supply
- Behaviour of competitors and providers of substitutes
- Regulatory environment
- Economic environment

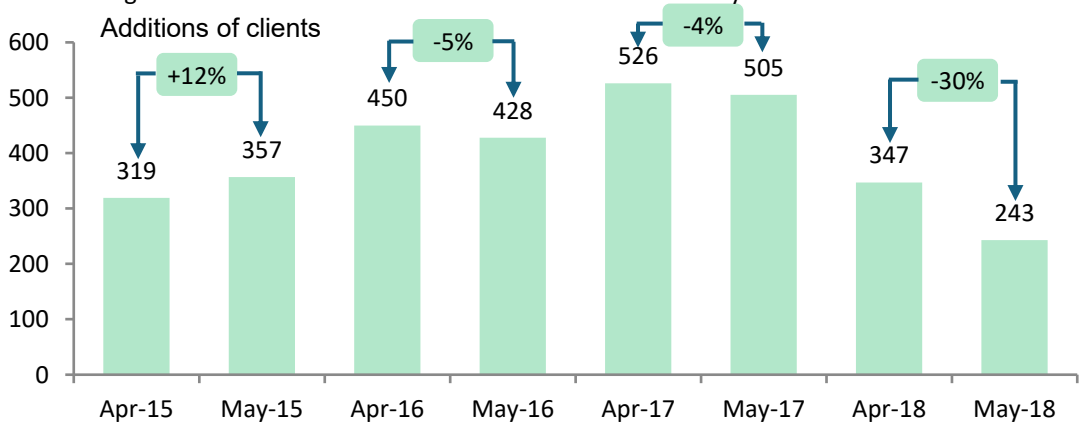
External determining factors:
- Growth in demand – growth of client industries, demand from new use cases
- Supply growth – additions of production at competitors
- Availability of materials and means of production

Example: Software as a service company

Revenue forecast

	Unit	2014	2015	2016	2017	2018E	2019E	2020E	2021E
Number of customers BOP	#	4,789	7,209	10,219	14,532	19,521	24,065	28,036	34,036
Monthly net additions	#	202	251	359	416	379	331	500	500
Number of customers EOP	**#**	**7,209**	**10,219**	**14,532**	**19,521**	**24,065**	**28,036**	**34,036**	**40,036**
Avg. number of customers*	#	5,951	8,845	12,510	17,133	22,045	26,184	31,286	37,286
growth (%)	*%*		*48.6%*	*41.4%*	*37.0%*	*28.7%*	*18.8%*	*19.5%*	*19.2%*
Revenue per customer/month in USD	**USD**	**84.57**	**93.76**	**92.29**	**93.45**	**93.45**	**91.58**	**89.75**	**87.95**
growth (%)	*%*		*10.9%*	*-1.6%*	*1.3%*	*0.0%*	*-2.0%*	*-2.0%*	*-2.0%*
FX (USD/PLN)	PLN	3.14	3.32	3.83	3.97	3.60	3.60	3.60	3.60
Revenues	**PLN**	**19**	**33**	**53**	**76**	**89**	**104**	**121**	**142**
growth (%)	*%*		*74.5%*	*60.5%*	*43.8%*	*16.7%*	*16.4%*	*17.1%*	*16.8%*

Note*: Average number of customers calculated on a basis of monthly data



Background story

- The company offered software for e-commerce businesses
- Reported every month net client additions
- Generated revenues in USD but reported in PLN (2018 showed strengthening of Polish currency against the dollar)
- The market at that time was pretty fragmented, but there were 2 key developments happening at that time:
  - Strengthening of the position of the free of charge providers of similar software
  - Market entry of big players with deep pockets
- Additionally, because of rising competion marketing platforms changed the ways they were charging for promoting software solutions in this field

Example: Semiconductor producer

Revenue forecast

	Unit	2019	2020	2021	2022E	2023E	2024E	2025E	2026E
FX (EUR/USD)	EUR	1.13	1.12	1.19	1.07	1.07	1.07	1.07	1.07
Automotive semiconductors									
Automotive semiconductor market	USD	37,186	34,960	46,700	50,436	59,514	68,442	76,655	84,320
growth (%)	%		*-6.0%*	*33.6%*	*8.0%*	*18.0%*	*15.0%*	*12.0%*	*10.0%*
Implied automotive semi market share	%	10.6%	11.3%	12.3%	12.3%	12.3%	12.3%	12.3%	12.3%
Automotive semiconductor revenue	EUR	3,503	3,521	4,841	5,815	6,861	7,890	8,837	9,721
growth (%)	%		*1%*	*37%*	*20%*	*18%*	*15%*	*12%*	*10%*
Industrial power control									
Discrete IGBT transistors	USD	1,430	1,586	1,745	1,867	2,053	2,238	2,417	2,586
growth (%)	%		*11%*	*10%*	*7.0%*	*10.0%*	*9.0%*	*8.0%*	*7.0%*
Intelligent Power Modules	USD	1,537	1,429	1,429	1,458	1,516	1,592	1,687	1,755
growth (%)	%		*-7%*	*0%*	*2.0%*	*4.0%*	*5.0%*	*6.0%*	*4.0%*
IGBT modules	USD	3,316	3,626	3,880	4,074	4,400	4,796	5,131	5,439
growth (%)	%		*9%*	*7%*	*5.0%*	*8.0%*	*9.0%*	*7.0%*	*6.0%*
Total IPC market	USD	6,283	6,641	7,053	7,398	7,969	8,626	9,236	9,780
Implied market share	%	25.5%	23.7%	26.0%	26.0%	26.0%	26.0%	26.0%	26.0%
Total IPC revenues	EUR	1,418	1,406	1,542	1,799	1,938	2,097	2,246	2,378
growth (%)	%		*-1%*	*10%*	*17%*	*8%*	*8%*	*7%*	*6%*

Background story

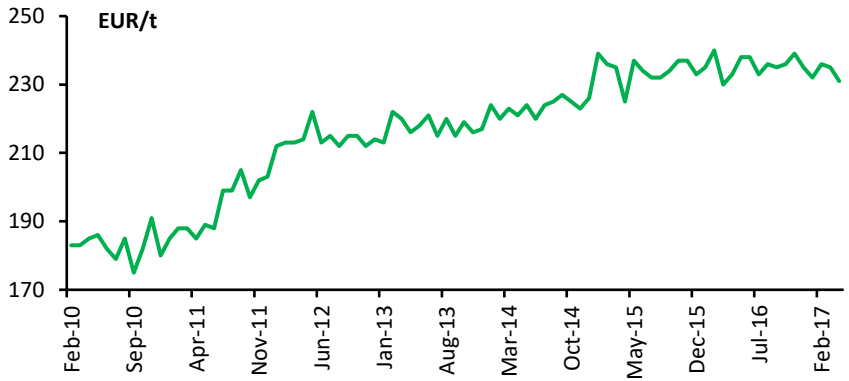
- Well-known European semiconductor producer with strong presence in automotive as well as energy sectors
- We experienced high energy prices associated with the war in Ukraine, it also seemed that the governemnts would be pushing for quicker energy transition in Europe to make the continent independent of Russian fossil fuels
- Despite potential downturn in the automotive market we could face a jump in demand for semiconductors for automotive sectors as the value of semis in PHEV and BEVs is more than double of the value of semis in internal combustion engine cars
- Increasing share of EVs would also trigger higher demand for infrastructure (charging stations, smart grid), which was expected to additionally support the demand for semis
- Fierce competition among semi producers would make it tough for the company to win over any market share

Example: Chemical company

Revenue forecast

	Unit	2014	2015	2016	2017E	2018E	2019E	2020E	2021E
FX (EUR/PLN)	PLN	4.2	4.2	4.4	4.26	4.15	4.15	4.15	4.15
Soda ash revenues									
Capacity	kt/y	2,200	2,450	2,600	2,600	2,600	2,600	2,600	2,600
Capacity utilisation	%	89%	85%	87%	88%	90%	90%	90%	90%
Production/Sales volume	kt	1,966	2,079	2,262	2,288	2,340	2,340	2,340	2,340
Benchmark European soda ash price	EUR/t	222	233	235.7	231.0	224.1	224.1	224.1	226.3
change of the benchmark price	*%*		*5.0%*	*1.2%*	*-2.0%*	*-3.0%*	*0.0%*	*0.0%*	*1.0%*
Implied sales price vs. benchmark	%	81%	83%	81%	81%	81%	81%	81%	81%
Implied achieved sales price	EUR/t	180.3	194.2	190.7	186.9	181.3	181.3	181.3	183.1
Implied achieved sales price	PLN/t	753.6	819.5	831.4	795.9	752.2	752.2	752.2	759.7
Revenues from sales of soda ash	PLNm	1,481	1,704	1,881	1,821	1,760	1,760	1,760	1,778

Benchmark price of soda ash in Europe



Background story

- A chemical company producing among others soda ash (sodium carbonate) which is used as a cleansing agent (ingredient of washing powder/dishwasher tablets) but also in glas production
- Soda ash can be produced synthetically, but there is also natural soda (trona) that can be mined, the latter is much cheaper to produce
- The demand for soda ash globally was growing at c. 2.5-3.0% per annum
- At that time in Turkey there were new production capacities of natural soda coming online of 0.5mt in 2017 and another 1.5mt in 2018 which made up c. 5% of global capacity or 20% of European capacity
- Additionally there were other small capacity expansion projects ongoing (Kazakhstan, USA)
- The company did not plan expansion of its own capacity

3 Forecasting expenses

Step by step guide to forecasting expenses

What is essential to run the business – in terms of inputs and overheads?

Which expenses are dependent on volumes and which have to be borne irrespective of production/ sales (fixed vs. variable)?

Are there separate markets for the inputs? – markets for raw materials, job market – perform the analysis of these individual markets and draw conclusions

What plans does the company have with regards to the expenses? Is it feasible what they are saying or is the market reality different?

Similarly like for revenues: draw conclusions and build a scenario – it is not about precision of forecast, but rather correctly recognising the impacts of potential occurences and making a directional estimate

How to think about costs – make it simple

Key determining factors:
- Company growth strategy
- Company asset structure (lease vs. own)
- Efficiencies (incl. administrative overhang and company structure) and synergy effects (post M&A)

Total cost = Per unit variable costs x Volume + Fixed costs

Key determining factors:
- Supply & demand of the production inputs
- Behaviour of suppliers
- Achievable efficiencies (technology)
- Regulatory environment through the supply chain
- Economic environment

NOTE*: The term “cost” is used here deliberately as I am referring to the economic definition

Example: Forecasting COGS at a commodity chemical company

COGS forecast

	Unit	2014	2015	2016	2017E	2018E	2019E	2020E	2021E
FX (USD/PLN)	PLN	3.2	3.8	3.9	3.77	3.50	3.50	3.50	3.50
FX (EUR/PLN)	PLN	4.2	4.2	4.4	4.26	4.15	4.15	4.15	4.15
Soda ash COGS									
Production volumes	kt	1,966	2,079	2,262	2,288	2,340	2,340	2,340	2,340
Coal									
Coal needed to produce 1t of s.a.	t	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
Volume of coal used	kt	782	827	900	910	931	931	931	931
Price of coal	PLN/t	234	218	194	200	220	240	240	240
Coal expense	**PLNm**	**183**	**180**	**174**	**182**	**205**	**223**	**223**	**223**
Coke									
Coke needed to produce 1t of s.a.	t	0.097	0.097	0.097	0.097	0.097	0.097	0.097	0.097
Volume of coke used	kt	191	202	220	223	228	228	228	228
Coking coal price	USD/t				172	220	180	150	150
Coke price multiplier					1.4	1.5	1.5	1.5	1.5
Coke price	USD/t	213	171	146	241	319	270	225	225
Coke price	PLN/t	670	650	575	908	1,117	945	788	788
Coke expense	**PLNm**	**128**	**131**	**127**	**202**	**254**	**215**	**179**	**179**
Energy expense		**84**	**84**	**93**	**94**	**100**	**107**	**107**	**107**
Gas expense	**PLNm**	**152**	**154**	**122**	**149**	**155**	**146**	**137**	**129**
Limestone expense	**PLNm**	**59**	**70**	**77**	**75**	**73**	**73**	**73**	**73**
Salt brine expense	**PLNm**	**68**	**94**	**139**	**135**	**136**	**136**	**136**	**137**
Ammonia expense	**PLNm**	**14**	**15**	**11**	**12**	**11**	**11**	**11**	**11**
Employee expenses	PLNm	136	139	184	195	211	225	239	254
Other expenses	PLNm	722	635	658	658	658	658	658	658
COGS excl. D&A	**PLNm**	**1,409**	**1,363**	**1,401**	**1,508**	**1,591**	**1,569**	**1,524**	**1,518**

Background story

Chemical company is producing soda ash synthetically with use of a Solvay method

COGS (excl. D&A) of this company consist mainly of raw materials and energy required for production

The biggest and most volatile expense contributors are thermal coal, coke, electricity and gas

At the time of the analysis, the company faced some increases in thermal coal prices and much greater jumps in coke prices resulting from increased coking coal prices (due to floodings in Australia)

The company argued that thanks to their long-term contracts with suppliers of coke, they are protected against the coke price hikes – **spoiler alert** – they were not

The company tried to protect their margins by partly switching from coke to anthracit (which was cheaper) but needed to be imported from Ukraine and as an input was required in greater volume than coke

Example: Forecasting expenses at a semiconductor company

Expense forecast

	Unit	2019	2020	2021	2022E	2023E	2024E	2025E	2026E
Revenues	EURm	8,029	8,567	11,060	13,315	14,547	15,900	17,136	18,268
growth (%)	*%*		*7%*	*29%*	*20%*	*9%*	*9%*	*8%*	*7%*
COGS	**EURm**	**(5,035)**	**(5,791)**	**(6,800)**	**(7,855)**	**(8,297)**	**(8,780)**	**(9,349)**	**(9,833)**
% of revenues	*%*	*-63%*	*-68%*	*-61%*	*-59%*	*-57%*	*-55%*	*-55%*	*-54%*
Employee expenses	EURm	(1,772)	(2,006)	(2,438)	(2,844)	(3,135)	(3,358)	(3,597)	(3,779)
Raw materials	EURm	(1,336)	(1,248)	(1,363)	(1,697)	(1,751)	(1,914)	(2,063)	(2,199)
Cost of services	EURm	(1,209)	(1,409)	(1,820)	(2,136)	(2,232)	(2,329)	(2,510)	(2,676)
Other	EURm	(717)	(1,128)	(1,178)	(1,178)	(1,178)	(1,178)	(1,178)	(1,178)
R&D	**EURm**	**(945)**	**(1,113)**	**(1,448)**	**(1,594)**	**(1,715)**	**(1,841)**	**(1,961)**	**(2,061)**
% of revenues	*%*	*-11.8%*	*-13.0%*	*-13.1%*	*-12.0%*	*-11.8%*	*-11.6%*	*-11.4%*	*-11.3%*
SG&A	**EURm**	**(865)**	**(1,042)**	**(1,354)**	**(1,465)**	**(1,673)**	**(1,829)**	**(1,971)**	**(2,101)**
% of revenues	*%*	*-11%*	*-12%*	*-12%*	*-11%*	*-12%*	*-12%*	*-12%*	*-12%*

Background story

- The cost analysis at a semiconductor company is not as straightforward as the products are not as homogenous, prices of some raw materials are not readily available and inputs vary
- The most used materials for production of semis are silicon, germanium, gallium arsenide for which the main sourcing market is China
- You also need neon and palladium which are predominantly sourced in Russia and Ukraine (the biggest neon producing facility was based in Mariupol)
- One may anyway try to incorporate these findings while employee expenses and costs of services are heavily dependent on the wage increases and potential expansion in FTE
- R&D is rarely a story maker and you usually cannot make a better estimate than what management is saying as this expense is heavily discretionary
- SG&A is also rarely a gamechanger, you may however try to distinguish between sales costs that are indeed dependent on revenue and G&A that may behave differently

Example: Forecasting D&A

D&A waterfall

	Unit	2019	2020	2021	2022E	2023E	2024E	2025E	2026E	2027E	2028E
CAPEX on PP&E	EURm	1,295	915	1,268	1,997	1,891	1,908	1,971	2,101	2,209	2,265
% of revenues	%	*16%*	*11%*	*11%*	*15.0%*	*13.0%*	*12.0%*	*11.5%*	*11.5%*	*11.5%*	*11.3%*
PP&E	EURm	3,510	4,110	4,443	5,474	6,116	6,488	6,627	6,581	6,312	6,081
Total depreciation	**EURm**	**804**	**863**	**936**	**966**	**1250**	**1536**	**1831**	**2147**	**2478**	**2496**
% of CAPEX	%	62%	94%	74%	48%	66%	80%	93%	102%	112%	110%
% of revenues	%	10%	10%	8%	7%	9%	10%	11%	12%	13%	12%
Depreciation factor	%				*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*	*15.0%*
Depreciation of existing assets	EURm				666	666	666	666	666	666	444
Depreciation of CAPEX											
2022	EURm				300	300	300	300	300	300	200
2023	EURm					284	284	284	284	284	284
2024	EURm						286	286	286	286	286
2025	EURm							296	296	296	296
2026	EURm								315	315	315
2027	EURm									331	331
2028	EURm										340

Guidance

- Companies guide CAPEX outlays either as percentage of revenue or in absolute terms, similarly then analysts/advisors forecast depreciation in relation to revenues
- Depreciation is however, far from being related to revenues
- Thus, look at the notes to financial statements, analyse the structure of the assets to see how fast they have been depreciated in the past and estimate the depreciation factor or weighted-average lifetime of assets
- Depreciate already existing assets and CAPEX for each year separately – recommendation: depreciation waterfall
- D&A is not a very relevant item, but it affects your EBIT/EBITDA (depending on your approach) and how heavy your balance sheet appears
- Always consider the dependencies between different items in the financial statements when forecasting

4 The hidden complexity of margin forecasts

Step by step guide to forecasting margins

While forecasting margins directly may appear as a simpler approach – single line item, it is actually a much more complex task

When forecasting margins you need to still do the complete process for forecasting revenues as you need a baseline (margin on what?)

You also have to consider all expenses, however, this time you do not calculate them separately, which may lead to you skipping one thing or two, so be careful!

Essentially you need to aggregate the whole analysis for expenses into one percentage figure that will be an approximation of all the previous analyses

Sometimes it is the only way to create a forecast, e.g. if you do not have detailed information on the expense line items or when the product is not homogenous, but remember the story still has to come together

It all boils down to a simple formula from microeconomics

$$\text{Margin} = \frac{(\text{Price} - \text{Per unit variable costs}) \times \text{Volume} - \text{Fixed costs}}{\text{Price} \times \text{Volume}}$$

Example: Forecasting margins at IT services company

Margin forecast

	Unit	2014	2015	2016	2017	2018E	2019E	2020E	2021E	2022E
Revenues	**PLNm**	**6,232**	**7,256**	**7,932**	**7,831**	**8,797**	**9,126**	**9,288**	**9,411**	**9,522**
Poland	PLNm	1,677	1,769	1,640	1,550	1,555	1,608	1,651	1,682	1,714
Central Europe	PLNm	492	648	732	792	835	875	908	934	950
South-Eastern Europe	PLNm	499	486	570	570	577	581	586	590	595
Israel	PLNm	2,951	3,649	4,356	4,265	5,178	5,403	5,478	5,533	5,588
Western Europe	PLNm	498	599	575	636	635	642	647	652	656
Eastern Europe	PLNm	114	106	60	17	17	17	18	20	20
EBIT margin	**%**	10.2%	10.3%	9.7%	7.5%	8.1%	9.1%	9.1%	9.1%	9.0%
Poland	%	17.8%	15.7%	15.8%	13.8%	14.0%	13.7%	13.3%	13.0%	12.7%
Central European	%	10.2%	9.7%	9.1%	8.9%	9.2%	9.0%	9.0%	9.0%	9.0%
South-Eastern Europe	%	9.2%	10.8%	9.9%	11.6%	12.0%	12.0%	13.0%	13.0%	13.0%
Israel	%	6.4%	7.7%	7.9%	4.3%	5.7%	7.5%	7.5%	7.5%	7.5%
Western Europe	%	7.4%	6.3%	9.7%	8.2%	8.4%	8.5%	8.8%	9.0%	9.0%
Eastern Europe	%	15.3%	22.1%	-18.8%	-5.8%	0.0%	0.5%	1.0%	1.0%	1.5%
EBIT	**PLNm**	**637**	**745**	**769**	**585**	**711**	**828**	**844**	**852**	**858**
Poland	PLNm	298.3	277.6	258.6	213.4	218	220	220	219	218
Central Europe	PLNm	50.3	63.1	66.9	70.4	77	79	82	84	85
South-Eastern Europe	PLNm	46	52.6	56.4	65.9	69	70	76	77	77
Israel	PLNm	187.8	280.8	343.4	185.3	295	405	411	415	419
Western Europe	PLNm	36.8	37.9	55.6	52	53	55	57	59	59
Eastern Europe	PLNm	17.4	23.4	-11.2	-1	0	0.1	0.2	0.2	0.3
Eliminations	PLNm	0	9.8	-0.3	-1.2	-1	-1	-1	-1	-1

Background story

- IT services company operating globally, offering customised as well as standard solutions to banks, businesses as well as governments
- The approach here for forecasting margin was to look at the developments in the individual markets and aggregate them in the forrm of an EBIT margin
- There were multiple aspects that affected the margins in different markets/segments. Let us go through some them:
  - **Poland** was very dependent on the governmental contracts, however, it also had a strong leg for business solutions offering standardised software (no implementation and individual maintenance)
  - **South-Eastern Europe** also had a high share of standardised solutions in the offering which positively impacted margins
  - **Israel** – a lot of governmental and military contracts pressuring margins, additionally, changes in ownership of some subsidiaries led to firstly deconsolidating them and then consolidating them again in the mid 2018 which added complexity
  - **Western Europe** a combination of taken over companies that implemented, e.g. Oracle solutions – thus lower profitability

5 Inter-relations between financial figures and how they influence forecasting

Let’s play a game – identify the issues with the forecast

	Unit	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E
Capacity	#	20,000	20,000	20,000	20,000	20,000	20,000	40,000	40,000	40,000	40,000
Capacity utilisation	%	85%	83%	88%	85%	88%	90%	92%	94%	95%	98%
Production volume	#	17,000	16,600	17,600	17,000	17,600	18,000	36,800	37,600	38,000	39,200
Price per unit	CHF	15,684	15,987	16,427	16,425	16,671	19,172	19,459	19,702	19,919	20,118
growth	*%*		*1.9%*	*2.8%*	*0.0%*	*1.5%*	*15.0%*	*1.5%*	*1.3%*	*1.1%*	*1.0%*
Revenue	**CHFm**	**267**	**265**	**289**	**279**	**293**	**345**	**716**	**741**	**757**	**789**
COGS	CHFm	173	171	189	185	193	225	464	458	445	440
Gross margin	**CHFm**	**93**	**94**	**100**	**94**	**100**	**120**	**252**	**283**	**312**	**348**
Gross margin	*%*	*35.0%*	*35.5%*	*34.7%*	*33.7%*	*34.2%*	*34.7%*	*35.2%*	*38.2%*	*41.2%*	*44.2%*
Sales costs	CHFm	14	14	15	14	15	18	37	38	39	40
% of revenue	*%*	*5.4%*	*5.3%*	*5.1%*	*5.1%*	*5.1%*	*5.1%*	*5.1%*	*5.1%*	*5.1%*	*5.1%*
G&A	CHFm	37	38	37	37	39	46	95	98	100	104
% of revenue	*%*	*14.0%*	*14.4%*	*12.9%*	*13.2%*	*13.2%*	*13.2%*	*13.2%*	*13.2%*	*13.2%*	*13.2%*
Other operating income, net	CHFm	25	10	-18	6	6	6	6	6	6	6
EBIT	**CHFm**	**67**	**52**	**30**	**49**	**53**	**62**	**127**	**153**	**179**	**210**
EBIT margin	*%*	*25.0%*	*19.5%*	*10.5%*	*17.5%*	*17.9%*	*18.1%*	*17.7%*	*20.7%*	*23.6%*	*26.6%*
D&A	CHFm	15	16	18	25	26	31	64	66	67	70
EBITDA	**CHFm**	**82**	**68**	**49**	**74**	**79**	**93**	**190**	**219**	**246**	**280**
EBITDA margin	*%*	*30.8%*	*25.6%*	*16.8%*	*26.4%*	*26.8%*	*27.0%*	*26.6%*	*29.6%*	*32.6%*	*35.5%*
CAPEX	CHFm	20	20	20	20	21	24	29	30	30	32
Inventory	CHFm	57	55	58	59	53	53	58	58	56	55

Let's play a game – solution

	Unit	2020	2021	2022	2023	2024E	2025E	2026E	2027E	2028E	2029E
Capacity	#	20,000	20,000	20,000	20,000	20,000	20,000	40,000	40,000	40,000	40,000
Capacity utilisation	%	85%	83%	88%	85%	88%	90%	92%	94%	95%	98%
Production volume	#	17,000	16,600	17,600	17,000	17,600	18,000	36,800	37,600	38,000	39,200
Price per unit	CHF	15,684	15,987	16,427	16,425	16,671	19,172	19,459	19,702	19,919	20,118
growth	%		*1.9%*	*2.8%*	*0.0%*	*1.5%*	*15.0%*	*1.5%*	*1.3%*	*1.1%*	*1.0%*
Revenue	**CHFm**	**267**	**265**	**289**	**279**	**293**	**345**	**716**	**741**	**757**	**789**
COGS	CHFm	173	171	189	185	193	225	464	458	445	440
Gross margin	**CHFm**	**93**	**94**	**100**	**94**	**100**	**120**	**252**	**283**	**312**	**348**
Gross margin	%	*35.0%*	*35.5%*	*34.7%*	*33.7%*	*34.2%*	*34.7%*	*35.2%*	*38.2%*	*41.2%*	*44.2%*
Sales costs	CHFm	14	14	15	14	15	18	37	38	39	40
% of revenue	%	*5.4%*	*5.3%*	*5.1%*	*5.1%*	*5.1%*	*5.1%*	*5.1%*	*5.1%*	*5.1%*	*5.1%*
G&A	CHFm	37	38	37	37	39	46	95	98	100	104
% of revenue	%	*14.0%*	*14.4%*	*12.9%*	*13.2%*	*13.2%*	*13.2%*	*13.2%*	*13.2%*	*13.2%*	*13.2%*
Other operating income, net	CHFm	25	10	-18	6	6	6	6	6	6	6
EBIT	**CHFm**	**67**	**52**	**30**	**49**	**53**	**62**	**127**	**153**	**179**	**210**
EBIT margin	%	*25.0%*	*19.5%*	*10.5%*	*17.5%*	*17.9%*	*18.1%*	*17.7%*	*20.7%*	*23.6%*	*26.6%*
D&A	CHFm	15	16	18	25	26	31	64	66	67	70
% of revenue	%	5.7%	6.1%	6.3%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%	8.9%
EBITDA	**CHFm**	**82**	**68**	**49**	**74**	**79**	**93**	**190**	**219**	**246**	**280**
EBITDA margin	%	*30.8%*	*25.6%*	*16.8%*	*26.4%*	*26.8%*	*27.0%*	*26.6%*	*29.6%*	*32.6%*	*35.5%*
CAPEX	CHFm	20	20	20	20	21	24	29	30	30	32
% of revenue	%	7.3%	7.4%	6.8%	7.0%	7.0%	7.0%	4.0%	4.0%	4.0%	4.0%
Inventory	CHFm	57	55	58	59	53	53	58	58	56	55
Days of inventory outstanding	days	120	120	110	116	101	86	46	46	46	46

Capacity suddenly doubles. Is it possible? Did CAPEX reflect any capacity expansion?

Is it possible for capacity utilisation to be so high?

This may be justified or it may be a simple typo, make sure that you have a backing in these situations

Gross margin suddenly going up after being stable for many years, may be correct but also here backing is needed

General & administrative expenses rarely go in line with revenues

Usually not material item, maybe not wrong but to eliminate randomness probably it is better to forecast as 0 – not core

How does D&A behave in relation to CAPEX and then potentially also fixed assets?

Can you double your capacity with this CAPEX?

Is it justified? Is it enough to replace the assets?

Inventory remains stable, but is it justified compared to increased sales? Look at the DOI

6 Questions and answers