

Scenario analysis and valuation in a decision making context

– with GN Store Nord as case study



Master thesis

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'The trouble with our time is that the future is not what it used to be'
- Paul Valéry (1871-1945) (Fahey (1998))

Abstract

This thesis establish a framework for scenario analysis used for company valuation in order to facilitate better decision making ability and is applied to GN as case.

It is argued that scenario analysis, mostly, should bypass real option valuation when applied at a corporate level even though scenario analysis and real option valuation sometimes is used as interchangeable concepts. Instead focus should be on trends of fundamental change in industries in which case a shaping or adapting strategy can be implemented depending on the underlying analyzed company. Internally, a company should always assess its level of diversification and constitutes the second parameter of the scenario analysis framework. In this way the scenario analysis becomes a supplement for traditional strategic models with focus on future characteristics (not historic), and provides logic for value drivers in companies. This will serve stakeholders with better decision making ability since change in the logic for value drivers will make it more transparent what tasks to initiate. If the logic for value drivers is not available the traditional single point estimate valuation approach is sufficient since no realistic scenarios backed by a “story” can be created. In this case only residual uncertainty is present as reflected in the cost of capital.

When the scenario analysis is applied to GN, as case, it is shown that little evidence exists that GN will be better of by splitting its operations into two separate units of Resound and Netcom. This is shown both in a relative valuation compared to actual market capitalization and a fundamental valuation approach.

When Resound is analyzed in a transaction setting very attractive values are derived compared to other scenarios. A sale seems probable after a favorable German Supreme Court ruling, which is already reflected in the GN share price. A transaction approach should thus be pursued unless success is achieved in operational excellence and integration into new markets.

For the industry of hearing aids there is a clear tendency to seek new product solutions and vertical integration into distribution. Here, it is argued that Resound is better off by implementing an adapting strategy ensuring its market share and reduced cost of capital unless this will severely affect its operating margins in which case Resound is better off by focusing on operations. Using the dynamics of logic behind the value drivers in this manner decision making is improved at a level different from what a traditional single point estimation valuation provides.

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1. Introduction

1.1 Motivation

The motivation for this thesis is to assess how different scenarios impact value on a company, what constitutes most plausible scenarios and which values these imply while assessing how sensitive scenarios are. This approach facilitates industry knowledge which I also find motivating.

Furthermore, the valuation aspect of the paper gives a foundation for theoretical sound valuation models.

The thesis will have a reduced focus on the traditional strategic models such as SWOT, Porters Five Forces, Boston Matrix, PEST (Sørensen, 2005) etc. which in my opinion has become recklessly used beyond reason in valuation papers where “fill-out-the-blanks” in these models seems more important than the actual understanding of underlying industries. An evident link between strategic analysis and valuation has frequently been dubious with little or no connection between the two which is why a new approach is motivating. Without detailed information gathering on industries these mentioned, traditional, models seem redundant to me.

Finally, I believe the case company of GN, a former C20-index company which may have been “forgotten” in recent times, constitutes an interesting case with break-up opportunities which I think deserve further examination, especially in context of scenario analysis.

1.2 Acknowledgements

I would like to thank my thesis councilor Thomas Einfeldt for very constructive meetings that continued to motivate me throughout the workings on the thesis.

I would also like to acknowledge the valuable input on valuation models that were given to me by Martin Thøgersen, Analyst at Royal Bank of Scotland giving advise on forecasting balance sheet items, Tobias Kjeldsen, Associate at Nordea Corporate Finance giving advice on general outlines of

DCF¹ valuation models and forecasting methods and Kristian Marthedal, Senior Equity Analyst at Nordea Markets covering GN giving advice on GN specific valuation methodology and classification of balance items and business opportunities and capabilities.

1.3 Scenario analysis historically

Famous cases where scenario analysis (which will be defined shortly) has been used include Royal Dutch/Shell that is conceived as one of the pioneering companies (Cornelius, 2005) in using scenario analysis. The company would position itself ideally relative to its future context by using scenario analysis². What is described as value adding for Royal Dutch/Shell is that it could ‘think-out-side-the-box’ and establish scenarios that were fundamentally different than its conceived ‘normal’ business context. Doing this, Royal Dutch/Shell could position itself to preempt various changes in the external environment such as geopolitical issues, reduction in oil supply, increasing oil prices and government policies. However, no value implications on company capitalization have publicly been assessed which gives less insight on the explicit effectiveness on the approach.

1.4 Case

GN Store Nord A/S, also known as Great Nordic (hereinafter GN), has been in a lot of turmoil the last couple of years. It operates in R&D intensive and product innovative industries with strong competitors, dynamic industry layout, ongoing legal issues of great potential value and had a failed sale of a very large part of business, the hearing aid division GN Resound (hereinafter Resound) which has forced the company to re-saddle and restructure to regain lost customers and a more streamlined division. Meanwhile GN Netcom (hereinafter Netcom) has been under increased pricing competition and poor performing operations thus creating a need for restructuring as well in its pursuit for excellence within the headset business. This makes the organization open for substantial change in the context of already dynamic industries with pricing competition, product innovation, supply chain and production strategies. Most recently there have been signs of stabilization in the organization where no further restructuring is expected in the near future.

¹ Discounted Cash Flow.

² Sometimes the phrase scenario planning is used but this seems to be part of the more general term scenario analysis.

The two business divisions of GN are in large separated and no synergies are evident between them which gives an interesting internal perspective where it should be assessed what reasonable actions are available. Combining this internal perspective with possible external possibilities different scenarios can be established. Externally there have been several interesting shifts in the hearing aid industry with trends of focusing on vertical integration as well as horizontally into new hearing aid solutions.

As such GN is an obvious case used for scenario analysis. This is why a framework of scenario analysis is established to better assess underlying logic of industry value drivers and explicitly integrate them with valuation models.

Doing this will create a tool box for decision makers where most logical scenarios should be chosen but with an eye to how sensitive these scenarios are to changes in both internal and external drivers.

1.5 Problem statement

In continuation of the introduction it gives concern how a comprehensive scenario analysis framework can be established and assess sensitivity across scenarios but also how this approach differs from traditional single point valuation estimates³ such as those typically given by equity researchers.

Based on these considerations the following problem statement is sought answered in the master's thesis:

How can scenario analysis be used to provide a better foundation for decision making based on valuation models and how does this apply to GN as case?

³ Single point estimate will be used throughout the thesis as a reference to the more static nature such as that of equity research valuation where just one scenario is created for the purpose of finding a share price or multiple scenarios (although latently) are weighted into a single share price.

By answering the master's thesis problem statement following sub questions are sought to be answered:

- 1) *What is meant by 'scenario analysis' and 'better decision making' – how should the terms be defined? What framework should scenario analysis be built upon?*
- 2) *What are the financial characteristics and trends of the industries in which GN operates?*
- 3) *Using valuation models what is the sensitivity on changing fundamental structure of the industries, i.e. changing the scenario setting?*

1.6 Method

The thesis will start off by an introduction and discussion of the scenario analysis approach which will be followed by the detailed framework establishing the methods which will be applied later to GN as case.

Next, a general introduction to GN and a description and analysis of the industries of which GN is involved will be conducted. This section will include elements of previously mentioned traditional strategic models but will be used mostly to establish a benchmark for the future in the scenario analysis.

A financial analysis will then follow, assessing what historic performance the company has achieved lately, covering complete business cycles from 2003 to 2009. These findings will be used as key driver for the following scenario analysis since the environment will be linked into this financial performance creating driving factors for future forecasting.

The scenario analysis on GN will project what possible, and likely, outcomes will take place and quantify how this affects GN future financial performance since the created environments affect drivers for valuation models. Hence, integration between the two, scenario analysis and valuation models, will quantify how valuation models depend on scenarios.

Valuation consequences of change in scenario driving factors will follow the different scenario outcomes and valuations. This sensitivity analysis will serve the purpose of determining decision changes when valuations alter.

1.6.1 Generality vs. specific theory

In the development of the scenario analysis framework the distinction between complete generality (framework applicable to all cases) and specific to the GN case needs to be made. The approach selected is focused on multidivisional companies in industry changing environment.⁴

Case studies can be used for the development of theories (Yin, 2004) but in this thesis the established scenario analysis framework and general mindset will be used to GN as case in order to make explicit how it can improve decision-making ability (deductive approach).

The master's thesis is using a modern positivistic research approach (Kvale (1997), p. 68), where currency is regarded as a proper measurement of value. Hence, data sources that are deriving future scenarios are regarded as the appropriate drivers for valuation and scenario construction. The decision making criteria is therefore assumed to be based on the maximization of value although certain decision makers might have a different opinion on how to make proper decisions. Examples include employment, where layoffs is seen as a last resort although certain downsizes could improve market value, or family firms holding on to ownership despite a sale could make it more valuable in terms of currency.

1.6.2 Delimitations

The thesis will not focus on in-depth discussion or analysis of various capital cost models but assume that CAPM⁵ is adequately precise in estimating the cost of capital.

There will not be any in-depth assessment of possible values or probabilities of winning underlying pending legal issues for GN including the tax loss carry forwards in regards to the Beltone

⁴ Yin (2004), p. 7 argues that case studies do not need to use statistical inference in order to gain generalization value.

⁵ Capital Asset Pricing Model (Ross (2002), p. 418).

acquisition by Resound and the data traffic claim of DKKbn 5 in Polish telecommunication activities.

Detailed assessment of gaming theory or description hereof will not be applied in the thesis although it is indirectly used as a mean to identify competitor and industry movements in established scenarios.

Furthermore, it is deliberately chosen not to get in contact with any person(s) within GN since, in many situations of company analysis in real work situations, it is not possible to have this type of contact and as such it is seen as a healthy exercise to perform the thesis' analysis and valuations without intra company inputs.

Probability coefficients applied to scenarios will not be analyzed or sought calculated since this can be highly arbitrary and will also move this approach towards more traditional valuation methods providing a point estimate giving little attention to the importance of decision making.

In depth descriptions and analysis using traditional strategic models such as the ones described above, including, but not limited to, Porters Five Forces, PEST-model, Boston matrix, SWOT are not used for reasons already mentioned. However, parts of the different models will be used in parts however, especially when analyzing past and present of relevant industries and GN performance.

Netcom information does not allow for specific creation of scenarios and will thus be circumvented.

Finally, any market information after July 11, 2010 will not be reflected in this thesis.

1.7 Source criticism

Sources used in this thesis consists of annual reports and other company generated information, equity research reports, Factset, Bloomberg, mergermarket, German cartel office' documents (Decision Division) and various hearing loss information sites based in US, EU, Australia and Denmark. Moreover, various books on scenario analysis have been used in the establishment of the

theoretical framework, as well as books on theoretical valuation for a sound valuation model creation.

1.7.1 Validity

Annual reports and equity reports are perceived as highly valid and prime source of company and industry information as well as financial performance evaluation. Factset and Bloomberg are professionally used databases providing vast company and market information which is a useful tool in gathering data in an efficient manner and is seen as highly valid. Hearing loss information sites also seem valid since they specifically inform about forms of hearing loss, solutions etc and as such gives insight into the industry.

The German cartel office' documents regarding Resound/Sonova transaction are considered highly valid since they give detailed information on argumentation in the denied sale.

There is a validity problem regarding the difference in precise definition and application of scenario analysis across various authors; no consensus exists.

1.7.2 Reliability

Reliability of all sources is more dubious since all could potentially have a more latent agenda, i.e. unable to provide an objective opinion on the state of things. Annual reports might not give an impartial view on the industry or performance and PL statements might suffer from earnings management although it should be remembered that the reports are audited which limits agenda maneuverability. Auditors verify quantitative data most easily which is why this should be trusted more than qualitative information given in these reports.

Equity research reports might also give a 'colorful' picture of companies facilitated by business opportunities for companies providing the equity research, thus making the reports less reliable. However, the research is perceived as reliable in the description of industries and can be more comprehensive than that of company reports.

Factset and Bloomberg gathers information from annual reports or other company reports, equity research databases and I/B/E/S⁶ among others and are as such seen no more reliable than above mentioned sources. It should be noted though that core business of these data providers is that of objective purveyance of information which is why certain reliability should be trusted.

German cartel office' documents are more dubious in their reliability since it is based on a few people's conclusions that have not been shared by colleagues in other countries.

US based sites such as the Hearing Industries Association are sponsored by its members who comprise hearing aid manufacturers and suppliers among others. Their agenda is for example to pass legislation that will give tax credits to hearing aid end users, but any information that are gathered from this site, such as market statistics, should be analyzed carefully since it can be biased by the partial nature of its sponsors.

1.7.3 Lack of data

Private company information on Siemens, Widex, Starkey and other manufactures within hearing aids and head sets are difficult to obtain. Danish Widex has annual reports published through the Danish Commerce and Companies Agency but information is in general not disclosed by these companies which otherwise could have been useful in the analysis of growth rates, profitability, return on capital, market shares, risk etc. Due to the nature of private companies this information is not provided.

Information on revenue estimates through penetration rates, incidence⁷ rates etc would have been very beneficial to have in the attempt of forecasting into the future. The availability and detail of these market surveys are however scarce and not easily obtained. Throughout the thesis, those sources available are carefully selected such that converging data is obtained.

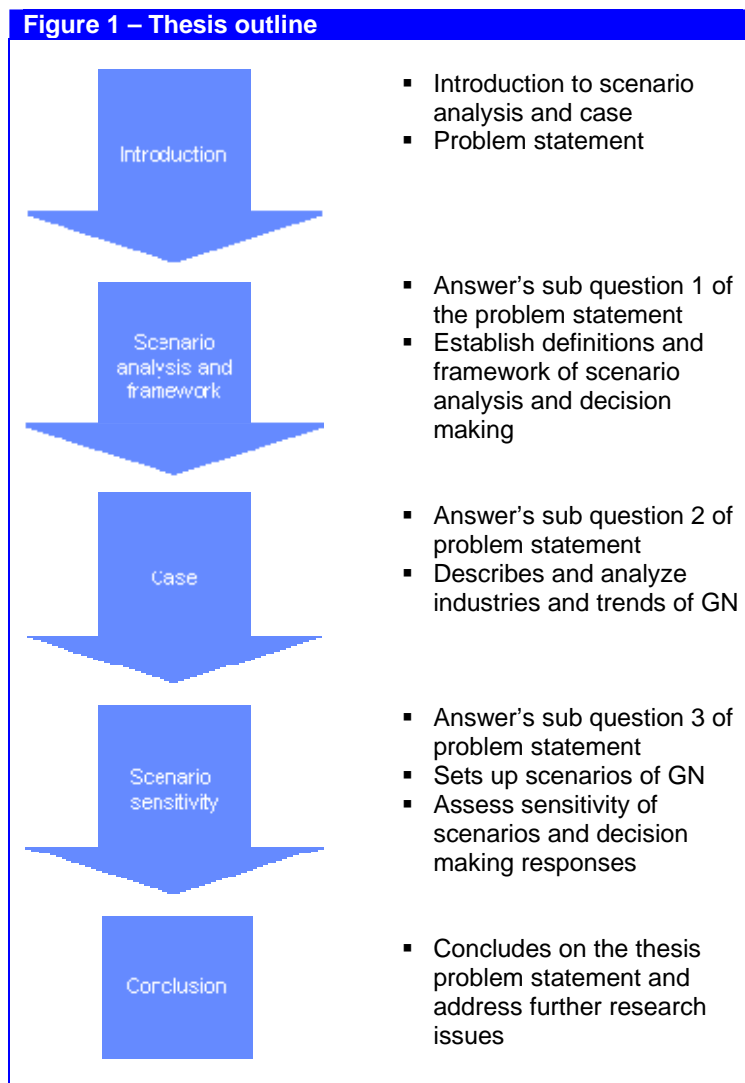
Intelligence on the headset market is far more scarce than the hearing aid industry and constitutes limiting factor in the creation of scenarios within this division.

⁶ Institutions Brokers Estimate System.

⁷ Relating to the percentage of people having hearing aids/ hearing impairment.

All data for valuation and financial analysis is located on the CD-ROM included which have been developed using Excel. Also included are certain publications used as source as well as the thesis document itself. This is provided for reader convenience when assessing coherence in valuations etc.

1.8 Thesis outline



Source: Author's own creation

2. Scenario analysis discussion and framework

2.1 Discussion and application of real options

In the following, the scenario analysis will be introduced and discussed so that first sub question of the problem statement can be answered.

What is meant by ‘scenario analysis’ and ‘better decision making’ – how should the terms be defined? What framework should scenario analysis be built upon?

Making the problem statement more tangible it necessary to define what is meant by respectively ‘scenario analysis’ and ‘better decision making ability.’

2.1.1 ‘Scenario analysis’

There is no consensus on the definition on scenario analysis⁸ since each book and paper that frames the term use different descriptions. Very often any attempt of defining ‘scenario analysis’ is not even attempted (probably because it seems evident to the authors what the term covers). More often it is described what tools the scenarios should be established with and sometimes in a very micro-managerial form.

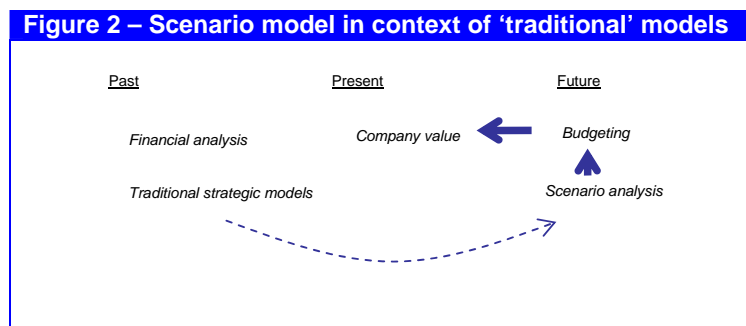
The definition of scenario analysis in this thesis will be:

⁸ In Oxfords Advanced Learner’s Dictionary the word scenario is defined as: ‘An imagined sequence of future events.’

*'Establishment of mutually distinctive future logics, that are influenced by internal and external variables, which have direct relation to valuation models, in order to quantify what implications these will have on company value.'*⁹

'Distinctive future logics' should be understood as difference in products, political issues, competition, operating performance etc. based on sound argumentation that give certain realism to them. Hence, simple changes in revenue, operating margin etc. is in itself not seen as a new scenario. There has to be logic or 'story telling' behind each scenario with direct relation to valuation models. Otherwise, the difference in margin for instance is easily absorbed by the risk associated with the cash flows. What on the other hand gives real decision maker insight is a realistic scenario setup which will facilitate industry understanding. This also ensures that the number of established scenarios is kept at a level that makes them manageable. Too many scenarios will multiply the amount of value drivers to an extent where decision making becomes impossible.

This is where the spirit of scenario analysis, illustrated below in figure 2, becomes different from traditional strategic models such as SWOT and PEST-models.



Source: Author's own creation

What traditional strategic models primarily focus on are the historic facts of various internal and external factors except perhaps for SWOTs 'Opportunities' and 'Threats' that relates to the future.

⁹ Author's own creation.

Just as the historic financial analysis is in itself redundant in a company valuation aspect, so are the traditional strategic models. However, with scenario analysis a direct link to valuation models is created.

Typically, in the literature scenario analysis is used to establish inputs for real option valuation models (see for example Courtney (1998), p. 74) such as time for expiration, volatility and exercise price. Real option valuation is rarely used in company valuation such as the methods used in equity research, corporate finance, private equity or similar activities. In the valuation literature real option valuation is usually applied as a method for valuing different intra company projects (Koller, 2005). It is, however, possible that certain companies should be valued using these methods including oil companies, bio technology companies and small/single product companies (Damodaran (2002), p. 788).

Commonly used methods for option valuation are the Black-Scholes formula (Ross (2002), p. 430) for European options, or Binominal grid valuation, for American, Asian or other exotic options. What they have in common is the privilege to initiate certain future activities. If there is not an exclusive privilege the exercise price can quickly converge closer to a zero net present value investment, making the option less attractive because all competitors will have access to the activity and quickly remove the time value of the option. If there is little time in which the option can be exercised it will be less valuable. Likewise, a low current asset value will decrease the real (call) option value.

In other words, for a real call option, a higher exercise price, lower time to expiration and lower volatility will decrease option value or perhaps make them valueless. In a developed industry there will typically be a competitive rivalry that will push the price of exercise up as opposed to small investment projects where this sort of market mechanism rarely take place. Lower volatility will decrease the price as well since it will limit the upside possibilities. If an investment is sure to give a return there is no option value attached to it since the option will not be exercised no matter the future path. Finally, a low time to expiration will also decrease option value since there will be little time where the uncertainty can exist, hence no time value exists.

All this is characterized by developed industries making the option valuation tool less important.

Consider the following example applied on a project in an established industry.

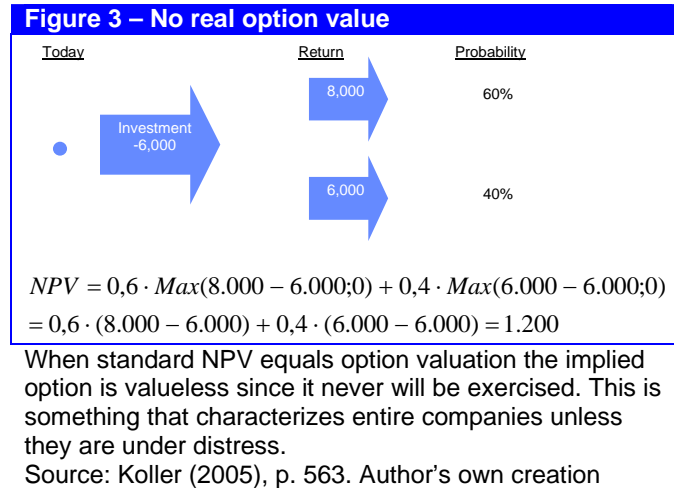
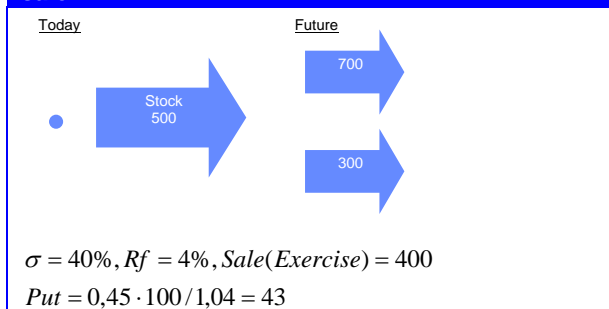


Figure 3 show that the option has no value since it is equal to its traditional valuation assessment (standard DCF). Therefore, what is crucial is the privilege to utilize a low exercise price compared to the underlying asset. This can be obtained by patents or the right to drill on a piece of land (as seen in the oil industry) although these are rare examples of real options applied in corporate valuation.

Considering real put options such as moth balling certain production facilities or selling equipment entirely can be met with the same argumentation. Looking at company level these are not valuable since certainty and low exercise prices will dilute their values (in the case the market becomes unattractive).

If it turns out that the company can be driven better by a new owner, the shareholders has the option to sell. Using the best estimate for future scenarios to calculate company value this acquisition possibility should obviously be considered. As figure 4 show the percentage value of an acquisition does not constitute substantial value compared to stand alone value since the probability of an acquisition usually is very uncertain.

Figure 4¹⁰ – No substantial put option value in sale



If a company knows it can achieve a 30% sales premium in case its operations fails this real put option is worth less than 10% of today's value. If a transaction is not certain in the event of failed operations this option will be worth even less.
Source: Koller (2005), p. 563. Author's own creation.

An example, where a sale is more plausible is the case when operational performance is inferior to peers thus making an acquisition sensible for an industrial buyer. However, there are two possibilities: If it is very certain to be accomplished immediately there is no option since it will be without time value. Otherwise, time will tell if the gap to industry performance can be closed or if the option should be exercised in case of failure. The exercise price however will be reduced¹¹ compared to today's equity value and this will reduce the value of the real (put) option.

Entire companies will usually be in a context of an established industry with assets in place. Here little or no distinctive alternative scenario can be established besides the traditional single point estimate. This will reduce the need for any scenario analysis.

When companies operate in a more uncertain environment, the importance of scenario analysis will increase. Real options have value when there is time to maturity but in established industries it can

¹⁰ Calculation is based on the risk neutral probability of a downward movement in the underlying asset stock (Koller (2005), p. 563).

¹¹ The sales transaction price will be reduced once the market realize that assets are no longer as valuable.

be argued that no time to maturity exists. It is simply not possible to wait and see whether certain investments will be profitable (or not) due to competitors and lack of exclusive rights.

In situations, as the above example, where a firm is nearly certain to gain economic profit there will not be any option value available to the company. The availability of these lucrative investments is scarce in nature which forces the nature of gaming theory (Frank (2003), p.463) to step in. If one company waits to see whether investments will turn attractive then other companies will utilize first mover possibilities and gain on economic profit that would otherwise not be possible to acquire. In this situation the question is not so much if economic profit will be achievable but its magnitude in comparison to alternatives. This completely eliminates real option value (since everyone will initiate immediately).

Distressed companies can be viewed as a real option by investors since the stock will be worth either value of assets less debt or nothing (Damodaran (2002), p. 629)¹², but this constitutes a special case. In other words, it is possible that a traditional DCF value of the assets less debt will imply negative or zero equity value. In this situation equity will start to behave differently where increased risk actually increases investor wealth on the costs of creditors (Brealy (2006), p. 484). It is still a challenge to calculate the inputs for the option valuation; although it is important to consider any possible value that lie herein. This is a common investor-creditor game where investors increase their appetite for company operation risk since they otherwise will lose their investment. As the risk of default becomes less the option in equity will decrease in value as well.

Most authors writing about real option valuation recognize that its usefulness in equity or company valuation is less profound (Koller (2005), p. 560).

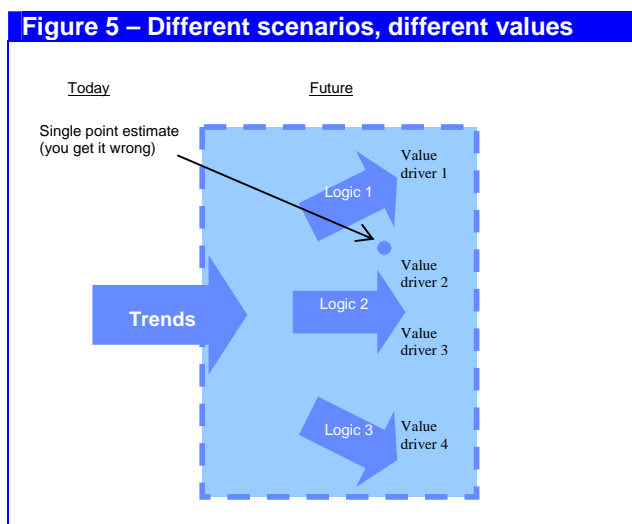
Damodaran (2002) comments that some sort of exclusive rights, such as a patent, needs to be available otherwise no option value exists.

In a study by Skovgaard (2009) it is concluded that Danish brewery giant Carlsberg has a real option value around 1% of total enterprise. Although it is concluded in the study that strategic flexibility is important, this view is opposed here by the fact that a 1% difference in value is easily dominated by the large uncertainty in cost of capital or simply the forecasted cash flows. The option

¹² Also established by Danish law in "Aktieselskabslovens" §1, *stk.* 2.

value in the study is based on an opportunity in a single market in India and if similar opportunities are available in other markets the entire real option attached to the company will obviously rise as well, adding to the total value of Carlsberg. The problem with this is that most of Carlsberg markets are probably established and explored hence giving little room for additional information (no time value) gathering that could prove valuable in a real option setting. In addition if there are no special rights attached to investments then competition will quickly erode any positive net present value.

Conclusively, options will not be used as a valuation tool when assessing equity value. This means that the scenario analysis will take a different angle in this thesis. Based on the above argumentation the real option aspect is negligible when considering entire companies but the tools for the establishment of scenarios are still important because of reasons illustrated below in figure 5.



Source: Ringland (1998), p. 47. Author's own creation

What figure 5 shows is the static environment that single point estimate provides whereas establishment of scenarios give improved understanding of possibilities.

Yet, while options are not reflected in the scenario analysis, different potential future scenarios will unavoidably affect company value. Instead of providing a single point estimate for valuation, for the derivation of *one* share price, each scenario with its inner logic will be presented. This improves

decision-making ability since changes in value drivers will help decision makers initiate the proper reaction.

2.1.2 'Better decision-making ability'

'Better decision-making ability' is in this thesis defined as:

"The ability to react appropriately to shifts in industry logic"

The significance of this assumes that value is added by timely decision that would otherwise be neglected in the single point estimate simply because logic to value drivers are not assessed.

The decision makers should be seen in a broad definition and can be conducted by management, investors, equity researchers or other stakeholders that have interest or incentives to maximize company market capitalization or simply assess its value. It is however important to realize that decision makers do not necessarily have uniform decision making criteria. The before mentioned risk shift game between creditors and investors is one such example. In a company split there can be a transfer of wealth from creditors to investors because creditor protection becomes diluted when the assets are separated (DePamphilis (2008), p. 636).¹³ Another example is the principal/agent conflict (Ross (2002), p.10) that can arise in a corporation as well as the 'castles in the air theorem'.

¹⁴

Therefore, different decision-makers can certainly reach different conclusions about what strategies that should be initiated in a company.

2.2 Company strategies

¹³ Although certain protection is still insured by law to creditors in these restructurings, see for example under Danish law Aktieselskabslovens § 136, stk. 2.

¹⁴ Defined by Michael C. Jensen of Harvard Business School also known as the Free Cash Flow theorem (Ross (2002), p. 798).

In general a wide range of different strategies can be implemented by a company¹⁵ but in more broad terminology two strategies will be the focus in the following.

2.2.1 Shape/adapt

First, a company can shape the industry in which it acts or otherwise adapt (Courtney (2001), p. 39) to the rest of industry peers. The prerequisite for this strategy decision is that the underlying industry is changing (or about to change). Such a development will be driven by competitors' ambition to improve their competitive ability and creation of economic moats.

In order to be shaper a company needs to have the financial strength along with the operational expertise to initiate projects that will force competitors to follow suit. From a microeconomic standpoint an example is the price leader strategy (Frank (2003), p. 456). If financing or operational excellence is limited it will be difficult to change direction and shape the industry. This means determining company and industry opportunities when assessing shape/adapt strategy.

Shaping capabilities combine in this way an internal and external assessment of the company and gives insight to the strengths of industry peers.

2.2.2 Focus/diversify

Secondly, within company strategy, it must be decided what level of focus vs. diversification (Courtney, 2001) that should be pursued in business conduct. A high diversification can be seen as an attempt to leave the company less exposed to downside risk. The company, however, will have to accept less maneuverability and upside potential related to specific products or markets. An increased focus on business conduct will on the other hand make a more risky company which will highly influence future scenarios for the company. The level of diversification is an internal perspective of the company but can be heavily influenced by the industry.¹⁶ Especially if the company is mostly an 'adapter' it can become necessary to switch strategy into a more diversified business portfolio. The level of future diversification is also interesting on the basis of investor

¹⁵ Some of which are mentioned in Courtney (2001).

¹⁶ The discussion of diversification intra company and the justification of conglomerates has been highly debated. See for example Brealy (2006), p. 916.

sentiment. It is possible that a too broad diversification will give rise to a conglomerate discount where the vast business portfolio will actually destroy shareholder value since these shareholders can diversify on their own (Brealy (2006), p. 916). On the other hand an adequate level of diversification could increase shareholder value through synergies between company business units.

Conglomerates and similar companies with several business units owned by its parent needs to assess value added by each unit on a regular basis in order to justify their existence to shareholders. It is generally accepted that a discount is attached to the pricing of conglomerates since investors can diversify their portfolio on their own making company diversification redundant. Thus, the presence of synergies between units, such as shared cost base, justifies these company structures. This aspect constitutes an important decision factor in scenario analysis since it denotes part of the future company structure and as such this is part of the internal possibilities that exists for a company which will influence possible scenarios. This makes it necessary to analyze restructuring possibilities when it is applicable for a company. Multi-unit companies can potentially gain value by making the right decision of keeping units in house, partially retain ownership or cut them out of the organization completely making business units independent entities.

In general terms a company should divest or in some other way dispose of a business unit if it is worth more on the outside. Thus, after subtracting any possible debt financing of a business unit, what is left should be worth more, than what outside factors might value this unit at. Otherwise, it should be removed from the company since it will provide an upside value to investors. This can be written in the following way (Damodaran (2002), p. 834)

$$\text{Expected value increase} = \text{Divestiture value} - \text{Continuing value} > 0$$

Motives for exiting a business unit include unlocking value, sharpening strategic focus, gaining financing sources and avoidance of conflicts with customers.¹⁷

¹⁷ Lecture notes provided by Prof. Lloyd Levitin of Marshall School of Business, USC.

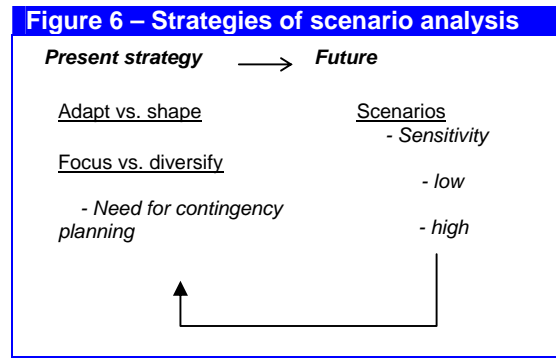
Unlocking value relates to the possible conglomerate discount in an enterprise, as mentioned above, which will be eliminated when the unit cut has been made thereby making it a pure play company.

Sharpening strategic focus is derived by lack of fit with business unit, thus providing increased value possibilities if separated since management will have better focus on the prevailing company.

New financing sources can furthermore be achieved in addition to parent equity and debt. If parent company does not want to dilute its ownership, when raising new equity, it can remain in control while selling shares in business unit instead. This still give exposure to potential upside in business unit and once this stock is traded in the market it can lead to future financing to parent by issuing new shares (or sell off part or the entire remaining stake in the unit).

If a company integrates backwards into the supply of materials, the unit could increase its market share by selling to competing firms to the parent. This makes it reasonable to separate certain parts of supplier unit that most directly can aid competing firms to parent core business.

These considerations are important when company strategy, concerning the level of diversification, is assessed.¹⁸



Source: Author's own creation

¹⁸ One approach to assess how valuable divisions are consolidated vs. separated is to use divisions' respective cost of capital in a separated DCF and compare that to a consolidated DCF using parent company cost of capital (if relevant peers are available for assessment of division beta and parent company is listed so that its beta is retrievable).

For both levels of strategy it is necessary to identify whether there are any conflicts between them and potential scenarios and what these conflicts infer. Conflicts can be especially critical for a company if its ability to shape or adapt the general industry is negligible making lost market share increasingly difficult to regain. In this case there will be a conflict between company strategy and industry direction (Fahey (1998), p. 35) which should be avoided.

Then, contingency planning needs to be integrated into company strategy as figure 6 suggests. If the scenarios do not develop as expected decision makers need to response fast. This can be done through proper contingency planning that establishes a strategy for various scenarios (Fahey (1998), p. 41). This is a rational for multi-unit enterprises which will be better prepared across scenarios.

2.3 Residual uncertainty

Identifying scenarios (including company strategy described above) leaves only residual uncertainty which will be captured by risk used for discounting cash flows.

There are 4 levels of residual uncertainty (Courtney (2001), p. 22):

- 1) A clear future, which is the most compatible with traditional single point estimates with only residual uncertainty. Here no further meaningful or convenient scenarios can be established which makes the company predictable and safe in its nature. Here, there is a limit to the risk involved which will be captured by discounting factors and no alternative scenarios can be created. In other words no logics or arguments exist for the establishment of alternative futures.¹⁹

Remembering the above argumentation for the less evident impact of real options in corporate valuation the game theory aspect becomes more interesting. In relation to the residual uncertainty a couple of equations can be written:

¹⁹ No fundamentally different scenarios can be created with difference in logic impacting value drivers.

$$1) PV = PV_{NE}$$

$$2) PV = Expected(PV1, PV2, \dots, PVn)$$

- 1) Assuming that game theory can resolve outcome of scenarios such that Nash equilibriums exist.
- 2) Investments are made immediately and there is no option to wait and see whether scenarios (1, 2, ..., n) turn attractive

When there is a clear Nash Equilibrium no scenario analysis is necessary and value can be assessed. This resembles residual uncertainty level 1.

- 2) A level with two or three distinct and different scenarios that constitutes the only possible scenarios leaving only residual uncertainty in each scenario, captured by the risk of valuation models complementing each scenario. Here, each scenario represents exhaustive possibilities that fundamentally differ making them distinguishable on clearly defined logic giving little or no relation between the two.
- 3) A level with a range of futures leaving a spectrum of scenarios that can not be outlined into a few scenarios because the complexity for the industry is too great in the future. However, it is possible to set boundaries for the industry such as logic for maximum and minimum growth rates, market penetrations etc.

In these situations it is possibly the most vital to think scenario analysis since the uncertainty is more explicit in defined scenarios. Discount factors will be in particular 'dangerous' to use if the past has not been effected by such uncertainty (reflected in beta values). If a news flow indicates such a rise in industry risk and scope of scenarios, beta regressions will not capture this shift since they are based on past returns that are derived by information different from present day news flow. In this case the point estimate valuation will be particularly biased upwards due to the artificially low risk measurement. By analyzing the scenarios a much better proxy for risk involved will be achieved and residual uncertainties can be sought estimated via industry betas, if available, that reflect nature of scenario spectrum.²⁰

²⁰ Fahey (1998), p. 31 mentions that risk can vary greatly across different futures.

- 4) Finally a perfect ambiguity level is theoretically possible making it impossible to set up possible futures or even boundaries since the future is too uncertain thus leaving only residual uncertainty. This level is also compatible with traditional valuation models which capture risk only in discount factor. The residual risk is however substantially higher than in the case of level 1 residual uncertainty. These level 4 uncertainty environments are considered rare but the IT days in the beginning of the millennium could possibly qualify as suggested by the crash of this particular market in 2003.

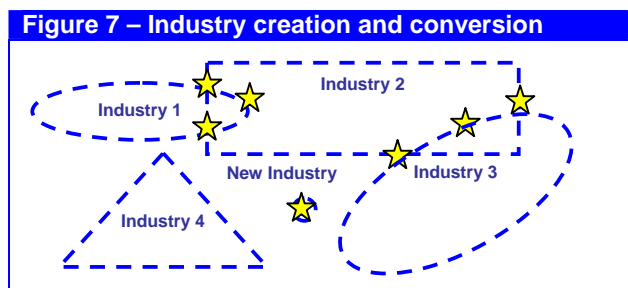
The scenario analysis should incorporate events that can reduce residual uncertainty by identifying scenario strategy of shaping vs. adapting, possibility of conflicting strategy with scenarios, level of diversification and the necessity of contingency plans. As time progresses events will reduce uncertainty related to different scenarios and eventually disappear. Thus, these points in time are important to identify since they can determine the future at this point²¹ in time and make decision tree substantially less complex. In other words, it is of utmost importance to react appropriate accordingly to these developments that affect the level of uncertainty.

The time dependence of uncertainty creates the need for the company to make strategic decisions at the right time depending on scenarios.

2.4 Framework

The framework of scenario analysis suggests that an industry is undergoing change (i.e. shaping capability, conflict in strategy). This is where the concept becomes an important tool for decision makers. Figure 7 shows the concept of industry change that is as fundamental as described in the above.

²¹ Example includes court rulings that will have significant effect on an industry.



Stars denote the merging and creation of new industries.

Source: Ringland (1998) p. 44, Authors' own creation

When no indications of industry shifts are available for a company, there is not enough fundamental difference across scenarios to make the analysis worth while. Here, a traditional valuation approach serves much better since only the discount factor comprise residual uncertainty.

Scenarios should be defined in an adequately different way such that little or no overlap exists. The 'grey areas', where scenarios converge, is thought to be captured by valuation risk factors, i.e. variance that can not be described explicitly in a scenario.

The advantage of this approach is that the limit to the number of scenarios makes them easier recognizable which is also seen as a quality in most books covering scenario analysis. It simply makes scenarios manageable.

On the other hand reducing the number of scenarios established will increase residual variance, captured in valuation discount factors, thus making cash flows in each respective scenarios more risky since several possibilities exists within each of these scenarios. If residual risk is high although all possible scenarios have been established the necessity for contingency planning increases.

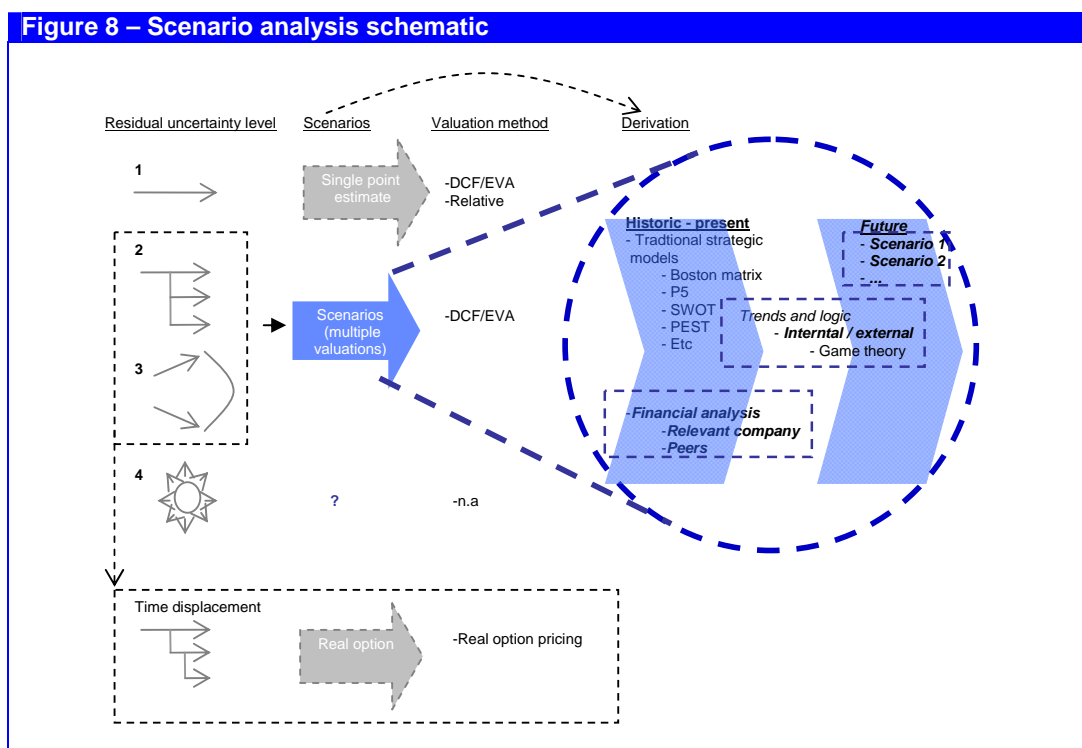
This means that the theoretical development of all possible scenarios will completely eliminate residual risk making the risk free rate the only appropriate discount factor in each scenario. In this case deriving a stock price for the relevant company will depend on the probability of each scenario. This assessment is however not as interesting as the logic or driving factors behind each scenario which will improve the decision making process when trend shifts in these occur. When this happens decision makers have better knowledge of how to react due to the coherence between value and logic.

It should be noted that the different scenarios do not seek to assess so called low, medium and high performance scenarios (also traditionally seen) since these more or less are captured in model discount factors making such distinction somewhat redundant.

In this way the scenario analysis and valuation approach places itself somewhere in between traditional point estimate valuation and real option equity pricing. The option pricing takes notice to valuable decision possibilities such as holding on to a subsidiary which might prove to become very profitable at a later stage. In these situations traditional DCF approaches can give negative net present values since they can not earn required rate of return thereby ignoring management decision capacities which is reflected in the option pricing where binary response opportunity of exercising (or discarding) the underlying asset is given to decision makers. This is why some authors' work combine scenario analysis with option valuation where inputs for options are found via the scenario analysis including time frame and volatility. Here, in this thesis, decision making is explicitly valued when comparing company value across scenarios.

The described theoretical aspect has two purposes, 1) it facilitates basic understanding of the industries at hand and 2) it provides a sound fundament for establishing scenarios which a company could be facing and makes it easier to intertwine the theory to basic valuation models.

The valuation models will be given input from the scenario analysis providing a strong theoretical foundation on company value using different scenarios. This will make it clearer what is more valuable for a company in terms of share price. This leads to the performance of a sensitivity analysis on the more valuable scenarios. This sensitivity analysis is crucial since it will assess how the most lucrative scenarios depend on variables that once changed has the potential to complete turn things around thereby making other scenarios preferable.



The blue-squared dotted boxes indicate what this thesis mainly focuses on (industry and company descriptive and financial analysis as well as company strategies for the future scenarios). Grey arrows indicates that these are not primary focus

Source: Courtney (1998) p. 23, Plenborg (2005), p. 34. Author's own creation

Note, in figure 8, that relative valuation is not as easily applicable in the multiple scenario situations because the creation of new industries will decrease obvious comparables.

Summarizing on the framework of theory the following model can be established:

There are internal and external strategies that influence future scenarios driven by a plot that is backed by sound logic. The level of residual uncertainty helps determine sensitivity and the need for contingency planning. The pure internal strategy is the company's decision to either focus or diversify its business. The pure external strategy relates to its shaping/adapting of possibilities.

The financial analysis will be an integrated part of the scenario analysis where it serves as a benchmark that can be extrapolated into several alternative futures. The future financial performance will however depend on the path of scenarios.

Finally, scenarios are created only when such big changes occur that it shifts an entire industry in a certain direction or multiple directions. If this is not the case traditional valuation models can be relied upon.

3. The case

The following seek to answer sub question 2 of the problem statement.

2) *What are the financial characteristics and trends of the industries of which GN operate?*

3.1 *Company description*

GN is a listed Danish based company engaged in the manufacturing of hearing aids and headsets for mobile, call center and office (CC&O) use, primarily selling in North American and European markets and producing in low cost markets. Resound is the subsidiary that produces hearing aids and related audiology equipment. Netcom produces headsets.

Since the failed sale of Resound in 2007 to Swiss based manufacturer Sonova the company has been restructuring and no further decisions on spinning off the companies in two different public companies or other separating solution has been made although it has been stated by the company itself (AR²² 07, p. 3) that a separation would provide added value.

It is mentioned in equity research reports (SEB, May 7-07, p. 11) that a financial sponsor will find it difficult to justify a price that is even close to the original sale price of DKKbn 15,5 by Sonova although a sales solution might still be beneficial if shareholders are trading the share at a conglomerate discount or otherwise unable to provide similar value upside.

²² Annual report.

This can explain the recent company decision to keep the divisions together supervised by the board of GN in order to possibly restructure and prepare the businesses for a later sale (Børsen, Apr 4-10).²³

GN has been active in M&A-transactions and acquired several companies but it has also exited several investments during the last decade.

US based hearing aid manufacturer Beltone was acquired in year 2000 in a EURm 500 deal providing a strong network of dispensers used as sales channels with products from Beltone exclusively which also spread the product portfolio of Resound across several classes of hearing aids. The Beltone network is believed to be a valuable contribution to other hearing aid manufacturers and constitutes a rationale for acquisition (Jensen (2001), p. 59).²⁴

Beltone has caused a dispute between GN and the Danish Tax authorities relating to the tax deductibility of goodwill write down in connection to the acquisition of a remaining stake in 2005.

Then, distribution²⁵ company Ultravox was sold off to the Italian listed hearing aid distribution giant Amplifon in 2006, when the Resound sale process was pending, in a EURm 90 deal (mergermarket). This indicates a particular focus by Resound where involvement in distribution has become more relaxed.

In year end 2002 GN divested Danish based NetTest, which provided measurement systems within telecommunication technology outside GN primary operations, to Danish based private equity house Axcel giving rise to a 15% increase in GN stock price.

The company has as of today two primary pending legal issues including an arbitration regarding a claim of DKKbn 5 regarding data traffic on fiber optic networks in Poland²⁶, not otherwise related to GN core business, and the before mentioned Beltone dispute.

²³ Announced after German Supreme Court ruling when it was speculated that Resound would be likely to be spun off. From a game theory perspective this is also the correct reaction which makes the true GN management agenda less transparent. Source: Børsen (Danish Business daily), "William Demant Chef: Vi ser ingen salgskilte".

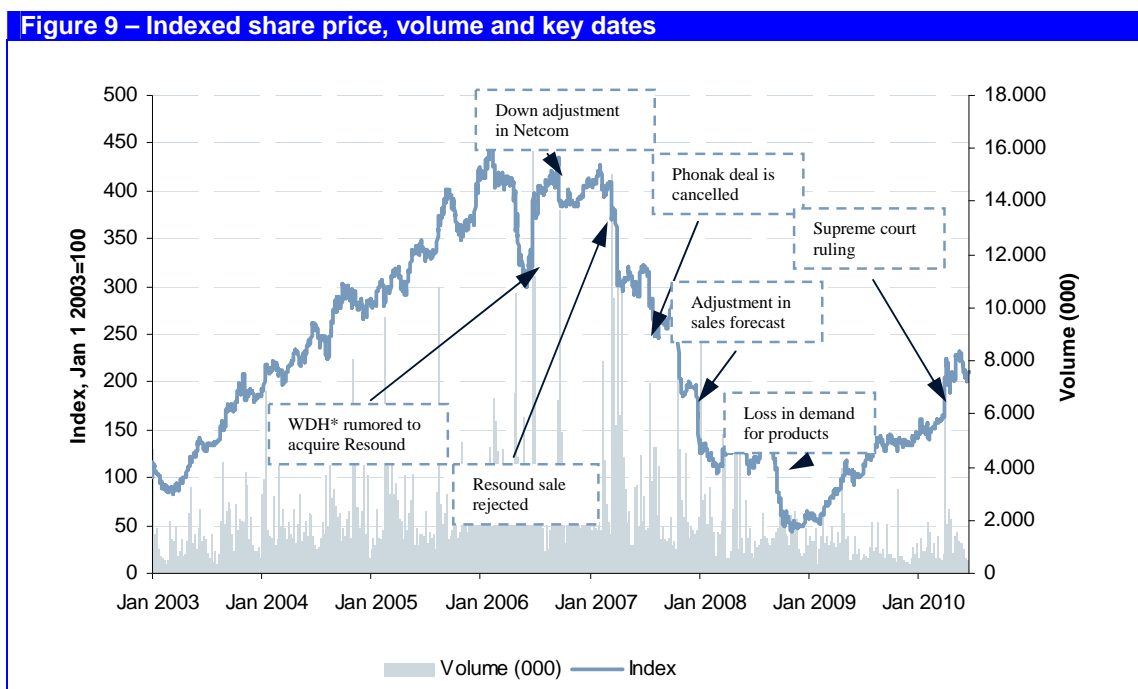
²⁴ The network includes 270 dispenser owners with 1.500 office locations in the US (AR 09, p. 14).

²⁵ Distributors serve end users of hearing aids.

²⁶ The dispute concerns data traffic in Polish fiber networks during the period of 1994 to 2004. GN finds it entitled to the underlying cash flow through its 75% of DPTG which has an interest in the TPSA (Telekomunikacja Polska S.A.) income (GN AR09, p. 56).

Most recently on April 20, 2010 it was decided by the German Supreme Court that the restricted sale of Resound by the German cartel office was illegal. This ruling can give renewed dynamics in the hearing aid industry.

In figure 9, key issues for GN are pointed out on a share price and volume chart.



*WDH (William Demant Holding)

Source: Factset, Børsen (Danish business daily), Author's own creation

3.2 Recent history

GN had a phenomenal year in 2005 with improved sales and margins compared to years before. In the preceding year, 2004, GN had sold off Moldavian mobile operator Voxtel at an undisclosed amount to France Telecom in order to focus on core business of hearing aids and head sets.

The company had 60% of revenue generated by products no older than two years which has meant a high product launching cadence. This percentage has been sustainable throughout the years and uniform to peers²⁷ as well.

Resound's ITE (In-the-Ear hearing aids) production was moved to the US during the year and at the time most BTE (By-The-Ear hearing aids) production took place in Xiamen, China while 20% came from the company's factory in Ireland.

Headsets were also produced at a growing rate in the Xiamen factory. For both Mobile and CC&O products in Netcom, 35% came from Xiamen and the rest by subcontractors.

GN acquired German hearing aid manufacturer Interton for EURm 47 providing hearing aids for the low and mid price segment and at the same time discontinued Japanese cochlear implants (AR 05, p. 20) operations which meant increased focus on conventional hearing aids and core business in Resound. It was believed that the transaction of Interton would create annual synergies of DKKm 30 each year.

For Resound the 10 biggest customers had 15% of total revenue in 2004, which increased to 25% in 2005 where one customer had sales of more than 5%. Despite sales were up it was distributed in a different way now with more sales to fewer customers.

The 10 Largest customers of Netcom had respectively 25% for CC&O market and 75% for the mobile market, primarily driven by the big OEM (Original Equipment Manufacturers) customers such as Nokia.

Netcom had also strongly expanded its distribution network via agreements with retail chains and office and IT distributors and 2004 would become the year where the office market surpassed the call center (CC) market in terms of revenue due to stronger growth rates and much more moderate growth rates for the CC market.

GN's improvement in operating performance was made possible after an extensive DKKm 140 restructuring in 2003 of GN production, distribution and local sales companies and which made the

²⁷ Applies both to headset and hearing aid segments.

company decide to resume dividend payments of DKK 0,6 per share after two years of suspension.²⁸

There were pricing pressure on less advanced products during 2004 and 2005 but it seemed that only top notch quality was in strong demand, a market which GN serves.

Thus, growing markets seemed to be the case for hearing aids as well as head sets with the potential to further upside through expanding blue tooth technology, higher social acceptance of hearing aids with improved technology (thereby making them less stigmatizing).

The path GN was at in 2005 focused on increased in-house production in low cost markets via the Xiamen factory in China, a much more focused business strategy with reduction in non-core activities and a strong focus on frequent product launches providing growth opportunities.

2006 would become a clear cut fundamental change for GN business conduct when it was attempted to sell off its hearing aid division, Resound, to listed Swiss based hearing aid manufacturer Sonova (then Phonak).

All involved cartel offices except the German approved it after the deal was announced in October 2006 (company announcement Jan 16-07).

Since the price tag on Resound was set at c. DKKbn 15,5 this seemed to dominate any synergies between the divisions of Netcom and Resound²⁹. The offer price was probably justified due to the fact that Sonova would become a giant of hearing aid manufacturing with enclosed economies of scale and cross selling opportunities. Synergies were estimated at an annual DKKm 400 (mergermarket).

On the day of announcement in October 2006 the share price fell dramatically around 10% but this was mainly due to a 25% decline in Netcom sales forecast for the year. It was rumored on the other hand on July 15, 2006 that the Resound sale would take place which caused the share price to increase 15% since a price indication of DKKbn 15 was given.

²⁸ Dividend payments have been suspended in subsequent years.

²⁹ Interestingly the position by GN on the existence of synergies was later changed and today no synergies are perceived to exist except in the restructuring phase of both divisions (which is now coming to an end).

In the year, Netcom attention to operations was stressed by a record of 11 new launched products and a 3% organic growth, which would have been 10% without the failed Netcom HelloDirect service that sold directly to end-user³⁰.

A total of 27m headsets were manufactured with an increase in outsourced manufacturing, which now seemed to be a new focus for GN opposite to earlier times with focus on in-house production. GN intended to outsource all its production after completion of the Resound sale in order to gain on economies of scale from producers.

Because of the fundamental change in GN business during 2006 the company would have Netcom:

- 1) Reengineer into a single scalable business with reduced working capital and improve sales/cost ratio as well as reduce number of suppliers,
- 2) accelerate business with frequent product launches and
- 3) expand to related activities which was articulated in corporate strategy.

CEO Joergen Kildegaard decided to leave along with Resound CEO Jesper Mallind due to the substantial change in the organization in 2006 and was replaced by Toon Bouten.

The failed sale had a huge impact of GN in 2007, when it was realized that the transaction of Resound would lapse after the German cartel office' decided it illegal on April 12, 2007 resulting in a 9% share price decline. Customers of Resound had decided to leave in the period of transaction since proper focus on operations was not possible which is reflected in the PL statement and the substantial decline in profitability.

As a result, a new restructuring process was initiated by GN trying to turn the business 'back to basics' both within Netcom and Resound.

Resound and Sonova tried to comply with the cartel office by suggesting selling off certain operating assets in Germany to third parties but the Decision Division of the German cartel office

³⁰ Suggested by SEB Jan 07, to be discontinued in order to focus entirely on B2B.

firmly believed the presence of the largest hearing aid manufacturers constituted a dominant oligopoly where parallel business behavior was being conducted (Decision Division p. 3 and 12). The Decision Division stated that the hearing aid market should be seen as one market and not fragmented into several country markets. This made asset sales in the German market irrelevant. As a consequence, Resound and Sonova decided to participate in a hearing at the relevant appeal court, requesting a temporary approval of an accelerated transaction completion, while simultaneously objecting to the decision by the German cartel office in a separate trial. This was determined necessary since further postponing of the transaction would lead to severe operational influence.

On August 1st, 2007 it was carved in stone that GN could not chance the decision of April 2007 by the German cartel office. On this day the German appeal court decided it could not approve an accelerated completion of the transaction resulting in an 11% share price decline stressing how strong investor sentiment was for the transaction. The sensitive business information had been given to Sonova during the long period of due diligence now seemed in vain and could not have pleased investors neither.

GN tried to pursue an emergency plan and sell Resound to other potentially interested investors such as private equity investors which seemed more logical now that industrial buyers were perceived illegal participants in the transaction. Besides, very few other industry players would have the necessary financing capabilities to acquire Resound (SEB May 7-07, p. 7).

SEB research suggested that an auction of entire GN would be beneficial since any implied reduction in Resound sales price would be more difficult to assess, management could get more aggressive remuneration packages and the number of potential bidders would likely increase. This approach however never saw the light of day probably caused by the potential value of the ongoing legal issues in GN including the EURbn 5 claim in Polish data traffic on fiber (TPSA³¹ case).

On August 15, 2007 Sonova decided to withdraw from the transaction.

³¹ Telekomunikacja Polska S.A.

The German cartel office' decision left GN with a mismanaged business and on top of things some of the worst organic growth rates in company history. The mobile division had a negative organic growth of 24% due to lower sales to OEM landing at 29m manufactured units for the CC&O and Mobile units of which 90% now were by subcontractors (in line with strategy of outsourcing more of production).

Further, reduced average prices especially within the mobile segment made 2007 a tough year and forced GN to initiate an additional specific turnaround plan for the Mobile unit within Netcom which focused on key markets, products and customers.

Resound experienced a negative 2% organic growth in 2007, ending at 1.4m manufactured hearing aids, implying focus on lower priced hearing aids.

Since Resound had to be kept within GN, Mike van der Wallen was appointed Resound CEO, after being on the board of directors, and the turnaround plan was initiated which meant

- 1) capitalizing on product launches,
- 2) winning back lost accounts and expand distribution via joint ventures,
- 3) build infrastructure in emerging markets³² and
- 4) decrease inventories by establishing a build-to-order profile with a 14-day delivery window.

In terms of days that inventory is tied, current level of Resound is on par with 2004 of around 50 days which does suggest that the turnaround plan has partially worked.³³

No cost focus was presented in the turnaround plan probably due the fact that cost cutting seemed to be nearly exhausted since increased focus on manufacturing in low cost countries already had been initiated (SEB Feb 08).

³² Which is why Resound acquired an Indian based distribution company during the year which opposed previous years' focus on core business.

³³ See financial analysis section below.

In 2008 GN launched new products in all product and price segments, i.e. all price segments of the Resound, Interton and Beltone brands. Per Wold-Olsen was elected chairman of the supervisory board which now had 5 out of 6 members with less than two years on the board.

The Group's focus was to grow top line, reduce operating expenses, enhance profitability, improve operating excellence and in general improve cash flow and earnings.

In Netcom it was decided that Toon Bouten would not continue as CEO and then it was strongly believed that unified communications technologies³⁴ (UC) and the modest 9% mobile attachment rate³⁵ would become a major growth factor in the near future for the Netcom division.

The division launched its FAST program during the year (Focused And Simplifying Turnaround) which implemented a demand driven supply model with focus on key markets and products. Instead of the previous more than 700 served customers now only 100 were being served in the CC&O market through more centralized centers. Fewer centers were also implemented for the Mobile product distribution (AR 08, p. 3).

Furthermore, the program meant termination of up to 250 jobs within the organization which already had halved employment since 2005 from c. 2.000 employees to 1.000.

Prices for Netcom products declined around 15% and organic growth in CC&O was c. negative 6% while Mobile suffered an organic growth of negative 14% due to sharp decline in OEM contracts caused by problems at a single OEM.

The organic growth for Resound hearing aids was better at 5% with a 12% increase in unit sales. In the US there was a 1% organic growth, but excluding public distributor Veterans Association³⁶ (VA), offering reimbursement schemes, the organic growth was (2,5)%.

³⁴ UC is a technology that improves the ease of use for several communication technologies such as landlines, mobiles and soft phones.

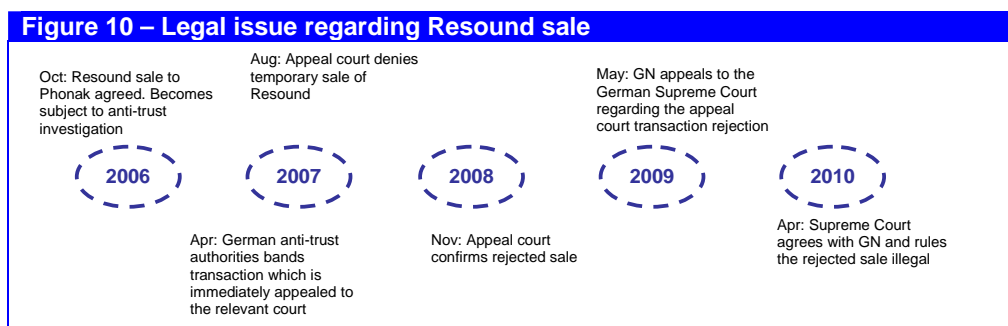
³⁵ A measure of Bluetooth enabled handhelds having blue tooth head sets.

³⁶ Serving war veterans from focal points such as Iraq and Afghanistan.

The UK showed same trend with 5% organic growth coming from public sales in NHS (National Health Service), while the private segment had a negative growth of 6%. In Germany the organic growth was decent at 6%.

A staggering 15% growth in China stress the countercyclical nature of hearing aid operations compared to that of Netcom’s when considering the extremely volatile year of 2008 in the general economy.³⁷

When the German appeal court in November 2008 confirmed the German cartel office’ decision of preventing the Resound sale, a Supreme Court filing was initiated on May 11, 2009 regarding the legality of the transaction. Figure 10 gives a sketch of the legal development regarding the Resound sale.



Source: Company announcements. Author’s own creation

Even when corrected for non-recurring items, 2008 was economically a very tough year but it should be seen in the context of a unique financial crisis culminating with the Lehman Brother’s collapse in October 2008 and extreme market volatility.

2009 has brought GN back several years in terms of financial performance but there are positive notes to be made:

³⁷ Refer, for example, to beta values in appendix 3.

The FAST program in Netcom has proven to be much more beneficial than expected and will generate DKKm 500 per year in future savings.

Then, UC pilot projects have been initiated with research showing an expected 50m UC clients in 2014 of which 75% needs headsets. This could indicate that the market is mature for commercialization of UC.

Furthermore, it has been possible to improve average sale prices of headsets although the general markets have shown a declining price trend.

Still, 2009 resulted in a 30% organic decline for Netcom and only 14.3m head sets produced down from 25m the year before. So, despite the FAST program had an impact of non-recurring DKKm 143, the year has been heavily stagnating in Netcom.

Mogens Elsberg has been appointed as CEO for Netcom replacing Toon Bouten but no changes to the previous Netcom strategy has been indicated.

Resound has expanded its collaboration with distributors German KIND Horgerate and Italian Amplifon while selling off its Belgium distribution unit of Dialgoue to Amplifon³⁸.

Then, Resound was elected as provider for the growing VA-market in the US, a market showing growing tendencies.

Finally, the ITE manufacturing sites were reduced from 24 to only 6 locations in the attempt of focusing on costs, working capital and economies of scale.

Resound continues to have high fraction of new products, no older than 24 months as in the past, generating sales (66% up from 60% in 2003), but there seems to be a shift in geographic segmentation for Resound.

Europe is still the largest market with 40% with the US as the second largest, but as figure 11 shows, there has been a shift from Europe to Asia and the rest of the world which now generates around 20% of revenue compared to 15% in 2003.

³⁸ Like it sold Ultravox in 2006, continuing its core business focus.

Figure 11 – Development in Resound geographical segmentation

Geography	2003	2004	2005	2006	2007	2008	2009
Europe	45%	42%	45%	n.a	44%	44%	40%
North America	40%	40%	40%	n.a	40%	38%	39%
Asia and rest of the world	15%	18%	15%	n.a	16%	18%	21%
Sum	100%	100%	100%	0%	100%	100%	100%

As reported.

Source: GN company annual reports. Author's own creation

In figure 12 below some of the key financials are presented for GN on a consolidated basis.

Figure 12 – Key financials

DKKm	2003A	2004A	2005A	2006A	2007A	2008A	2009A
Revenue	4.742	5.548	6.644	6.766	5.981	5.624	4.729
<i>growth</i>		17%	20%	2%	-12%	-6%	-16%
EBIT	90	506	834	257	228	34	(23)
<i>margin</i>	2%	9%	13%	4%	4%	1%	0%
Net income	250	508	850	348	(67)	(56)	(70)
<i>margin</i>	5%	9%	13%	5%	-1%	-1%	-1%

As reported.

Source: GN company annual reports. Author's own creation

Looking ahead fewer extraordinary items are expected by management (SEB Feb-10, p.1) but also modest growth and there still might be some restructuring costs related to Resound in 2010. Some equity researchers fear that the declining sales growth seen last couple of years can potentially side track Resound R&D which will give competitors an upper hand since their sales have not been affected as much.

In 2010, three of the more noticeable developments are:

In March 2010, Mike Van der Wallen was replaced by Lars Viksmoen as CEO for Resound with the announcement that one of the initial key assignments for Viksmoen would be to successfully launch wireless hearing aid products in 2010. This has been achieved in April when Resound

launched its first wireless hearing aid although it does not support binaural processing³⁹. Nevertheless the product launch is seen as highly important by management.

The new CEO is the fourth CEO in GN last 4 years.

On April 19, 2010 Netcom revised its 2010 estimates with an improvement in operation profit by DKKm 50 making the share jump 5%. This signals a shift in previous year's trend of stagnating markets.

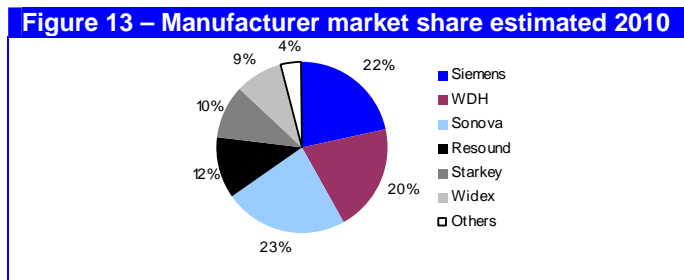
On April 20, 2010 it was ruled by the German Supreme Court that the rejected sale by the German cartel office was illegal giving rise to a 20% increase in share price probably caused by the reduction in uncertainty regarding Resound future although no compensation is expected to be paid. This indicates that an acquisition premium is traded in the share price.

3.3 Hearing aid industry

The hearing aid industry is generally a R&D-heavy industry with historically high product shifts, innovations and short product life-cycles with only a handful of big manufacturers which constitutes almost the entire manufacturing market. The main manufacturers are Siemens, William Demant and Sonova followed by Resound. Other players, although more marginal, are private companies such as Widex and Starkey. The companies have the largest markets in the US and Europe.

Market shares are estimated in various sources one of which is presented in figure 13 below.

³⁹ Binaural processing is a technology that enables the user to locate the point of sound origin. This is something certain competitors offer in their product lines.



Source: Jyske Bank. Author's own creation

3.3.1 Technology

In broad terminology hearing aids can be ITE or BTE. Lately BTE technology is becoming more widespread than ITE due to less stigmatizing design. Digital hearing aids are substituting the older analogue hearing aids where they provide better hearing aid solutions such as binaural processing. The digital technology adjusts to different situations of sound environment making the hearing experience more natural for the user.

Furthermore, hearing aid technology is becoming wireless making them even less visible since the microphone is disconnected from the speaker.

Finally, the connectivity to other digital equipment is becoming increasingly widespread which makes it possible to automatically connect to television sets, mobile phones, land line phones etc.

The last 10 years there have been an intense product launch rivalry between the companies giving rise to new technologies in hearing aids and a short product life cycle of around two years. This suggests that customers of hearing aid manufacturers only purchase superior technologies which could be explained by better sound technology as well as less stigmatizing and more esthetic appearance of hearing aids. As an example, only 10% of manufactured hearing aids (Decision Division, p. 6) are analogue as opposed to digital hearing aids which provides advanced signal processing for better sound experience. BTE products are also getting smaller in terms of size compared to ITE products giving BTE a 90% market share.

That being said, customers have lately shown to place themselves more in the mid-price market of hearing aids probably caused by the recent global economic turmoil. The general innovation value add is hence less significant, and does not give the same competitive advantage between manufacturers (Decision Division, p. 7).

Twice a year large conventions are held in the US and Germany respectively in April and October where new products of hearing aids traditionally are being presented by manufacturers and are always well visited among others by equity analysts. When looking at share prices of manufacturers on the relevant dates very little volatility is observed supporting that the product innovations are less important.⁴⁰

Other technologies that serve more severe hearing losses are cochlear implants and BAHA (Bone-Anchored-Hearing-Aid) which focuses on the inner ear and bypasses the impaired outer ear. Both require surgery but have the advantage of less visibility thus making them less stigmatizing.

3.3.2 Types of hearing loss

Hearing loss can be caused by exposure to loud sounds over a longer duration of time, infections, aging or brain trauma (in which case hearing aid solutions will not help). The most common form of hearing loss is caused by damage to inner ear functions (tiny hairs facilitate the sound and can be reduced in functionality if damaged through loud sounds or aging). This market has been the target audience for today's hearing aid manufacturers. However, reduced middle ear functionality requires different solutions if severe since normal hearing aids only enhances outer ear functionality. In this case BAHA can be provided (CA Jan-10, p. 21).

Hearing loss on both ears is statistically more frequent as opposed to single sided deafness, which is why Europe is expected to narrow its gap with the US from 50% binaural hearing to 80% (AR 09, p. 10)⁴¹.

⁴⁰ Although it should be noted that information might gradually slip into the market thereby slowly digesting news of valuable products.

⁴¹ This information is used as input in the Resound revenue model that is presented later on in the valuation section (see also appendix 9).

Hearing loss can be classified into:

- Conductive hearing loss: Sound is not conducted properly through the outer and middle ear due to obstruction, infection, deformity or allergy which can be treated with medicine or BAHA products estimated at 40.000 units per year. This unit sale is negligible compared to conventional hearing aid sale.
- Sensorineural hearing loss: Occurs when there is damage to hair cells in the inner ear (cochlea) which can be caused by noise, aging, diseases, drugs or tumors which is permanent and can be helped by conventional hearing aids estimated at around 9m units per year or products which in severe cases it can be treated with cochlear implants.
- Central auditory processing disorders: Occur when there is damage to the auditory centers of the brain via injury, disease, tumors etc which is not treatable.
- Mixed hearing loss between sensorineural and conductive hearing loss can be helped by middle ear implants but this is a much undeveloped market and no commercialization is expected before 2011. (CA Jan-10, p. 21)

In the US 1 in 10 has reduced hearing but only 20% of those will statistically find a hearing aid solution that suits him due to lack of awareness, costs and reasons related to stigmatizing. This percentage is probably higher for the severely hearing impaired but information and awareness of better hearing solutions for this market may be underutilized (considering the substantially smaller market serving conductive hearing loss).

There is a dependence on reimbursements in the industry since hearing aids are very costly to end user. The US is unique in the sense that its government does not offer reimbursements for hearing aids unless purchasers are related to VA.

The reimbursement schemes are expected to come under pressure since a shift in demographic composition, especially in Europe, will make it increasingly difficult to finance these schemes. Currently in Germany and France they are undergoing changes to the reimbursement procedures (SEB, William Demant research, Jan-10, p. 3). Demographic developments (See revenue model in

appendix 9) in the western world will however drive demand in itself considering the natural interest of hearing impaired to acquire a hearing aid.

It is possible that increased focus on the hearing aid manufacturing industry from political and legislative aspect in the non-European countries could be a potential growth factor for manufacturers in the future.

3.3.3 Reimbursement

Typically in continental European countries it is required to have a medical prescription in order to get a hearing aid, which is issued by a physician, and it should be verified that the hearing aid has actually been fitted before any purchase can be made. This applies for countries such as Germany, France and the Netherlands. Service providers are mainly private stores, acousticians or opticians, and reimbursement is made, in full or partially, via private health insurance or by the government typically covering standard hearing aids. A rough estimate suggest that 50% of revenue is derived by public reimbursement giving some indication of what possible consequences could be if these reimbursement schemes come under pressure (Amplifon AR 08, p. 24)

In the UK, one of the biggest hearing aid markets, the NHS the is main service provider (around 80% of hearing aids) which is free of charge but no reimbursements are given to private providers.

The biggest market for hearing aids, the US, has mainly private providers and has no reimbursement system except for members of VA which has contributed to overall US hearing aid growth partially due to injured war veterans returning from war zones. The VA market is however small compared to total US market. As in the UK no medical prescription is necessary for hearing aid purchase.

3.3.4 The general industry

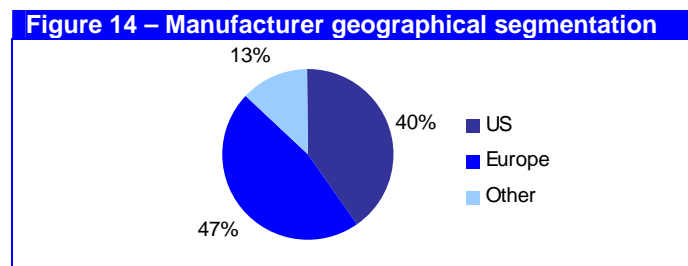
The companies of the hearing aid industry have cross selling opportunities in audiologic equipment which can be used by vendors of hearing aids, such as hearing clinics and distributors, to fit

products to end users. These products serve as a smaller fraction of total revenue however, around 10% for Resound, and this has been the case for several years. William Demant and Resound are leading providers of these audiologic instruments.

Looking at the last couple of years of revenue in largest hearing aid manufacturers it is seen that there have been fluctuating growth rates but mostly positive supporting the defensives of the assets. The growth rates however are clouded by difference in prices of hearing aids, M&A-activity and currency effects (Koller, p. 191). William Demant reports their local currency sales growth which has been positive during the period and with double digit growth rates in year 2004, 2006 and 2007. GN had a 5% organic growth in 2008 whereas William Demant had their first decline in unit growth for many years (AR08) but Resound growth has been much lower in other years compared to William Demant.⁴²

World production of hearing aids has increased from around 7m in 2004 to around 9m in 2009 implying a compound annual growth rate (CAGR) of 5%. This growth should be seen as a function of an increasing elderly population in the western world and less stigmatizing hearing aids.

The segmentation of the companies has been stable across geography but looking at population sizes there should be future potential in these unexplored markets. Nothing suggests hearing loss rates should be any less than the primary markets in the US and Europe. Resound has as opposed to its peers increased its revenue generation from Asian markets by 6 pp as seen in figure 11.



Based on figures from Resound, William Demant and Sonova. Average last 5 years
Source: Company reports. Author's own creation

⁴² See appendix 1 for key financials on hearing aid manufacturers and distributors.

Listed companies engaged in other hearing aid solutions and in the distribution link are respectively Australian Cochlear, operating in BAHA and implant hearing aids, and HearUSA, Audika and Amplifon who serve as distributors.

Cochlear sales growth indicates that this is a whole other industry exposed to different growth rates than what is the case in the traditional hearing aid manufacturing industry. Cochlear have had a CAGR, from 2004 to 2008, of over 20% although this is expected to converge with conventional hearing aid manufacturers over time.

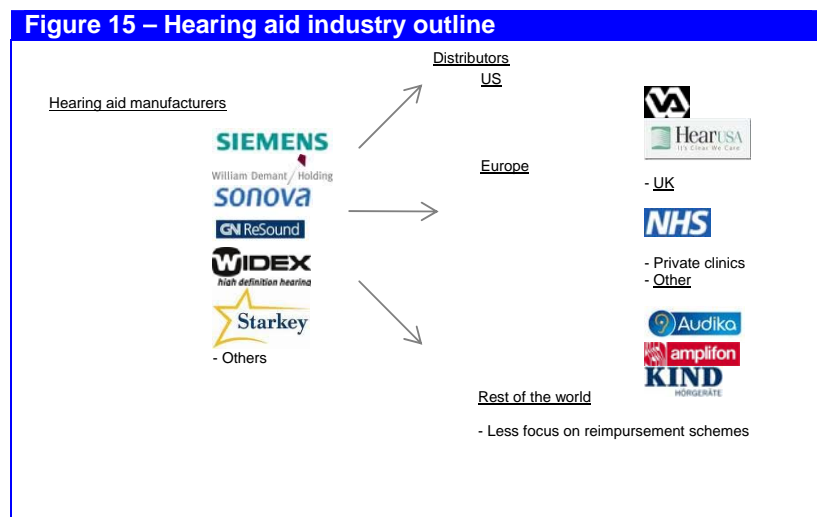
Cochlear profitability has been on par with that of traditional hearing aid manufacturers and looking at market multiples (refer to appendix 1) it is seen these are fairly close to one another suggesting similarities in risk and future growth exposure (Plenborg (2005), p. 27).

HearUSA, Audika and Amplifon growth rates are more in sync with manufacturers of regular hearing aids in the historic context. Their primary business is to buy manufactured hearing aids from producers and sell them to end-buyers through hearing centers which provides fitting and consulting services on hearing loss issues. Providing these services other private hearing clinics are bypassed so key for dispensers is to gain awareness to ENT (Ear-Nose-Throat)-doctors so that they can give reference to the most value adding products for the end buyers at the distributors.

Amplifon has a network of 3.000 sales outlets, 3.500 authorized centers, 2.000 affiliated shops and 3.500 specialty hearing aid shops and is the largest of all listed distributors. Audika has a much smaller network comprising 350 centers.

HearUSA owns centers themselves which primarily sells Siemens hearing aids but the company also provides to its independent network of hearing aid providers.

In figure 15, a sketch of the value chain within the hearing aid industries is presented.



Source: Author's own creation

Some of the bigger M&A activities in recent years have been consolidating both horizontally and vertically into distribution. This is seen in figure 16.

Figure 16 – Noticeable precedent transactions

Completed Date	Target Company	Target Description	Bidder Company	Bidder Description	EV (EURm)
6-Jan-10	InSound Medical Inc	US based company that develops and manufactures hearing solutions	Sonova Holding AG	Switzerland based manufacturers of hearing systems, wireless communication systems for audiological applications and provider of solutions for hearing protection	52
30-Dec-09	Advanced Bionics Corporation	US based developer and manufacturer of cochlear implant systems	Sonova Holding AG	Switzerland based manufacturers of hearing systems, wireless communication systems for audiological applications and provider of solutions for hearing protection	326
30-Jul-09	Dialogue	Belgium based distributor of hearing aids	Amplifon SpA	Italian distributor and fitter of hearing aids and related products and services	14
25-Jun-09	Pulse Medtech	US based medical components manufacturer	Altor Fund III	Swedish private equity fund	140
28-Feb-08	Sonion A/S	Denmark based developer, manufacturer and supplier of advanced electroacoustical and electromechanical miniature components. It also manufactures hearing instruments, mobile terminals, headsets and medical devices	Technitrol Inc	US based manufacturer of electronic components, electrical contacts and assemblies and other precision engineered parts and materials	286
18-Sep-07	Audika Group (holding company)	UK based investment holding company engaged in marketing and sales of hearing aids and related products.	ECAS II Sarl; European Capital S.A. SICAR	France based private equity firm. Investments are typically in the range of EUR 5m and EUR 100m per transaction in equity, mezzanine debt, or senior debt; France based subsidiary of European Capital S.A, the France based private equity firm.	n.a
20-Oct-06	Advanced Hearing Services Ltd	UK based provider of hearing care service.	David Ormerod Hearing Centres Limited	UK based provider of hearing aid dispensers.	n.a
Lapsed	GN ReSound AS	Denmark based manufacturer of hearing instruments and accessories	Sonova Holding AG	Switzerland based manufacturers of hearing systems, wireless communication systems for audiological applications and provider of solutions for hearing protection	2.079
29-Sep-06	Bioacustica Espanola Acustica Medica S.L; Grupo Laudio	Spain based maker and distributor of hearing aids.; Spain based maker and distributor of hearing aids.	Amplifon SpA	Italian distributor and fitter of hearing aids and related products and services	15
30-Jun-06	Ultravox Holdings Ltd	UK based distributor of hearings aids.	Amplifon SpA	Italian distributor and fitter of hearing aids and related products and services	91
1-May-06	Amplimedical SpA (Diagnostic division)	Italy based diagnostic division of Amplimedical SpA.	Nanogen Advanced Diagnostic Srl	Italian developer and manufacturer of advanced diagnostic products	8

Notice that the Resound deal is the only deal that lapsed.

Source: Mergermarket. Author's own creation

The trend in the M&A-activities gives an indication of the future hearing aid industry.

3.4 Headset

The headset industry is characterized by two distinct companies, Netcom and US based public company Plantronics who both serve the mobile and call center & office segment providing wireless Bluetooth technologies and wired solutions for mobile phone manufacturers, IT distributors, retail stores, offices and call centers. Here, OEM contracts within the mobile market serve as a central value driver since large orders from mobile manufacturers will serve as a

substantial growth driver. This was experienced by Netcom in 2008 when an OEM did not order the expected volume of head sets and total revenue fell more than 10%.

Some of the products are sold under head set manufacturer label, for GN called Jabra, while others are sold under private label in OEM brand.

Although the call center market has been fairly stable with modest growth rates there could be a potential for increasing outsourcing of call centers to Asian markets thus providing a need for head sets.

The two segments of mobile and CC&O have been converging (GN AR 04, p. 12) last couple of years in functionality and technology which could lead to increase in overlap of distribution and products serving UC.⁴³

Call center growth is very stable at fairly low levels which indicate this market has been saturated. However, the mobile and office markets have shown stronger growth rates and the potential seems bigger if this awareness could be improved. Only a few in the office workspace actually use head sets, although talking on the phone for several hours a week suggesting improved productivity can be achieved when both hands are free to handle computer typing, writing etc.

Penetration rate is expected to be around 10% of a market of 100m people in the western world using the phone for at least two hours (AR 2005, up to 200m people in AR2007).

In the mobile sector the fairly low penetration rate of Bluetooth enabled handhelds with Bluetooth headsets of 9% (5% in Europe and 11% in the US) also makes for growth opportunity.

Figure 17 shows sales of the head set industry last couple of years along with estimates.

Figure 17 – Head set industry revenue										
Sales, DKKm	2004A	2005A	2006A	2007A	2008A	2009A	CAGR 04-09A	2010E	2011E	2012E
Netcom	2.514	3.509	3.396	2.811	2.430	1.736	-7%	1.867	1.996	1.415
Plantronics	3.023	4.053	4.623	4.942	4.695	3.841	5%	4.121	4.701	5.749
Sum	5.537	7.562	8.019	7.753	7.125	5.577	0%	5.988	6.697	7.164
growth		37%	6%	-3%	-8%	-22%	2%	7%	12%	7%

Source: Company reports. IBES estimates. Author's own creation

⁴³ This will be a key assumption in the head set revenue growth forecasts.

Netcom serves a fairly high-end market with their Jabra head set brand providing technologies that are easier to implement with other communicating technologies, UC. This technology has also been a new feature for certain hearing aids (which does suggest that some synergies might still be available for GN by keeping its division together).

The markets that the two competitors, Netcom and Plantronics, target are a little different since the Jabra brand aims at the high-end segment while Plantronics goes for the mid segment. In view of the economic climate this could be a weakness for Netcom that might be forced to reorganize their product strategy.

The industry is, as mentioned above, dependent on the financial health of OEMs since these take up a lot of business. This demand can be analyzed via companies such as Finnish Nokia, US based Motorola and Swedish Ericsson. The industry of mobile manufacturing was hit by major set back in 2008 and 2009 when the toll of the economic environment had taken its effect. This reduced revenue by double digits resulting in a 2% CAGR based on last 5 years.

3.5 Financial analysis

The financial analysis will assess historic performance both in GN and company peers as a benchmark which will provide insights into relative operational excellence and at the same time be used as base for the following DCF valuation models.

During the analysis period from 2003 to 2009 a complete economic cycle is covered from the IT bubble ending in 2003 to the most recent financial crisis separated by a booming period. This is reasonable since performance will be measured in both recessions and booming periods (Plenborg (2005), p. 120).

In 2002 GN also switched to IFRS (Johansson, 2008) from Danish accounting standards which makes a natural cut-off year for the financial analysis. William Demant also switched to IFRS in 2005 with comparability to 2004 GN (WDH AR 04, p. 19).

Throughout the analysis certain items are separated including non-recurring/non-operating items in the PL statements (Koller (2005), p. 161) hence assessing true financial performance in the organization. Various one-time expenses such as restructuring charges are not seen as recurring and thus added back to operating profit. These expenses have been profound in the case of GN.

GN has disclosed rather detailed financial data on their business divisions which are used in the following analysis as this will provide the prerequisite for valuation.

There are different approaches to the financial analysis and adjustments depending on the purpose which can be summarized as follows:

First, if the purpose is to assess the fundamentals of GN adjustments should be made in the extent possible that gives a proper measurement of company performance.

Second, when compared across peers adjustments should only be made as long it can be made on all companies. If this is not possible the adjustments should be left out.

Since GN consolidated financial statements are derived by the two business divisions, shared expenses and inter-company eliminations, some details are difficult to allocate to the core business areas. This includes the years 2005 and 2006 where the level of detail in division balance sheet items has been particularly sparse. These years are therefore less comparable to the remaining which reduces the quality of the financial reporting by GN, making analysis less transparent (Plenborg (2005), p. 279). The change in reporting is attributable to the intentions of exiting the Resound business which made segmented reporting less important.

GN capitalizes on R&D expenditures⁴⁴ as opposed to peers. By adjusting peer expenditures downwards and capitalizing in their balance sheets comparability will be improved. In this aspect it should be remembered that R&D-expenses still give full tax deductibility⁴⁵ which is why taxes should be unaffected by this adjustment (Damodaran (2002), p. 500). Due to the limited amount of

⁴⁴ This is perceived as the proper method according to both Damodaran (2002) and Koller (2005).

⁴⁵ Under Danish law insured by Ligninglovens § 8b.

publicly available annual reports, capitalizing for every year becomes difficult and is therefore only performed for most recent years when a comparable valuation is performed later on.⁴⁶

Furthermore, the shared cost base, including operating leases, is more difficult to assign to GN division performance making comparability to peers less which is why these leases are ignored for comparable reasons.

Sonova, Widex and Plantronics have fiscal years that do not follow the calendar year which is why their key financials are adjusted, to PL items, to reflect the calendar year January through December. Sonova and Widex reports from April to March and Plantronics reports from May to April.

Widex financial performance is not as directly comparable to above peers since Widex is a Danish private company and reports under Danish accounting standards. The detail level of the financial statements is also lower than the listed peers making comparability less obvious. No operating leases or non-recurring items are reported in statements. Nevertheless Widex is highly engaged in the industry making it a relevant comparable to Resound.

3.5.1 Resound operations

The division of Resound has had several non-recurring items in its PL statements through out the period including loss on disposal of operations, costs related to failed Resound sale, inventory write down, R&D impairment and restructuring all of which are eliminated in the financial analysis. These are all extraordinary and not perceived as recurring.

Restructuring consist of DKKm 64 in 2003, inventory write down of DKKm 30 and impairment of R&D assets of DKKm 25 which are all added back to operating profit.

⁴⁶ The amortization period is based on GN company report estimation AR 08, p. 71.

Resound have had a c. 0% revenue CAGR last 5 years contributed by the financial turmoil and the failed division sale which has kicked revenues back to the level in 2003 of around DKKbn 3.

Operating margins have been between 7% in 2008 and 17% in 2005 when excluding goodwill impairment with an average of 12%. It has been stated by GN as an ambition to narrow its gap with competitor profitability (GN AR 06, p. 5). This was partially realized over the years from 2003 to 2005.

The competitors consisting of Sonova, William Demant and Widex have been substantially above Resound margins and sales growth rates throughout the years especially in most recent times.

Production costs have been around 40% of revenue on average during the period but with a declining trend recently due to the workings of restructuring initiatives implemented in the organization. Peer production costs have been closer to 30% although reduced from a previous higher level.

Expensed development costs and SG&A for Resound have relatively been increasing during the period putting a damper on margins. The trend of increased expensed development costs is probably explained by business necessity as revenues have been declining. Falling behind in nominal terms of R&D (SEB research on GN, Feb-10 p. 4) can be devastating for a hearing aid manufacturer. Hence, the nominal amount of resources spent on R&D must be fairly constant. It is also suggested that R&D and products of Resound are lagging behind competitors thus making a higher portion of the reduced revenues necessary to be used for R&D.

R&D relative to revenue was around 6% in the beginning of the decade but has increased to about 9% in 2009. William Demant and Sonova R&D-expenses to sales have been closer to 10% but when adjusting for capitalizing of these expenditures the margins are more similar. Recently Sonova has reduced its margin to around 5% of sales probably due to their high revenue growth.

Return on invested capital peaked with 14% in 2005 for Resound and bottoming in 2008 with 3%. Such low returns indicate value destructive operations when compared to cost of capital⁴⁷.

The trend of declining performance has been completely inferior to competing peers. William Demant has had better turnover ratios of sales to invested capital and better operating margins after

⁴⁷ For more detailed calculations on cost of capital (WACC) refer to appendix 10.

tax which has resulted in returns on invested capital between 50% in 2004 and 22% in 2008. For Widex the return has been between 60% and 30% (ignoring difference in reporting year).

Here, Sonova is the only manufacturer of hearing aids that has increased its returns from 20% to 30% also disregarding their reporting bias to the calendar year. All is caused by higher turnover ratios and better margins after tax (see figure 18 and appendix 11).

Historically, Resound capitalization of incurred R&D has been around 60% and amortized over 1-5 years. Using 4 years as the amortization horizon and adjusting for the 60% capitalization rate invested capital can be adjusted in the calculation for peers. When adjusting NOPAT, 20%⁴⁸ of the incurred expenses are added back to reflect capitalization, however the tax remains the same, and therefore tax rate times total incurred R&D expenses is added back.

Operating margins would be slightly higher if a proper driver could disperse shared lease costs to the divisions of GN since part of the lease costs would be converted into an interest expense. Likewise, invested capital would increase due to a rise in operating assets financed by the debt equivalent.

Some of the key GN operating financial data is summarized in figure 18.

Figure 18 – Resound key operating data						
	2004A	2005A	2006A*	2007A*	2008A	2009A
Turnover ratio	0,8x	0,9x	0,6x	0,6x	0,7x	0,6x
Profitability	11%	17%	12%	6%	4%	6%
ROIC	9%	14%	6%	3%	3%	4%
ROIC	9%	14%	6%	3%	3%	4%
ROE	8%	13%	9%	4%	2%	3%
Leverage	4%	3%	43%	31%	5%	2%
Interest after tax	-19%	-39%	-1%	0%	-25%	-41%
ROE	8%	14%	9%	4%	2%	3%

* Denote that years are not directly comparable to other years due to change in annual report level of detail. Items are adjusted for non-recurring and non-operating items. ROIC and ROE is reported twice to show underlying model is reconciliated. 2005 difference in ROE is caused by loss from associated companies.

Source: Company reports. Author's own creation

⁴⁸ Historically Resound expensed development costs out of total incurred has been 80%. Using these as estimates for peers the corresponding R&D to sales ratios can be calculated. This assumes that peer R&D capitalization capabilities are a mirrored image of Resound, however if these peers have better R&D units these should materialize in a higher capitalization rate.

Inventory of Resound has been tied throughout the years between 40 and 50 days and for receivables and payables respectively 60-90 and 10-30 days. Net working capital has been 90 and 110 days which is on par with peers although slightly higher⁴⁹.

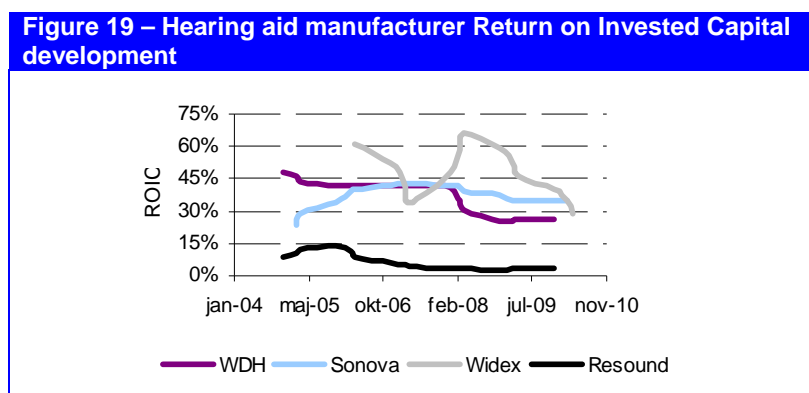
Plant, property and equipment to sales has been 7% in 2009 and 8-9% in previous years which compared to peers is slightly lower as they have had between 10-12% in revenue tied to plant, property and equipment.

Capital expenditures, excluding goodwill and developments, have been 1-3% of revenue which has been lower than peers in the past. Recently Sonova and Widex have surpassed its competitors with regards to capex to sales of around 10%.

Neither Resound, Widex nor William Demant pays out dividend thus making there return on equity equal to self financed growth. However, in Sonova, there is a policy of paying out 20% of earnings to shareholders.

The low tax rate and leverage of Resound resulted in a 13% return on equity in 2005 which has decreased to 2% in 2009 due to the higher tax rate.

This has been substantially below performance in the peer group as well, as seen in figure 19.⁵⁰



No R&D adjustments are possible back in time and no operating lease adjustment is made (increasing comparability to Resound)
 Source: Company reports. Author's own creation

⁴⁹ Please refer to the attached CD to this thesis for these calculations.

⁵⁰ For detailed information on peer reports refer to appendix 11.

3.5.2 Resound financing and capital structure

Net financial expenses on net interest bearing debt have been fairly high between 20% in 2004 and 90% in 2009. This however is clouded by inter-company loans. Resound owes its parent around DKKbn 1.5 and if this is seen as part of interest bearing debt as opposed to an equity equivalent (Koller (2005), p. 550) then the financial costs will be substantially decreased to 3-7%. This is comparable to peers where William Demant has had 2-4%, Sonova 1-10% and Widex 5% in costs (appendix 11).

All hearing aid manufacturers have had very healthy interest coverage ratios suggesting little liquidity issues.

The capital structure in terms of book value debt to equity was 8% in 2004 and most recently 2% which is lower than peers in recent times. Sonova, William Demant and Widex had last reporting year a leverage of 20%, 650% and 49%. In terms of market value the leverage was closer to respectively 15% for Sonova and 16% for William Demant. If treating the intercompany loan as a debt equivalent capital structure for Resound would be between 20% and 60%.

On this basis it must be concluded that the inter-company loans in GN makes it harder to assess the true capital structure but it should be closer to peers. It should also be noted that the leverage in reports have been fairly fluctuating making a target capital structure less evident. In terms of market value William Demant capital structure has been increasing last 7 years from 8% in 2003 to 16% in 2009. Sonova capital structure was 10% in beginning 2003 increasing to 15% in beginning 2010 after several years in between with negative net interest bearing debt.⁵¹ It is a reasonable assumption that the recent global economic turmoil does not reflect the true capital structure of the companies and is therefore likely to be closer to the historic values.

⁵¹ See appendix 2 for capital structure calculations based on market value.

3.5.3 Netcom operations

As for Resound, Netcom has shown a stagnating tendency in revenue for both the Mobile and CC&O units. Recently there has been a considerable reduction in revenue probably contributable to the economic environment which has turned the division back to the level in 2003 of DKKbn 1,7. Operating margins has been between 1% in 2008 and 10% in 2005 compared to Plantronics with 17% in 2005 and 8% in 2008 (calenderized for comparability). In general Plantronics profitability and revenue growth has been higher than Netcom.

Production costs have been fairly stable at around 60% of revenue for Netcom but development costs expensed have been increasing from 5% in 2003 to 8% in 2009 of revenue probably due to the same reasons as stated above for Resound, i.e. a minimum nominal level of R&D expenditures is required. Management and administration costs have increased rapidly from 16% in 2003 to 22% in 2009 but are due to the restructuring process initiated which resulted in a total of extraordinary DKKm 228 costs in production and SG&A.

Development costs relative to sales for Plantronics have been closer to 10% than Netcom's historic 5% of expenses development costs but as explained for Resound this is due to difference in R&D classification between the companies.

It is however important to notice that the extraordinary costs have been fairly consistent throughout the years in GN. In 2003 extraordinary costs of DKKm 140 incurred in the year due to the restructuring process. Only 2004 and 2005 showed a 'stable' period with no explicit restructuring costs categorized as non-recurring. This can question the nature of these items and weather they truly are non-recurring.

For Plantronics there has been a trend of declining production costs to the level of Netcom from around 50% to today's 60%.

Return on invested capital has been decreasing substantially throughout the period c. 17% in 2004 to 4% in 2009. Plantronics have had a return well above 50% in 2004 to 14% in 2007 and 7% in 2008. In general turnover ratio and profitability have been better in Plantronics. Considering costs of capital in these companies it seems that there has been value destruction taken place in most recent times. When adjusting for R&D expenses, not recognized in Plantronics balance sheet, the

return on invested capital decreases in most recent financial year from 7% to 6% closing the gap to Netcom performance. When disregarding operating leases and adjusting for the R&D discrepancy the most recent return on invested capital has been 9% for Plantronics as of April 2009 and 2% for Netcom in year end 2008.

ROE has not deviated a lot from return on capital since leverage has been sparse or marginalized because of low spread between return on invested capital and financing costs.

Figure 20 – Netcom key operating data

	2004A	2005A	2006A*	2007A*	2008A	2009A
Profitability before tax	9%	10%	3%	3%	1%	8%
Turnover ratio	1,8x	2,6x	1,5x	1,4x	1,7x	1,4x
Profitability	9%	10%	3%	4%	1%	10%
ROIC	16%	27%	4%	5%	2%	14%
ROIC	16%	27%	4%	5%	2%	14%
ROE	12%	25%	6%	10%	0%	15%
Leverage	1%	0%	276%	414%	1%	-2%
Interest after tax	-378%	n.m	-4%	-4%	-163%	-59%
ROE	12%	n.m	6%	10%	0%	15%

* Denote that years are not comparable to other years due to change in annual report level of detail. Items are adjusted for non-recurring and non-operating items. ROIC and ROE is reported twice to show underlying model is reconciliated. 2005 difference in ROE is caused by loss from associated companies.

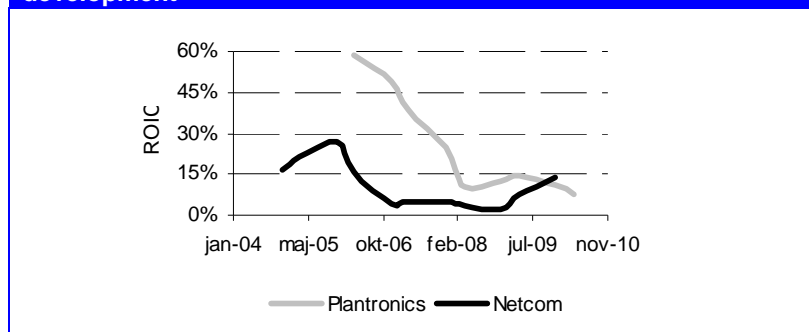
Source: Company reports. Author's own creation

Inventory in Netcom has been tied throughout the years between 20 and 60 days. Receivables have been between 40 and 90 days and payables between 10 and 40 days. This results in net working capital between 50 in 2005 and 110 days in 2007 very similar to Plantronics performance.

Plant, property and equipment relative to revenue have in general been less than that of Plantronics respectively 2-3% and 10-13%.

Capital expenditures to sales have been around 0-3% and this is on par with Plantronics when ignoring acquisitions.

Figure 21 – Head set manufacturer Return on Invested Capital development



No R&D adjustments are possible back in time and no operating lease adjustment is based (increasing comparability to Netcom)
Source: Company reports. Author's own creation

3.5.4 Netcom financing and capital structure

Interest coverage has been reasonable healthy and has been negative in 2009 due to net financial income. Plantronics has had net financial income in most years but in most recent financial year Plantronics had negative income making its interest coverage meaningless.

In most recent period Netcom has had net cash positions of between 2% in 2008 and 11% in 2009 of equity from previous leveraged years. The change can be contributable to the economic environment which has forced Netcom to reduce its debt. Plantronics has shown the same tendency of holding net cash positions with 0% in 2006 and 40% in 2003. In 2008 Plantronics had 20% net cash to equity in terms of market value indicating that the industry is fairly unlevered.

5. Scenario set up

In the following sub question 3 will be sought answered

3) *Using valuation models what is the sensitivity on changing fundamental structure of the industries, i.e. changing the scenario setting?*

5.1 Internal and external perspective – level of diversification and shaping/adapting strategy

The scenario analysis of GN will be divided into the external perspective of adapting and the internal perspective of diversification on accordance with the theoretical description of scenario analysis in the second section.

In the scenario analysis there are certain items that are common across all scenarios which will be described in the following.

5.2 Common item valuation

Latest report from GN is the un-audited first quarter 2010 report which is seen as the best (most recent) statement of GN and therefore used as base year in the explicit budgeting period of Q12011 to Q12021. Although the report is not audited it is not believed any misleading information is contained herein. There are no annual reports from GN that has lead to remarks by auditors and it is therefore reasonable to use the quarterly statement as base year without jeopardizing the quality of the valuation. On the contrary the valuation will be updated to present day in its fully possible extent. GN has properly segmented their accounts into Netcom and Resound in the quarterly statement making the exercise possible.

Therefore the general valuation model will be based on the fiscal year of April to March and hence have Q1-2011 as first year in forecast. By adding the full 2009 result, PL statement, with Q1-2010 and subtracting Q1-2009 a proxy for Q2-2009 to Q1-2010 PL statement will be derived. The balance sheet will be that of the Q1-2010 report.

There are certain items of GN assets and liabilities that will be valued independently of scenarios since they will be perceived to be unaffected by these.

The first two forecast years in GN will be identical across scenarios which serve two purposes: It will give some lag time for scenarios to take effect and it will approximate the value of tax loss carryforwards of total tax assets. These tax assets are rather large in GN and are therefore expected to be utilized in forecast period which is why it is determined that GN will reduce its tax rate to 0% in the first year of the forecast. This gives the tax asset a total present value of DKKm 170.⁵²

Company debt is valued by its books, i.e. based on the financial analysis and liquidity ratios no distress is current. The most recent value of debt is in latest GN quarterly report from Q1 2010 will be used. Although the debt will progress differently in different scenarios it will not change value of today's liability. Derived tax affects of difference in debt structure across scenarios will be captured in the company cash flow.

Cash will be valued by its books (although it should be noted that cash should trade at a discount if management has a tendency to invest in projects that capitalize at a lower rate than other market participants (Damodaran (2008), p. 426). Considering GN low performance relative to peers it can be argued that cash should have a value less than face when looked at on a going concern basis). From time to time cash is divided into operations and part of net interest bearing debt usually with the respective weights of 1-2% and 98-99%. Considering that there is no indication of the operating cash balances in GN, this distinction is not made.

Goodwill is not expected to generate value (Koller (2005), p. 249) and will therefore be set to the most recent level in all future years. The generated revenue in forecasting is therefore purely organic growth.

⁵² This is derived by the difference in company value, between a 0% and 28% tax rate, for first two forecast years.

Financial instruments used for currency hedging are not expected to create value and the item is therefore valued at its current level and will remain constant in future years thereby not influencing cash flows.

Inter-company receivables and payables that occur when GN as parent finance inter-company subsidiaries are treated as part of equity and interest bearing debt. These accounts are not part of operations but treated as part of financing, where they represent for parent and subsidiary respectively equity investment and equity infusion.

There are also some more marginal changes to equity relating to the dilutive effect of incentive schemes with the option and warrants program that GN has initiated. The proper way of treating these are to exclude their value which is stated in GN annual report (Damodaran (2002), p. 444).

Value of legal issues is assessed in Nordea, Morgan Stanley and SEB research. The largest issue is the one regarding Polish telecommunications which has a value of up to DKKbn 5 (note: derived by accumulating interest to cash flows from the period 1994 to 2004 in data traffic) and when adjusted for risk (of winning the case or possibility of settlement) the consensus between equity researchers is that the case has a value of DKKbn 1 (Nordea GN, Apr 22-10).

The Beltone tax case⁵³ against the Danish tax authorities has a somewhat smaller value estimated at 31 DKKm in SEB research (Feb-10).

In research⁵⁴ a multiple of 30x earnings is applied to overhead costs as a proxy for its value impact. Accepting that overhead is much safer, as they are fixed, a low discount factor can be applied. Most of the overhead consists of management salary. This is not expected to grow much more than inflation. Thus, the overhead is valued at DKKm 1.000 when an estimated yearly cost of DKKm 30 is appropriate.

⁵³ Regarding the dispute with the Danish tax authorities on the tax deductibility of goodwill impairment relating to the acquisition of Beltone.

⁵⁴ Nordea, GN, Apr 22-10.

All other items are regarded as operations and are therefore influencing projected cash flows. These are driven by revenue forecasts. As an example of the justification of this driver, R&D can be mentioned: R&D incurred expenses are driven by revenue where a certain amount is assumed to be capitalized and amortization happens over a 4 year period. Revenue seems to be a good indication of R&D expenses.⁵⁵

GN has few other operations in telecommunication but this is completely negligible and is not described in any detail in company statements. These are therefore not expected to contribute value to GN and are hence disregarded in the valuation.

5.3 Resound revenue

Recently data from Hearing Industries Association in the US shows trend of increased sales in most of 2009 which is backed by positive unit sales in Europe (CA, Jan 2010, p.7) from Sonova, as well as from Audika which reports organic growth and a more positive outcome from clinic visits. It is speculated that the positive trend is caused by consumers delaying their purchase than what otherwise expected due to the financial crisis and tough economic environment. Combined with the fundamentals behind demographic development this seems, in general, as a very plausible assumption for all future scenarios.

The world growth of hearing aids is estimated based on western population developments using existing information on geographical segmentation of manufacturers. Residually the remaining world is calculated based on estimate of world market share (which is expected to gradually increase in the coming years due to a rising standard of living in this part of the world). Using the consensus on incidence and penetration rates of hearing aids it can be calculated how many of the hearing impaired that have a hearing aid. When this is calculated across years and using global manufacturer market shares in continents it can be calculated what marginal penetration that is required in order to arrive at that years total hearing aids sale. It is assumed that binaural hearing impaired is 80% of the hearing impaired in the US and only 50% in Europe (expected to increase

⁵⁵ In Jensen (2001), p. 17 it is argued that R&D for hearing aid manufacturers increase relatively to revenue based on increased competition and shorter product life cycles. However it is believed this trend of product life cycle is coming to a halt and that the competition on products is becoming less significant.

during forecast to US level). This means that 80% in the US buys two hearing aids instead of just one (sufficient when suffering from single sided deafness). By minimizing the difference between the actual number of sold hearing aids with the estimated, based on above assumptions, a marginal penetration rate can be found using Excel solver. This marginal penetration rate will be used in the forecast model where world population is estimated. In the revenue model (Koller (2005), p. 239) the marginal penetration rate is expected to increase gradually as hearing aids becomes better in terms of technology and appearance.

Figure 22 – Resound revenue model

	2004A	2005A	2006A	2007A	2008A	2009A
Average sales price	2,00% (Inflation)					
Resound sales growth		5%	4%	-3%	1%	-7%
Resound sale	2.670	2.795	2.910	2.823	2.862	2.662
Resound market share						
Market growth		7%	7%	6%	6%	0%
World units	7	7,5	8	8,5	9	9
US units	2,80	3,00	3,20	3,40	3,60	3,60
Europe units	3,15	3,38	3,60	3,83	4,05	4,05
Other units	1,05	1,125	1,2	1,275	1,35	1,35
US	40,0%	40,0%	40,0%	40,0%	40,0%	40,0%
Europe	45,0%	45,0%	45,0%	45,0%	45,0%	45,0%
Other	15,0%	15,0%	15,0%	15,0%	15,0%	15,0%
Sum	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
US binarual hearing	1,800	1,800	1,800	1,800	1,800	1,800
Europe binarual hearing	1,500	1,500	1,500	1,500	1,500	1,500
Year frequency of hearing aid replacement	8	8	8	8	8	8
US						
Incidence est.	16%					
15-64 incidence		11,50%	11,50%	11,50%	11,50%	11,50%
Total incidence	16,00%	16,00%	16,01%	16,05%	16,11%	16,14%
Total penetration	20,00%	20,04%	20,06%	20,07%	20,03%	20,02%
Difference to actual # sold hearing aids		(0,00)	-	(0,00000)	0,00000	(0,00000)
Marginal penetration (solver)		23,33056%	23,56420%	23,77718%	23,97334%	23,89252%
Europe						
Incidence est.	17%					
15-64 incidence		11,10%	11,10%	11,10%	11,10%	11,10%
Total incidence	17,00%	17,05%	17,11%	17,15%	17,20%	17,26%
Total penetration	20,00%	19,95%	19,90%	19,87%	19,83%	19,77%
Difference to actual # sold hearing aids		(0,00)	(0,00)	(0,00)	(0,00)	0,00
Marginal penetration (solver)		23,45055%	23,61566%	23,77369%	23,95235%	23,89439%
US						
People with hearing aid(s)	8	8	9	9	9	9
Percentage	3,20%	3,21%	3,21%	3,22%	3,23%	3,23%
Europe						
People with hearing aid	11	11	11	11	12	12
Percentage	3,40%	3,40%	3,41%	3,41%	3,41%	3,41%
Population (m)						
US						
15-64	218	220	223	225	227	229
65-99	41	41	42	43	44	45
Europe						
15-64	264	265	265	266	266	266
65-99	68	69	70	70	71	72

Refer also to appendix 9. Various sources on hearing impairment have been used to estimate younger/older incidence rate covering the Danish, UK, EU and US market. Def. of penetration is % people with hearing impairment that have a hearing aid. Incidence def. is # people with hearing impairment
 Source: Company reports. Census.gov.. Author's own creation

5.4 Netcom revenue

Mobile sales growth is estimated based on major customers of OEMs, company guidance, historic performance and equity research estimates combined with CC&O sales which are based on equity research, historic performance, converging into mobile revenue and company guidance for both Netcom and Plantronics. A model that is as detailed as for hearings aids is not available due to the lack of data.

Figure 23 – Head set and Mobile revenue

Sales, DKKm	2004A	2005A	2006A	2007A	2008A	2009A	CAGR 04-09	2010E	2011E	2012E	2013E	2014E
Nokia Corp.	218.594	254.467	306.044	380.001	377.411	305.025		316.128	327.954	336.033	345.624	350.953
Motorola Inc.	161.770	192.567	233.670	199.722	164.404	120.219		124.537	136.318	147.883	196.218	203.491
Sum	380.365	447.034	539.715	579.722	541.815	425.244		440.666	464.272	483.916	541.842	554.444
Growth		18%	21%	7%	-7%	-22%	2%	4%	5%	4%	12%	2%
Plantronics	2.514	3.509	3.396	2.811	2.430	1.761		1.863	1.973			
Growth		40%	-3%	-17%	-14%	-28%	-7%	6%	6%			
*Mobile	1.198	1.960	1.809	1.279	1.092	655						
Growth		64%	-8%	-29%	-15%	-40%	-11%					

* Of Netcom

Source: Company reports, Factset, IBES. Author's own creation

5.5 Level of diversification and base case scenario⁵⁶

The pending legal matters regarding tax issues and data traffic in Polish networks has likely caused a delay in any break up due to the uncertainty that lies herein. Otherwise, it is highly speculated that GN will split up in a transaction or by spinning off one of its business divisions.

A company break up could make a Resound/Netcom sale less likely because the price would be more directly comparable to the Sonova offer. Any offer will probably be lower (considering the aftermath of the financial crisis) which will lower investor sentiment to get involved in any such transaction. This is another reason why the company has not initiated any divestiture restructuring.

⁵⁶ Refer to appendix 4-8 for detailed GN accounts.

Continued consolidation could be justified by synergies which have been available during the GN restructuring phase in recent years.⁵⁷ Future synergies could lie in UC technology which adds benefits to both hearing aids and headsets and the compatibility to other communication products such as land line phones and mobile phones. The UC synergy possibility is nonetheless more dubious since the divisions in general are kept completely separate making synergies less evident.⁵⁸

Regulation of the industry is highly applicable in the case of GN since it caused the failed sale of Resound. This indicates the difficulty of selling to an industrial buyer and makes this solution of divestiture more uncertain. A transaction has however become more probable after the German Supreme Court has agreed with the party of GN. A potential consolidation of Netcom and Plantronics would be destined to meet opposing views by the regulatory environment as well since the companies are market leaders.

In order to better assess the rational of keeping Resound and Netcom together a separate valuation will be compared with a consolidated valuation. This also gives an indication of the *base case scenario* value in GN if they achieve competitor operational performance, as noted in company strategy seen on p. 34.

5.5.1 Relative valuation

Since Danish Widex is not traded publicly only Sonova and William Demant multiples are applied to financial data of Resound.

The multiples are derived by adjusting for the calendar year and exclude operating leasing adjustments since these are harder to value in Resound, thus making the financials more comparable. Furthermore, the historic financials are corrected for R&D capitalization which is the standard used by GN. This also improves comparability.

⁵⁷ Other reasons for a consolidated unit could be caused by such short term reasoning such as Danish tax law reasons. According to Selskabsskatteloven § 31 it is a requirement that subsidiaries are being taxed unified. Therefore, any losses can be deducted from profit in other units of GN. These tax assets might otherwise be lost in a separation (Dam (2009), p. 547).

⁵⁸ This is backed by Kristian Marthedal, Senior Equity Analyst at Nordea Markets.

Using the average of multiples on Resound financials its enterprise values are derived. Combining the division values GN, enterprise and equity values are obtained based on the most recent net interest bearing debt and other separated item valuations. See figure 24.

Figure 24 – Relative valuation

Company	Market cap DKK m	Net debt DKK m	EV DKK m	EVEBITA			
				2008A	2009A	2010E	2011E
WDH	26.712	2.700	29.412	26,6x	24,2x	21,1x	18,8x
Sonova	49.783	431	50.214	28,4x	26,4x	21,7x	19,3x
<i>Average</i>				27,5x	25,3x	21,4x	19,1x
Resound financials, DKK m				218	266	299	383
Implied EV, DKKm				5.996	6.730	6.390	7.301
Plantronics	8.320	(164)	8.156	28,2x	16,2x	12,3x	10,2x
Netcom financials, DKK m				36	152	178	205
Implied EV, DKKm				1.016	2.458	2.190	2.099
Total EV				7.011	9.188	8.580	9.400
Operating leases				350	350	350	350
NIBD				1.190	1.190	1.190	1.190
Shared cost base				1.000	1.000	1.000	1.000
<i>Incentive liabilities</i>							
Netcom				62	62	62	62
Resound				43	43	43	43
Shared				4	4	4	4
<i>Legal issues</i>							
Polish Tele case				1.000	1.000	1.000	1.000
Beltona Tax case				31	31	31	31
Tax assets				170	170	170	170
GN equity value, DKKm				5.563	7.740	7.132	7.952
Outstanding shares				204	204	204	204
GN share price, DKK				27	38	35	39

Financials are corrected for non-recurring and non-operating items and are converted into R&D amortizing figures. No operating lease adjustments are made due to uncertainty in GN divisions.

Source: Factset, IBES, Company reports, Author's estimates

Compared to the most recent market capitalization on the market of GN at DKKbn 8,9 it seems that market multiples are underestimating the value. Furthermore, the relatively poorer performance of both Netcom and Resound relative to competitors should also materialize itself in multiples suggesting even lower values. However, this approach completely ignores any potential value that lies in a possible acquisition premium of entire or parts of GN. Considering the share price move on the date of the German Supreme Court ruling this premium is highly probable (see figure 9).

If adjusting for the suggested premium as of April 20, 2010 of DKK 6,8 per share or DKKbn 1,39 in total equity this lower value of DKKbn 7,5⁵⁹ should make a separation more palatable for investors although this assumes that peer operational excellence can be achieved.

Considering the uncertainty relating to the legal issues a spin-off does not seem likely based on the relative valuation, i.e. investors want to clear these uncertainties before initiating a spin-off.

5.5.2 Fundamental valuation and base case of closing gap to competitors⁶⁰

It is initially assumed that GN gradually will improve its gap with competitors after the initiated restructuring initiatives described in the case section (section 3). This implies that production costs of business divisions will converge to that of competitors so that industry margins will become more homogenous.

In order to make the target capital structure converge with the actual capital structure a share repurchase is conducted in future years which will reduce cash positions and increase the necessity for debt (in order to finance capital expenditures).

This single point estimation approach serves to possibly identify GN value on a consolidated and separate basis. Using a sum-of-the-parts approach and relevant risk in discounting factors (measured by Sonova/WDH and Plantronics beta) a comparison to a consolidated valuation (with consolidated risk measured by GN beta) can be performed.

Giving Resound a cost of asset estimate of 8%⁶¹ based on peer analysis a value of the enterprise is estimated at DKKbn 7,5.

Based on cost of assets of 9.7% for Netcom derives an enterprise value of DKKbn 2,1 which seems reasonable as well when compared to the comparable valuation.

⁵⁹ Latest market cap of DKKbn 8,9 less DKKbn 1,39.

⁶⁰ The valuation is based on EVA and DCF using a 10 year explicit forecast period and a terminal period which is

calculated using the formular (Koller, p. 288)
$$CV = \frac{NOPAT_{t+1}(1 - \frac{g}{RONIC})}{WACC - g} = \frac{NOPAT_{t+1}}{WACC}, RONIC = WACC$$

This assumes that return on capital will converge into the cost of capital eliminating all future economic profit. The formular is slightly different in the EVA calculation but based on the same principal and is shown for value coherence.

⁶¹ See appendix 3 for beta calculations.

In total GN has a share price of DKK 39. As for the relative valuation this excludes any transaction upside. Figure 25 summarizes the valuation on a back-of-the-envelope base.

Figure 25 – Back of the envelope base case DCF

DCF		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
DKKm		2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E
<i>PV FCFE</i>		118	573	326	378	423	423	411	406	397	365	
Terminal												12.603
EV	9.430	10.104	10.288	10.737	11.118	11.418	11.691	11.951	12.180	12.382	12.603	13.663
		664	732	1.051	1.272	1.388	1.455	1.487	1.468	1.403	1.337	1.193
		9.440	9.556	9.687	9.845	10.030	10.236	10.464	10.712	10.980	11.266	12.470
EVA		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
DKKm		2.011	2.012	2.013	2.014	2.015	2.016	2.017	2.018	2.019	2.020	2.021
NOPAT		279	461	474	630	746	839	885	930	973	1.016	1.060
EVA		(221)	(51)	(15)	136	243	327	360	391	422	452	480
EVA		(221)	(51)	(15)	136	243	327	360	391	422	452	480
<i>PV EV</i>		(203)	(44)	(12)	99	162	201	204	205	204	201	
Terminal												5.705
EV	9.430											
						Operating leases	350					
						NIBD	1.190					
						Shared cost base	1.000					
						<i>Incentive liabilities</i>						
						Netcom	62					
						Resound	43					
						Shared	4					
						<i>Legal issues</i>						
						Polish Tele case	1.000					
						Beltone Tax case	31					
						GN equity value, DKKm	7.812					
						Outstanding shares	204					
						GN share price, DKK	38					

All DCF valuation models are reconciliated with the EVA (Economic Value Added) approach for consistency reasons. See appendix 4 and 5 for cash flow statement.

Source: Author's estimates

Turning to the consolidated valuation using GN risk, derived from the stock market, but keeping the cash flow constant, a share price of c. DKK 38 is derived as well. This gives an indication that the stock market values GN as a consolidated entity DKKm 165 less (please refer to CD valuation sheet).

Considering total company value this difference makes it less evident, given the uncertain nature of beta estimates, whether GN is worth more on a consolidated basis or separated.

As of July 9, 2010 the market cap of GN was DKKbn 8,9 trading at DKK 43,4 per share slightly higher than the above valuation approaches reflecting the acquisition premium of Resound.⁶²

Turning to empirical studies investor pressure is seen as a reason for management to decide separation although otherwise not interested in such a corporate restructuring (possibly due to Jensen's Free Cash Flow theory (Brealy (2006, p.305)) and different separation attempts have proven to add value. This indicates that investors are interested in pure play companies where financial statements are not clouded by differences in operations.

5.5.3 Empirical studies

DePamphilis (2008), p. 632 summarize on several studies on spin-offs and concludes that average abnormal returns is likely, especially if the spin-off is large compared to the entire company. A range of 2-6% return is empirically plausible. 1/3 of spin-offs gets acquired after 3 years which supports the abnormal returns. When adjusting for these takeovers, spin-offs give little abnormal return. In general it seems difficult for units to perform abnormally over a period of more than 2 years.

Fogh (2009) reports on case studies in Danish spin-offs and concludes that a temporary abnormal investor return is possible but that this is slowly diluted in the longer term.

It can be a concern how well GN applies to these empirical evidence and if recent stock increase in GN, as of Supreme Court ruling, can be followed by further increases due to a separation. The share price increase can have digested investor sentiment of value, i.e. they are not interested in the share due to uncertainty relating to possible acquisition of Resound. Hence, a separation has no value and should be postponed until these issues are resolved especially considering that a resolution is expected soon possibly during the late summer of 2010.

Conclusive, any synergies between the divisions are in general not perceived to exist (since little or no contact between the divisions is conducted). On the other hand, any conglomerate discount is not easily observable and requires the consolidated risk measure to be higher than the weighted risk

⁶² Which was strongly suggested by the sharp share price increase after the German Supreme Court ruling.

which is something the stock market does not justify. This indicates that a break up of GN is of more redundant nature.

5.6 Sensitivity analysis

Looking at GN its profitability and growth rates have been substantially below industry peers due to the failed carve out which caused loss of customers and an organization not keeping up with competitors. It is therefore necessary to see failure, in the pursuit of competitor performance, as a possible future outcome.

Performing a standard sensitivity analysis on both Resound and Netcom in the above fundamental valuation on operating margin indicates values as seen in figure 26.

Sonova has stated that (Sonova AR 09/10, p. 4) the penetration rate of hearing aids is one of the most important growth factors in the future of hearing aids. This is clearly observable in the revenue analysis. If penetration rate is just increased 0,2% points each year up to terminal year in 2021 the value of Resound increases to almost DKKbn 10 (DKK per share 50) which alone makes it a serious contender to the immediate company sale (refer to below).

Considering the less stigmatizing design and technological more advanced hearing aids it seems illogical if the penetration rate does not increase.

Figure 26 – Sensitivity

GN, share price DKK

		-55%	-54%	-53%	-52%	-51%	-50%	-49%	-48%
Netcom production costs		-40%	-38%	-36%	-34%	-32%	-30%	-28%	-26%
Resound production costs									
	-0,2450%	14	17	19	22	24	27	29	32
	-0,1838%	16	18	21	24	27	30	33	35
	-0,1225%	17	20	23	27	30	33	36	39
	-0,0613%	19	22	26	29	33	36	39	43
Marginal penetration	0,0000%	20	24	28	32	35	39	43	47
change per year	0,0613%	22	26	30	34	38	42	46	51
	0,1225%	23	28	32	37	41	45	50	54
	0,1838%	25	30	34	39	44	49	53	58
	0,2450%	26	31	37	42	47	52	57	62

Sensitivity is depended on the marginal penetration of hearing aids and the operational performance reflected in production costs (as percentage of revenue). Grey and black area indicates the more probable spectrum. The marginal penetration is only expected to increase as the more probable outcomes.

Source: Author's estimates

5.7 Transaction scenario

Considering the transaction multiple that was previously offered by Sonova, a very large premium can be provided to shareholders. In fact performing a sensitivity analysis shows that they are all preferable to the scenario of success in closing the gap to peer operational performance.

Figure 27 – Transaction sensitivity on Resound

Savings		Total earnings acquired				
		14x	15x	16x	17x	18x
250	450	6.300	6.750	7.200	7.650	8.100
300	500	7.000	7.500	8.000	8.500	9.000
350	550	7.700	8.250	8.800	9.350	9.900
400	600	8.400	9.000	9.600	10.200	10.800
450	650	9.100	9.750	10.400	11.050	11.700

Sensitivity is depended on annual cost savings and the transaction multiple.
 Source: Nordea, Author's own creation

A transaction multiple of 17x EBITA is the same as that offered originally by Sonova when adjusting for derived cost saving synergies of DKKm 500 per year. Since then Sonova and Resound have diverted from each other in terms of size and similar cost savings are thus not as likely to be realized. Consensus operating income for Resound in 2010 takes a value close to DKKm 300 which including savings of DKKm 550-600 will imply an acquisition value of DKKbn 9-10 which is substantially higher than the standalone value of Resound alone. As long as it is not certain that a transaction will take place the share will trade with a market consensus on how probable this event is. The indicating value however signifies where the difference between actual market capitalization and the comparable valuation comes from. It should be noted that if it is possible for Resound to capitalize on improved penetration rate (at 0,2% points per year) as stated above in figure 26, then this is more valuable than the immediate sale seen in figure 27.

There are several reasons why peers of Resound could be interested in the acquisition of the division. These include the Beltone network, VA-possibilities, the KIND⁶³ contract and add-ons in the product portfolio.⁶⁴

Considering the stagnating and static tendency in the headset industry and little logic for alternative scenarios no other external scenarios will be established for Netcom. For the hearing aid industry there is a much more dynamic setting.

5.8 Resound adapting scenario – the battle for market share

Recently there have been indications towards both a horizontal and vertical integration into different hearing aid product solutions, such as BAHA and cochlear implants, as well as into the distribution link in the value chain. In these markets further cross-selling opportunities lie for manufacturers, which will be especially important if further horizontal integration within traditional hearing aids is becoming increasingly difficult⁶⁵. Focusing on different hearing aid solutions, as well as securing market share through acquisitions in the distribution link, could serve as a growth opportunity for the companies in the industry. Recent M&A activity (see figure 16) shows this tendency which could potentially change how the industry will look in the future. One of the more noticeable transactions is the EURm 330 (mergermarket) sale of US developer of cochlear implants Advanced Bionics Corporation to Sonova in year end 2009.

Advanced Bionics Corporation is the second largest cochlear implant manufacturer with a market share around 18% in a market with double digit growth rates in the twenties worth around USDm 800 (CA, Jan 10, p.1) with an estimated market of 25.000 units sold. Sonova also acquired US InSound Medical in beginning 2010 which develops hearing aids and expands Sonova products into new areas providing hearing systems worn deep within the ear. Their product, called 'Lyric', has a long battery life and need only to be replaced every 4 months and is completely invisible. As it is stated by Sonova the low penetration rate serves a great growth potential especially with these product inventions.

⁶³ German distributor of hearing aids.

⁶⁴ Nordea research on GN, Apr-10, p. 3. Assumes that buyer pays for all synergies, i.e. zero NPV investment.

⁶⁵ As indicated by the failed Resound sale.

InSound currently has 200 locations in the US but this is expected to increase dramatically when resources can be utilized from the acquiring company of Sonova giving potential of up to 1.500 points of sale. The main products can be worn for 120 days and is approved by the Food and Drug Administration in the US where selling exclusively takes place (CA, Jan 10, p.15) providing superior aesthetics and long battery life since it is based on analogue sound processing.

The device is placed right next to the eardrum deep within the ear thereby making advanced digital sound processing and amplification unnecessary. The product's target audience is people with mild to moderate hearing loss which constitutes roughly 75% of all hearing impaired people (CA, Jan-10 p. 16). However, restrictions such as narrow ear canals reduce the market further to around 50% and when excluding people with traditional hearing aids around one third of people with hearing impairment are left. Both company acquisitions will give rise to synergies, in particular within marketing and sales (Sonova AR09).

Newport Audiology was acquired as well, the fifth largest distributor in the US moving Sonova into the end-buyer segment believed to be a strategic move for acquiring market shares.

SEB research believes William Demant will follow Sonova footsteps and seek into these new industries as well since the marginal (SEB, WDH research, Jan 7-10) R&D spending is not as important in industry competitive ability as it used to be as mentioned above. William Demant has already entered serving single sided deafness-market with the launch of its Ponto device (CA, Jan 25-10, p. 2) and with its acquisition of US based hearing aid dispenser HiddenHearing for EURm 40 in 2000 it is also exposed towards the distribution of hearing aids.

A derived economic moat for manufacturers could be to focus on several components as inputs for several products in order to better utilize economies of scale as a mean to stay competitive. Standard base components, i.e. homogenous product platform should improve profitability (GN AR-05).

Furthermore, the transition towards integration of distribution in-house is important if clinics are switching to the largest suppliers, thus buying fewer brands (MS, p.4 Feb 10) and making medium and small sized manufacturers left behind (SEB, Feb 10, p.4). Here a vertical integration will guarantee sales opportunities for manufacturers especially with consumer awareness (and price

awareness kept low as commented in Decision Divison, p. 25) making them less inclined to scout the market for better products/sale prices ratios.⁶⁶

The horizontal and vertical integration could provide cross selling opportunities as well. It is believed that persons otherwise reluctant to purchase a hearing aid due to the stigmatizing nature could be inclined to visit a hearing clinic or distributor to gather information on these invisible hearing aid solutions such as the 'Lyric'. If it turns out fitting for this particular person is *not* possible she still might decide to get an alternative solution (considering the physical presence in the store).

Finally, selling and awareness, information sharing, client lists, stable sales channels and scaled marketing campaigns towards physical examiners and ENT-doctors can be a valuable consequence of the industry integration.

Distributors' profitability and risk is substantially less than manufacturers due to the small value add they provide in products indicating that integration could dilute these value drivers which is reflected in below scenario sensitivity analysis (see appendix 1 and 2).

The Resound scenarios are thus exposed to level 2 residual uncertainty and a clear trend of industry converging⁶⁷ driven by the logic of increased focus on anti-trust institutions making horizontal integration into traditional hearing aids increasingly difficult. Although the German Supreme Court decided the failed Resound sale unjust, widespread consolidation in the hearing manufacturing industry seems close to exhausted.

If vertical integration in the industry takes place it could force Resound to pursue an adapting strategy since loss in market share can be devastating to growth rates even though the gap to competitor performance might not be (entirely) closed. It is therefore necessary for Resound to plan for contingencies.

⁶⁶ Decision makers should be aware that integration into distribution could keep other non-consolidated distributors from carry manufacturer products (since they now compete with its supplier).

⁶⁷ Also seen in company strategy on p. 36 in this thesis.

The adapting scenario is characterized by two distinct value drivers, caused by the before mentioned industry logics, namely:

- *Market share (caused by distribution and capture of end customers)*
- *Residual risk (caused by distributors lower residual risk exposure⁶⁸)*

Compared to the base scenario, of GN ability to close the gap of peer performance, it seems that achieving both close of competing gap as well as strong consolidation into new businesses will improve enterprise value of Resound to DKKbn 9 from DKKbn 7,5 (as inferred from figure 28).

In the battle of competitive advantages between peers of Resound there could in other words be a possibility for Resound to utilize this to its advantage by using the vertical integration as a mean to regain the lost market share.

In this attractive scenario a sale still seems as the most logical response for Resound management since implied transaction values are typically higher than DKKbn 9, note the sensitivity analysis above (figure 27).

If Resound decides to adapt industry trend it should pay close attention to its operating performance. If the adapting strategy compromise operating performance as stated above it can be beneficial for Resound to focus purely on operations. In fact, closing the gap to peer performance, while losing market share and emerging market share at 0,5% points each year up until terminal year, is more attractive than gaining market share at the expense of operating performance. If average production costs of 35% of revenue can be achieved while simultaneously gaining market share via integration into the distribution link and new product solutions then a value of DKKbn 7,4 is achieved exactly like gaining peer operating performance. Thus, if any signals indicates that Resound will not improve its operating margin while adapting to its surroundings it is better off concentrating on its operations accepting to lose some market share.

The sensitivity is reflected in following table in figure 28 and shows the implied value of managerial decision making which has the potential of increasing value from DKKbn 5,4 to DKKbn 6 (value of DKKm 600) if the expected scenario of DKKbn 7,4 does not materialize itself.

⁶⁸ As seen in appendix 3.

Figure 28 – Sensitivity, production costs vs. market share improvement

Resound, DKKm EV value

		Production costs									
		-40%	-38%	-36%	-34%	-32%	-30%	-28%	-26%	-24%	
Market share change per year	-0,5000%	3.577	3.979	4.382	4.785	5.187	5.590	5.993	6.395	6.798	
	-0,3750%	3.808	4.259	4.710	5.162	5.613	6.064	6.516	6.967	7.418	
	-0,2500%	4.039	4.539	5.039	5.539	6.039	6.539	7.039	7.539	8.039	
	-0,1250%	4.270	4.819	5.367	5.916	6.465	7.013	7.562	8.110	8.659	
	0%	4.501	5.099	5.696	6.293	6.890	7.488	8.085	8.682	9.279	
	0,1250%	4.733	5.378	6.024	6.670	7.316	7.962	8.608	9.254	9.900	
	0,2500%	4.964	5.658	6.353	7.047	7.742	8.436	9.131	9.825	10.520	
	0,3750%	5.195	5.938	6.681	7.424	8.168	8.911	9.654	10.397	11.140	
	0,5000%	5.426	6.218	7.010	7.802	8.593	9.385	10.177	10.969	11.761	

Blue area indicates the more likely outcomes in an adapting strategy while the grey area represents a strategy focusing on operations (base case). The fully framed blue cell indicates most valuable strategy of adapting to the industry. However, should the scenario end up at the dotted blue cell it would be more beneficial for decision makers to undergo the black dotted strategy.
 Source: Authors' own creation

Looking at the sensitivity of residual risk, the second value driver, integration into distribution justifies a lower beta, see appendix 3. Thus, adding discount and premiums to Resound WACC measures how sensitive the adapting scenario is compared to base case. See figure 29.

Figure 29 – Sensitivity, premium/discount to cost of capital vs. production costs

Resound, DKKm EV value

Risk premium WACC /discount	Cost of assets	Production costs									
		-40%	-38%	-36%	-34%	-32%	-30%	-28%	-26%	-24%	
-2,0%	5,888%	6,0%	6.126	7.010	7.895	8.779	9.664	10.548	11.432	12.317	13.201
-1,5%	6,388%	6,5%	5.621	6.416	7.211	8.006	8.801	9.596	10.391	11.185	11.980
-1,0%	6,888%	7,0%	5.192	5.911	6.630	7.349	8.068	8.786	9.505	10.224	10.943
-0,5%	7,388%	7,5%	4.823	5.476	6.130	6.784	7.437	8.091	8.745	9.398	10.052
0,0%	7,888%	8,0%	4.501	5.099	5.696	6.293	6.890	7.488	8.085	8.682	9.279
0,5%	8,388%	8,5%	4.220	4.768	5.316	5.864	6.411	6.959	7.507	8.055	8.603
1,0%	8,888%	9,0%	3.971	4.475	4.980	5.485	5.989	6.494	6.998	7.503	8.008
1,5%	9,388%	9,5%	3.749	4.216	4.682	5.148	5.614	6.080	6.547	7.013	7.479
2,0%	9,888%	10,0%	3.551	3.983	4.415	4.847	5.279	5.711	6.143	6.575	7.007

Blue indicates the more likely outcomes in an adapting strategy while they grey area represent a strategy focusing on operations (base case). The discounts to WACC should be seen as of more subjective nature.
 Source: Authors' own creation

If the impact of integration will remove management focus on operations it can substantially dilute Resound value, thus making focus on operations much more attractive. Thus, a similar schematic as the one illustrated in figure 28, which gives insight into rationale reaction patterns, can be made.

6. Conclusion

In conclusion to the problem statement

'How can scenario analysis be used to provide a better foundation for decision making based on valuation models and how does this apply to GN as case?'

the developed scenario analysis framework has established the impact of the two main strategies of shaping/adapting and level of diversification in Resound and GN entirely. Due to lack of proper logic behind scenarios it has not been possible to establish any such for Netcom except for traditional sensitivity analysis on value drivers.

For GN entirely a relative and fundamental valuation of the business divisions of Resound and Netcom was valued separately and uniformly using respectively the separated cost of capital and the consolidated cost of capital. Here, little evidence exists to any value add of a possible separation of the business which is partially supported by empirical evidence. If the likely acquisition premium trading in GN is being eliminated a separation might be more palatable for investors.

In the case of Resound, signs of industry shifts affecting adapting strategy necessity have been detected exposing it to level 2 residual uncertainty. The industry is moving into new hearing aid solutions and into the hearing aid distribution link of the value chain. This fundamental change in industry layout increases the valuable inputs from scenario analysis. The main drivers by adapting to these new business areas are market share and residual risk. It is shown that changes in market shares and residual risk at the cost of operating margins (production costs) improve decision making ability when sensitivity is assessed. If a strong negative impact on production cost is the result of adapting nature it will be more profitable for Resound to focus on operations entirely at the cost of losing market shares. This creates the need for Resound to have some contingency plan available in the case that the restructuring process of closing the gap to competitor operational performance will not be possible simultaneously with integrating into the new markets.

Taking a base case with little industry change, due to the ruling by the German Supreme Court, and assuming that GN will achieve competitor operating performance a value of GN equity is equal to or DKK 39 per share. Based on the share price as of July 9, 2010 of DKK 43 this is somewhat

different but can be explained by the transaction premium trading in the share (included in price after Supreme Court ruling). This makes it more plausible that GN will be broken up in a sale of one of its divisions, probably Resound.

A transaction scenario however is only desirable if GN does not succeed in both operational performance and vertical integration. That is proven in the sensitivity analysis.

The general tools of scenario analysis has facilitated a possible future for the hearing aid industry and GN and made it more transparent what actions are necessary for management, shareholders or other stakeholders in the event of change in value drivers.

It is important to understand that this is not principally different from a normal sensitivity analysis. The important thing about the scenario analysis is that it facilitates understanding of an industry and helps stakeholders keep an eye to important logic to value drivers. In the case of Resound a tendency to increased vertical and horizontal integration into new products will tell management, for instance how drivers will be affected and how to react accordingly. *This* is something normal sensitivity analysis does not pay attention to.

Based on this, it is concluded that the establishment of scenarios through analysis is important when relevant logic is available. This should have a substantial impact on the general industry causing it to change nature. Otherwise traditional analysis and single point estimation should be sufficient, especially from a decision making view point.

The level of subjectivity in the assessment of logic impact on value drivers is relevant to discuss, but *more* importantly the developed tools will improve decision making ability. Thus, management or others with detailed insights and industry knowledge will be much more apt to assess the impact. However, a certain degree of subjectivity will *always* be present.

In generality the developed tools and strategies of scenario analysis have been tailored to a certain extent to the case of GN but can be applied to similar companies as well. Furthermore, other special cases can improve decision making ability by focusing on other strategies than just level of diversification and adapt/shape focus. In this way the tools are seen as applicable to other cases.

7. Unanswered questions – further research

There are certain aspects of this thesis that deserve further examination for future studies:

- More strategies in scenario analysis theoretical framework
 - More strategies than shape/adapt and the level of diversification can obviously be included in the theoretical framework. The number of strategies makes the decision capability harder and should therefore be kept at a minimum. The type of strategy should be chosen based on the analyzed company which is most relevant. This has made the shape/adapt and level of diversification relevant for the GN case. Researching more on other strategy parameters that can be included in the scenario analysis framework could prove useful and provide a richer theoretical foundation when applied to other cases.
- Statistical research on the advantages of using and applying scenario analysis by management in companies vs. those who do not would conclude further on its advantages.
- Weighting of scenarios
 - The weighting using probabilities of the different scenarios would in theory derive an exact share price for a company. The assessment of these probabilities are not touched in this thesis but is something that can be further investigated
- Specific to the GN case
 - The impact of reimbursement schemes and level of binaural hearing problems, in the US and Europe in the future, is not analyzed in depth due to lack of source availability. Linking these drivers to revenue generation would prove an important tool in the Resound valuation model presented earlier.
 - Further research on the head set industry could facilitate more complex revenue models and the development of scenarios (such as the one developed in this thesis on Resound). Considering the relative size of the divisions the chosen approach is somewhat justified but implementing more detail in the Netcom valuation will give a more refined valuation that will improve decision making foundation.

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GN: Apr 20-10, Apr 21-10

JPMorgan

Plantronics: Dec 07-09

Morgan Stanley

GN: Feb 10-10

Sonova: Feb 10-10

WDH: Feb 10-10

Nordea

GN: Nov 27-08, Feb 3-09, May 5-09, Aug 11-09, Apr 19-10, Apr 22-10

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SEB

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8.9 Databases

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9. Appendices

Appendix 1 – Peer information

WDH

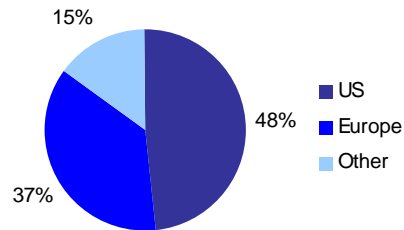
William Demant Holding A/S is a Denmark-based company engaged in the development, manufacture and sale of products and equipment, designed to aid people's hearing and communication. The Company is operational through three business divisions. Hearing Aids comprises Oticon and Bernafon, which produce hearing aids, marketed through subsidiaries and distributors worldwide. Diagnostic Instruments encompasses Maico, Grason-Stadler, Amplivox and Interacoustics, which manufacture and distribute audiological equipment. Personal Communication includes Phonic Ear, which provides wireless communication systems and hearing aids for the hearing impaired, and the joint venture Sennheiser Communications, acting in the market for headsets for professional and private users.

DKKm	2004A	2005A	2006A	2007A	2008A	2009A
Revenue	4.303	4.523	5.085	5.488	5.374	5.701
<i>growth</i>	11%	5%	12%	8%	-2%	6%
EBIT	1.004	1.103	1.271	1.268	1.042	1.149
<i>margin</i>	23%	24%	25%	23%	19%	20%
Net profit	716	791	901	895	682	795
<i>margin</i>	17%	17%	18%	16%	13%	14%

As reported



Revenue geographical segmentation



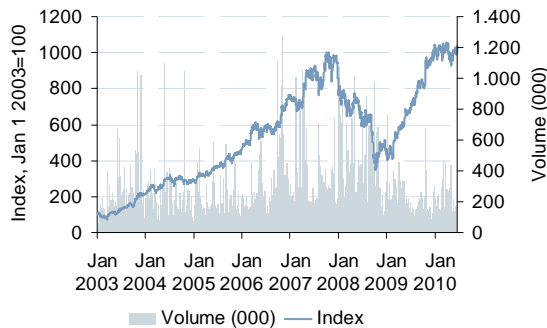
Source: Factset, company reports, Authors' own creation

Sonova

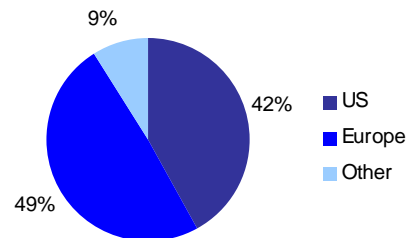
Sonova Holding AG is a Switzerland-based company operating in the healthcare sector. The Company offers hearing healthcare solutions, wireless communication systems for audiology applications and solutions for hearing protection. It also develops and manufactures advanced cochlear implant systems. The brand portfolio of Sonova Holding AG comprises two segments. Hearing instruments segment includes Phonak, Unitron, Lyric and Sona brands, while hearing implants segment includes Advanced Bionics and Acoustic Implants brands. The Company is active in over 90 countries through a combination of 65 subsidiaries in 30 countries and a network of independent distributors. It operates worldwide through its numerous subsidiaries, which include Phonak AG, Phonak (Shanghai) Co. Ltd., Phonak Iberica SAU, Indomed AG and Phonak AB, among others. In the fiscal year 2009, the Company acquired Advanced Bionics and InSound Medical.

CHFm	02/03	03/04	04/05	05/06	06/07	07/08
Revenue	551	638	679	867	1.073	1.205
<i>growth</i>		16%	6%	28%	24%	12%
EBIT	38	95	128	213	280	327
<i>margin</i>	7%	15%	19%	25%	26%	27%
Net profit	28	69	98	174	243	274
<i>margin</i>	5%	11%	14%	20%	23%	23%

As reported



Revenue geographical segmentation



Source: Factset, company reports, Authors' own creation

Plantronics

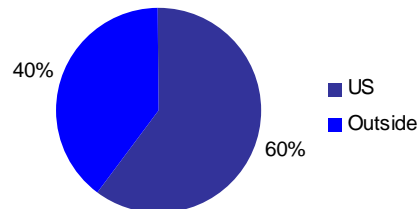
Plantronics, Inc. (Plantronics) is a global designer, manufacturer, and marketer of lightweight communications headsets, telephone headset systems, and accessories for the business and consumer markets under the Plantronics brand. In addition, the Company manufactures and markets under the Clarity brand, specialty telephone products, such as telephones for the hearing impaired, and other related products for people with special communication needs. It makes headsets for use in offices and contact centers, with mobile and cordless phones, and with computers and gaming consoles. On December 1, 2009, the Company completed the selling of Altec Lansing Technologies, Inc. (Altec Lansing), the Audio Entertainment Group (AEG) segment.

USDm	03/04	04/05	05/06	06/07	07/08
Revenue	417	560	750	800	856
<i>growth</i>		34%	34%	7%	7%
EBIT	85	127	110	52	79
<i>margin</i>	20%	23%	15%	7%	9%
Net profit	62	98	81	45	68
<i>margin</i>	15%	17%	11%	6%	8%

As reported



Revenue geographical segmentation



Source: Factset, company reports, Authors' own creation

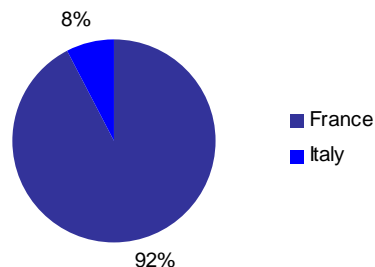
Audika

Audika SA is a France-based company that offers hearing correction solutions for hearing impaired people. It offers advice to select the appropriate hearing aid, regular check-ups for the suitability of hearing equipment, hearing aid advantage cards together with insurance and others. The Company is present in France, where it has a network of approximately 400 centers, and through about 50 centers in Italy. Audika SA operates through a subsidiary, SARFFA, and a number of dependant companies, including Audika Centre Audiometrique, Audika AAC, Audika Ouest and Audika Italia, among others. EBIT multiples have recently been between 12-14x.

DKKm	2004A	2005A	2006A	2007A	2008A	2009A
Revenue	485	526	589	691	691	794
<i>growth</i>		8%	12%	17%	0%	15%
EBIT	75	80	96	135	132	139
<i>margin</i>	15%	15%	16%	20%	19%	17%
Net income	44	47	59	83	76	80
<i>margin</i>	9%	9%	10%	12%	11%	10%



Revenue geographical segmentation



Source: Factset, company reports, Authors' own creation

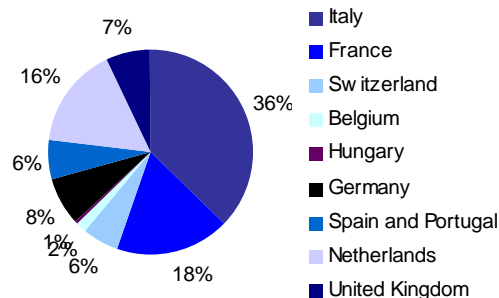
Amplifon

Amplifon SpA is an Italy-based multinational company engaged in the distribution and application of hearing aids and correlated services. It offers four types of hearing aids. The behind-the-ear hearing aid is positioned outside the pavilion of the ear. The inside-the-ear hearing aid is applied inside the auditory canal. The glasses-type hearing aid, an appliance containing electronic circuits, is inserted inside special arms of glasses. The box-type hearing aid, comprised of a case containing electronic circuits connected by a lead to the earpiece, is used for serious hearing problems. Amplifon SpA distributes hearing aids through a network of 3,000 sales outlets, 3,500 authorized centers, 2,000 affiliated shops and approximately 3,500 specialty hearing aid shops. In addition, it is involved in the development and sale of otological instruments and the distribution of diagnostic and biomedical equipment. The Company operates through its numerous subsidiaries. EBIT multiples have recently been between 13-15x.

DKKm	2004A	2005A	2006A	2007A	2008A	2009A
Revenue	3.665	4.079	4.571	4.979	4.782	4.898
<i>growth</i>		11%	12%	9%	-4%	2%
EBIT	390	547	593	373	119	443
<i>margin</i>	11%	13%	13%	7%	2%	9%
Net income	224	502	370	210	(108)	216
<i>margin</i>	6%	12%	8%	4%	-2%	4%

Historic IBES estimates

Revenue geographical segmentation



Source: Factset, company reports, Authors' own creation

HearUSA

HearUSA, Inc. (HearUSA) provides a range of hearing aids, with emphasis on digital technology along with assessment and evaluation of hearing. The Company operates in three segments: the Company-owned centers, the network of independent providers and an e-commerce business line. As of December 26, 2009, HearUSA had 180 Company-owned hearing care centers in 11 states. The Company also sponsors a network of approximately 1,900 credentialed audiology providers that participate in selected hearing benefit programs contracted by the Company with employer groups, health insurers and benefit sponsors in 49 states. The center professionals and the network providers provide audiological testing, products and services for the hearing impaired. On April 27, 2009, the Company sold the assets of Helix Hearing Care of America Corp. and 3371727 Canada Inc., both indirect wholly owned subsidiaries of the Company.

DKKm	2004A	2005A	2006A	2007A	2008A	2009A
Revenue	427	452	524	607	661	525
<i>growth</i>		6%	16%	16%	9%	-21%
EBIT	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
<i>margin</i>	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Net income	(20)	(11)	(19)	(20)	(20)	8
<i>margin</i>	-5%	-2%	-4%	-3%	-3%	2%



Revenue geographical segmentation

n.a.

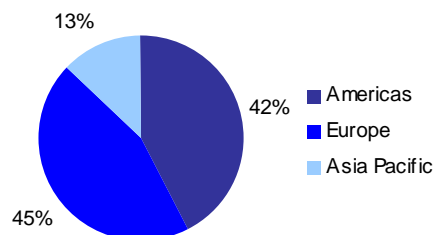
Source: Factset, company reports, Authors' own creation

Cochlear

Cochlear Limited (Cochlear) operates in the implantable hearing device industry. Its products include cochlear implant system, Baha system, freedom accessories, speech processor upgrades and nucleus freedom implant. Nucleus Freedom is the next generation of Cochlear's technology, including SmartSound 2, which brings clarity to everyday hearing. Its bone conduction implant, the Baha system, helps people with conductive hearing loss, mixed hearing loss, as well as Single Sided Deafness (SSD). The Company has also introduced Nucleus Freedom speech processor technology to all of its Nucleus implant recipients. Cochlear's Nucleus Freedom implant with Contour Advance electrode and Nucleus Freedom implant with Straight electrode features an electronics platform with a microchip. During the fiscal year ended June 30, 2009, Cochlear acquired Percutis AB, a Swedish company.

DKKm	2004A	2005A	2006A	2007A	2008A	2009A
Revenue	1.484	1.944	2.518	2.896	3.298	3.644
<i>growth</i>		31%	30%	15%	14%	11%
EBIT	352	482	677	815	894	1.032
<i>margin</i>	24%	25%	27%	28%	27%	28%
Net income	246	358	465	555	636	736
<i>margin</i>	17%	18%	18%	19%	19%	20%

Revenue geographical segmentation



Source: Factset, company reports, Authors' own creation

Appendix 2 – Capital structure

Capital structure analysis on closest peers

Company	Shares (m)	Share price	Market cap	Net debt	D/E
William Demant Holding A/S		<i>DKK</i>	<i>DKKm</i>	<i>DKKm</i>	
31-12-2009	58	393	22.664	3.581	16%
31-12-2008	58	219	12.742	3.533	28%
31-12-2007	60	473	28.181	3.365	12%
31-12-2006	62	458	28.215	2.508	9%
31-12-2005	64	349	22.230	2.172	10%
31-12-2004	66	257	16.989	1.866	11%
31-12-2003	69	200	13.671	1.029	8%
<i>Average</i>					13%
<i>Median</i>					11%
Sonova Holding AG		<i>CHF</i>	<i>CHFm</i>	<i>CHFm</i>	
31-03-2010			8.921	685	8%
31-03-2009	65	69	4.496	210	5%
31-03-2008	66	91	6.033	71	1%
31-03-2007	67	93	6.239	(53)	-1%
31-03-2006	66	74	4.921	38	1%
31-03-2005	66	41	2.720	78	3%
31-03-2004	65	31	1.992	152	8%
31-03-2003	65	12	784	177	23%
<i>Average</i>					6%
<i>Median</i>					4%
Plantronics Inc.					
28-03-2010			1.410	(109)	-8%
28-03-2009	49	12	584	(44)	-7%
28-03-2008	48	19	918	5	1%
28-03-2007	48	23	1.106	27	2%
28-03-2006	48	34	1.658	(173)	-10%
28-03-2005	48	38	1.789	(114)	-6%
<i>Average</i>					-5%
<i>Median</i>					-7%
GN-DK	GN Store Nord A/S				
31-12-2009	204	28	5.663	1.300	23%
31-12-2008	204	10	2.078	1.662	80%
31-12-2007	204	40	8.161	1.637	20%
31-12-2006	203	84	16.951	3.327	20%
31-12-2005	206	83	17.028	2.742	16%
31-12-2004	212	59	12.481	372	3%
<i>Average</i>					27%
<i>Median</i>					20%

Source: Factset, Company reports, Authors' own creation

Appendix 4 – Resound PL and restated balance sheet – historic

Resound PL statement and restated balance sheet

DKKm	2003A	2004A	2005A	2006A	2007A	2008A	2009A
Hearing instruments		2.670	2.795	2.910	2.823	2.862	2.662
Audiologic Diagnostics Equipment		348	324	302	332	326	319
Revenue	2.968	3.018	3.111	3.353	3.155	3.178	2.933
Production costs	(1.295)	(1.243)	(1.186)	(1.320)	(1.223)	(1.231)	(1.172)
Gross profit	1.673	1.775	1.925	2.033	1.932	1.947	1.761
Expensed development costs	(169)	(180)	(187)	(233)	(254)	(257)	(272)
Selling and distribution costs	(743)	(772)	(852)	(995)	(977)	(1.077)	(915)
Management and administrative expenses	(328)	(313)	(368)	(417)	(410)	(399)	(318)
Other operating income/(expenses)	2	10	12	(2)	9	4	10
EBITA	499	520	530	386	300	218	266
Restructuring	(64)	-	-	-	-	-	-
Amortization of other intangible assets acquired in company acquisitions	(265)	(175)	(8)	-	(27)	(26)	(25)
Depreciation related to GN ReSound in Q4 2006					(32)		
Operating profit (loss)	234	345	522	386	273	192	241
Gains (losses) on disposal of operations	-	-	-	54	(2)	-	93
Costs related to abandoned sales process concerning GN ReSound				-	(41)		
Profit (loss) before financial items and tax	234	345	522	386	273	192	241
Share of profit (loss) in associates	(10)	(6)	(8)	-	2	-	1
Financial income	66	19	-	-	47	219	212
Financial expenses	(113)	(49)	(42)	(23)	(56)	(298)	(274)
Profit (loss) before tax	177	309	472	363	266	113	180
Tax on profit (loss)	-	-	-	-	(82)	(37)	(50)
Profit (loss) for the year	177	309	472	363	184	76	130
Goodwill	2.261	1.940			2.111	2.230	2.307
Development projects	277	306			577	658	716
Software	57	64			50	50	
Patents and rights	74	68			50	43	
Other intangible assets	176	151	3.301	3.121	202	183	246
Intangible assets							
Property, plant and equipment	281	278	284	281	249	264	209
Investments in associates	141	134	189	64	59	41	
Other receivables	27	25			1	1	
Deferred tax assets	233	244			464	522	
Other non-current assets							715
Inventories	424	306			374	391	312
Trade receivables	563	535			665	744	721
Tax receivable	11	6			38	27	
Prepayments	72	69			151	112	
Other receivables	88	89			241	269	434
Other assets			2.209	2.130			
Operating assets	4.685	4.215	5.983	5.596	5.232	5.535	5.660
Trade payables	175	106			211	206	172
Tax payable	25	19			16	30	
Other payables	282	295			395	398	
Other current liabilities	166	132			174	157	657
Received prepayments	37	33			69	77	
NIBL	685	585	-	-	865	868	829
Invested capital	4.000	3.630	5.983	5.596	4.367	4.667	4.831
<i>NIBD</i>							
Equity	2.978	3.041	4.178	4.270	2.767	2.831	3.185
Amounts owed to subsidiaries	868	479			1.386	1.726	1.467
Amounts owed to associates		3					
Total equity	3.846	3.523	4.178	4.270	4.153	4.557	4.652
Bank loans	3	11					
Other non-current liabilities	117	105	1.805	1.326	213	281	294
Bank loans	78	106			212	67	43
Repayment of long-term loans	6	1			1	1	
Receivables from associates	7	6			18	5	
Receivables from subsidiaries	2	57					
Cash and cash equivalents	37	49			111	108	158
Other securities	3	4			83	126	
Listed securities	1	-					
NIBD	154	107	1.805	1.326	214	110	179
Invested capital	4.000	3.630	5.983	5.596	4.367	4.667	4.831
Difference	-	-	-	-	-	-	-

Source: Company reports. Adjusted for non-operating and non-recurring items

Appendix 5 – Netcom PL and restated balance sheet – historic

Netcom PL statement and restated balance sheet

DKKm	2003A	2004A	2005A	2006A	2007A	2008A	2009A
CC&O		1.316	1.549	1.587	1.532	1.386	1.081
Mobile		1.198	1.960	1.809	1.279	1.092	655
Revenue	1.760	2.514	3.509	3.396	2.811	2.430	1.761
Production costs	(858)	(1.398)	(2.098)	(2.223)	(1.717)	(1.462)	(937)
Gross profit	902	1.116	1.411	1.173	1.094	968	824
Expensed development costs	(81)	(85)	(125)	(153)	(182)	(171)	(145)
Selling and distribution costs	(373)	(457)	(637)	(792)	(566)	(507)	(426)
Management and administrative expenses	(275)	(298)	(288)	(319)	(327)	(363)	(329)
Other operating income/(expenses)	1		2	1	8	2	-
EBITA	174	276	363	100	96	36	152
Restructuring	(76)						
Amortization of other intangible assets acquired in company acquisitions	(54)	(50)				(5)	(5)
Depreciation related to GN ReSound in Q4 2006							
Operating profit (loss)	120	226	363	100	96	31	147
Gains (losses) on disposal of operations	-		-	-	-	-	-
Costs related to abandoned sales process concerning GN ReSound					(1)		
Profit (loss) before financial items and tax	120	226	363	100	95	31	147
Share of profit (loss) in associates	(1)	-	(3)	-	-	0	-
Financial income	20	4				107	126
Financial expenses	(86)	(72)	(24)	(62)	(58)	(138)	(111)
Profit (loss) before tax	53	158	336	38	37	-	162
Tax on profit (loss)					3	-	24
Profit (loss) for the year	53	158	336	38	40	-	186
Goodwill	515	441			414	425	447
Development projects	70	70			115	132	127
Software	42	39			46		
Patents and rights	15	12			1		
Other intangible assets	106	90	724	686	65	86	63
Intangible assets							
Property, plant and equipment	54	73	105	93	64	54	31
Investments in associates	3	3			-	-	-
Other receivables	21	5			11		
Deferred tax assets	198	246			212		
Other non-current assets						256	241
Inventories	198	212			343	271	74
Trade receivables	333	367			573	362	265
Tax receivable	33	15			18		
Prepayments	16	17			18		
Other receivables	43	102			41	100	31
Other assets			1.483	1.282			
Operating assets	1.647	1.692	2.312	2.061	1.921	1.686	1.279
Trade payables	88	151			181	208	127
Tax payable	37	4			6		
Other payables	39	169			224		
Other current liabilities	107	22			51	258	294
Receivd prepayments							
NIBL	271	346	-	-	462	466	421
Invested capital	1.376	1.346	2.312	2.061	1.459	1.220	858
<i>NIBD</i>							
Equity	76	229	615	401	1.288	1.249	1.134
Amounts owed to subsidiaries	1.282	1.117			155	-	-
Amounts owed to associates							
Total equity	1.358	1.346	615	401	1.443	1.249	1.134
Bank loans	31	26			60	19	12
Other non-current liabilities	43	17	1.697	1.660	12	27	37
Bank loans					-	-	
Repayment of long-term loans							
Receivables from associates							
Receivables from subsidiaries	24	26			-	30	295
Cash and cash equivalents	29	15			53	45	30
Other securities	3	2			3		
Listed securities							
NIBD	18	-	1.697	1.660	16	(29)	(276)
Invested capital	1.376	1.346	2.312	2.061	1.459	1.220	858
Difference	-	-	-	-	-	-	-

Source: Company reports. Adjusted for non-operating and non-recurring items

Appendix 6 –

Resound PL, restated balance sheet, Cash flow, financial key ratios – Forecast base case

Resound PL statement

	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
<i>DKKm</i>	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E
Hearing instruments	2.779	2.875	2.992	3.161	3.339	3.517	3.705	3.886	4.077	4.279	4.492
Audiologic Diagnostics Equipment	278	288	299	316	334	352	370	389	408	428	449
Revenue	3.057	3.163	3.291	3.477	3.673	3.869	4.075	4.275	4.485	4.707	4.941
Production costs	(1.192)	(1.170)	(1.152)	(1.147)	(1.139)	(1.161)	(1.223)	(1.282)	(1.345)	(1.412)	(1.482)
Gross profit	1.865	1.993	2.139	2.329	2.534	2.708	2.853	2.992	3.139	3.295	3.459
Expensed development costs	(360)	(357)	(360)	(368)	(380)	(394)	(411)	(428)	(447)	(468)	(490)
Selling and distribution costs	(1.009)	(981)	(954)	(939)	(992)	(1.045)	(1.100)	(1.154)	(1.211)	(1.271)	(1.334)
Management and administrative expenses	(367)	(380)	(395)	(417)	(441)	(464)	(489)	(513)	(538)	(565)	(593)
Other operating income/(expenses)											
EBITA	130	275	430	605	722	805	852	897	943	991	1.042
Restructuring											
Amortization of other intangible assets acquired in company acquisitions											
Depreciation related to GN ReSound in Q4 2006											
Operating profit (loss)	130	275	430	605	722	805	852	897	943	991	1.042
Gains (losses) on disposal of operations											
Costs related to abandoned sales process concerning GN ReSound											
Profit (loss) before financial items and tax	130	275	430	605	722	805	852	897	943	991	1.042
Share of profit (loss) in associates											
Financial income		2	2	2	2	2	2	2	2	2	2
Financial expenses	(11)	(27)	(27)	(37)	(44)	(48)	(52)	(55)	(57)	(57)	(59)
Profit (loss) before tax	119	250	404	570	679	758	802	843	888	936	985
Tax on profit (loss)	-	-	(113)	(160)	(190)	(212)	(225)	(236)	(249)	(262)	(276)
Profit (loss) for the year	119	250	291	410	489	546	578	607	639	674	709

Source: Authors' estimates

Resound Restated balance sheet

<i>DKKm</i>	Q1 2011E	Q2 2012E	Q3 2013E	Q4 2014E	Q1 2015E	Q2 2016E	Q3 2017E	Q4 2018E	Q1 2019E	Q2 2020E	Q3 2021E
Goodwill	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307	2.307
Development projects	682	661	651	653	663	681	703	730	759	792	828
Software	-	-	-	-	-	-	-	-	-	-	-
Patents and rights	-	-	-	-	-	-	-	-	-	-	-
Other intangible assets	245	221	230	243	257	271	285	299	314	329	346
Intangible assets	-	-	-	-	-	-	-	-	-	-	-
Property, plant and equipment	214	221	197	209	220	232	245	256	269	282	296
Investments in associates	36	37	39	41	43	45	48	50	53	55	49
Other receivables	-	-	-	-	-	-	-	-	-	-	-
Deferred tax assets	-	-	-	-	-	-	-	-	-	-	-
Other non-current assets	596	346	346	346	346	346	346	346	346	346	346
Inventories	298	293	288	287	285	290	306	321	336	353	385
Trade receivables	734	727	724	730	735	774	815	855	897	941	1.038
Tax receivable	-	-	-	-	-	-	-	-	-	-	-
Prepayments	-	-	-	-	-	-	-	-	-	-	-
Other receivables	458	474	494	522	551	580	611	641	673	753	741
Other assets	-	-	-	-	-	-	-	-	-	-	-
Operating assets	5.569	5.289	5.277	5.337	5.407	5.527	5.666	5.806	5.954	6.160	6.337
Trade payables	191	176	161	149	137	128	122	128	135	141	148
Tax payable	-	-	-	-	-	-	-	-	-	-	-
Other payables	-	-	-	-	-	-	-	-	-	-	-
Other current liabilities	642	664	691	730	771	812	856	898	942	988	1.038
Received prepayments	-	-	-	-	-	-	-	-	-	-	-
NIBL	833	840	852	879	908	940	978	1.026	1.076	1.130	1.186
Invested capital	4.737	4.449	4.424	4.458	4.500	4.586	4.688	4.780	4.878	5.031	5.151
<i>NIBD</i>											
Equity	4.771	4.471	4.212	4.072	4.011	4.008	4.035	4.092	4.182	4.306	4.465
Amounts owed to subsidiaries	-	-	-	-	-	-	-	-	-	-	-
Amounts owed to associates	(550)	(550)	(550)	(550)	(550)	(550)	(550)	(550)	(550)	(550)	(550)
Total equity	4.221	3.921	3.662	3.522	3.461	3.458	3.485	3.542	3.632	3.756	3.915
Bank loans	-	-	-	-	-	-	-	-	-	-	-
Other non-current liabilities	-	-	-	-	-	-	-	-	-	-	-
Bank loans	674	686	922	1.098	1.205	1.300	1.379	1.418	1.433	1.467	1.434
Repayment of long-term loans	-	-	-	-	-	-	-	-	-	-	-
Receivables from associates	-	-	-	-	-	-	-	-	-	-	-
Receivables from subsidiaries	-	-	-	-	-	-	-	-	-	-	-
Cash and cash equivalents	158	158	160	163	166	171	176	181	186	192	197
Other securities	-	-	-	-	-	-	-	-	-	-	-
Listed securities	-	-	-	-	-	-	-	-	-	-	-
NIBD	516	528	762	936	1.038	1.129	1.203	1.237	1.246	1.275	1.236
Invested capital	4.737	4.449	4.424	4.458	4.500	4.586	4.688	4.780	4.878	5.031	5.151
Difference	-	-	-	-	-	-	-	-	-	-	-

Source: Authors' estimates

Resound Cash flow

<i>DKKm</i>	Q1 2011E	Q2 2012E	Q3 2013E	Q4 2014E	Q1 2015E	Q2 2016E	Q3 2017E	Q4 2018E	Q1 2019E	Q2 2020E	Q3 2021E
EBITA	130	275	310	436	520	580	614	646	679	714	750
Depreciation	104	108	96	102	108	113	119	125	131	138	145
<i>WC changes</i>											
Other receivables	-	-	-	-	-	-	-	-	-	-	-
Deferred tax assets	-	-	-	-	-	-	-	-	-	-	-
Other non-current assets	119	250	-	-	-	-	-	-	-	-	-
Inventories	14	5	5	1	2	(6)	(15)	(15)	(16)	(17)	(32)
Trade receivables	(13)	6	3	(6)	(4)	(39)	(41)	(40)	(42)	(45)	(96)
Tax receivable	-	-	-	-	-	-	-	-	-	-	-
Prepayments	-	-	-	-	-	-	-	-	-	-	-
Other receivables	(24)	(16)	(19)	(28)	(29)	(29)	(31)	(30)	(31)	(80)	12
Other assets	-	-	-	-	-	-	-	-	-	-	-
Trade payables	19	(15)	(14)	(12)	(13)	(9)	(5)	6	6	7	7
Tax payable	-	-	-	-	-	-	-	-	-	-	-
Other payables	-	-	-	-	-	-	-	-	-	-	-
Other current liabilities	(15)	22	27	39	41	41	43	42	44	47	49
Received prepayments	-	-	-	-	-	-	-	-	-	-	-
CF operations	333	636	408	532	624	651	683	734	771	763	834
Goodwill	-	-	-	-	-	-	-	-	-	-	-
Development projects	34	21	10	(2)	(11)	(17)	(23)	(26)	(30)	(33)	(36)
Software	-	-	-	-	-	-	-	-	-	-	-
Patents and rights	-	-	-	-	-	-	-	-	-	-	-
Other intangible assets	1	23	(9)	(13)	(14)	(14)	(14)	(14)	(15)	(16)	(16)
Intangible assets	-	-	-	-	-	-	-	-	-	-	-
Property, plant and equipment	(109)	(115)	(72)	(113)	(119)	(125)	(132)	(137)	(144)	(151)	(159)
Investments in associates	(36)	(1)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(3)	6
FCFF	224	563	334	402	478	493	512	554	581	561	629
Change NIBD	337	12	234	173	102	91	74	34	9	29	(39)
Net interest cost	(11)	(25)	(26)	(35)	(42)	(47)	(50)	(53)	(55)	(55)	(57)
Tax shield	-	-	9	13	16	17	19	20	21	21	21
FCFE	550	550	552	553	554	554	555	555	555	555	556

Source: Authors' estimates

Resound Financial key ratios

	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
<i>DKKm</i>	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E
Turnover ratio	0,6x	0,7x	0,7x	0,8x	0,8x	0,9x	0,9x	0,9x	0,9x	1,0x	1,0x
Profitability	4%	9%	9%	13%	14%	15%	15%	15%	15%	15%	15%
ROIC	3%	6%	7%	10%	12%	13%	13%	14%	14%	15%	15%
ROIC	3%	6%	7%	10%	12%	13%	13%	14%	14%	15%	15%
ROE	3%	6%	7%	11%	14%	16%	17%	17%	18%	19%	19%
Leverage	4%	12%	13%	21%	27%	30%	33%	35%	35%	34%	34%
Interest after tax	-6%	-5%	-4%	-3%	-3%	-3%	-3%	-3%	-3%	-3%	-3%
ROE	3%	6%	7%	11%	14%	16%	17%	17%	18%	19%	19%

Source: Authors' estimates

Appendix 7 –

Netcom PL, restated balance sheet, Cash flow, financial key ratios – Forecast base case

Netcom PL statement

<i>DKKm</i>	Q1 2011E	Q1 2012E	Q1 2013E	Q1 2014E	Q1 2015E	Q1 2016E	Q1 2017E	Q1 2018E	Q1 2019E	Q1 2020E	Q1 2021E
CC&O	1.189	1.308	1.439	1.554	1.663	1.762	1.851	1.943	2.021	2.081	2.144
Mobile	721	793	872	942	1.007	1.068	1.121	1.177	1.224	1.261	1.299
Revenue	1.910	2.101	2.311	2.495	2.670	2.830	2.972	3.120	3.245	3.343	3.443
Production costs	(1.050)	(1.134)	(1.225)	(1.298)	(1.362)	(1.415)	(1.486)	(1.560)	(1.623)	(1.671)	(1.721)
Gross profit	859	966	1.086	1.198	1.308	1.415	1.486	1.560	1.623	1.671	1.721
Expensed development costs	(137)	(151)	(165)	(179)	(193)	(206)	(218)	(230)	(240)	(249)	(258)
Selling and distribution costs	(382)	(420)	(462)	(499)	(534)	(566)	(594)	(624)	(649)	(669)	(689)
Management and administrative expenses	(191)	(210)	(231)	(250)	(267)	(283)	(297)	(312)	(325)	(334)	(344)
Other operating income/(expenses)											
EBITA	149	185	227	270	314	360	377	395	409	419	431
Restructuring											
Amortization of other intangible assets acquired in company acquisitions											
Depreciation related to GN ReSound in Q4 2006											
Operating profit (loss)	149	185	227	270	314	360	377	395	409	419	431
Gains (losses) on disposal of operations											
Costs related to abandoned sales process concerning GN ReSound											
Profit (loss) before financial items and tax	149	185	227	270	314	360	377	395	409	419	431
Share of profit (loss) in associates											
Financial income		0	0	0	0	0	0	0	0	0	0
Financial expenses	17	(7)	(9)	(13)	(15)	(15)	(14)	(13)	(10)	(7)	(4)
Profit (loss) before tax	166	179	218	257	300	345	363	382	399	412	428
Tax on profit (loss)	-	-	(61)	(72)	(84)	(97)	(102)	(107)	(112)	(115)	(120)
Profit (loss) for the year	166	179	157	185	216	249	261	275	287	297	308

Source: Authors' estimates

Netcom Restated balance sheet

<i>DKK</i> m	Q1 2011E	Q2 2012E	Q3 2013E	Q4 2014E	Q1 2015E	Q2 2016E	Q3 2017E	Q4 2018E	Q1 2019E	Q2 2020E	Q3 2021E
Goodwill	447	447	447	447	447	447	447	447	447	447	447
Development projects	138	151	165	180	195	209	223	236	248	259	269
Software	-	-	-	-	-	-	-	-	-	-	-
Patents and rights	-	-	-	-	-	-	-	-	-	-	-
Other intangible assets	134	147	162	175	187	198	208	218	227	234	241
Intangible assets	-	-	-	-	-	-	-	-	-	-	-
Property, plant and equipment	191	210	231	250	267	283	297	312	325	334	344
Investments in associates	-	-	-	-	-	-	-	-	-	-	-
Other receivables	-	-	-	-	-	-	-	-	-	-	-
Deferred tax assets	-	-	-	-	-	-	-	-	-	-	-
Other non-current assets	75	75	75	75	75	75	75	75	75	75	75
Inventories	210	227	245	260	272	283	297	312	325	334	344
Trade receivables	382	420	462	499	534	566	594	624	649	669	689
Tax receivable	-	-	-	-	-	-	-	-	-	-	-
Prepayments	-	-	-	-	-	-	-	-	-	-	-
Other receivables	76	84	92	100	107	113	119	125	130	134	138
Other assets	-	-	-	-	-	-	-	-	-	-	-
Operating assets	1.654	1.761	1.880	1.985	2.084	2.175	2.261	2.350	2.426	2.486	2.547
Trade payables	137	147	159	169	177	184	193	203	211	217	224
Tax payable	-	-	-	-	-	-	-	-	-	-	-
Other payables	-	-	-	-	-	-	-	-	-	-	-
Other current liabilities	229	252	277	299	320	340	357	374	389	401	413
Receivd prepayments	-	-	-	-	-	-	-	-	-	-	-
NIBL	366	400	436	468	497	524	550	577	600	618	637
Invested capital	1.288	1.362	1.444	1.517	1.587	1.651	1.711	1.772	1.825	1.868	1.911
<i>NIBD</i>											
Equity	1.300	1.318	1.315	1.341	1.397	1.485	1.587	1.702	1.829	1.966	2.114
Amounts owed to subsidiaries	-	-	-	-	-	-	-	-	-	-	-
Amounts owed to associates	(160)	(160)	(160)	(160)	(160)	(160)	(160)	(160)	(160)	(160)	(160)
Total equity	1.140	1.158	1.155	1.181	1.237	1.325	1.427	1.542	1.669	1.806	1.954
Bank loans	-	-	-	-	-	-	-	-	-	-	-
Other non-current liabilities	-	-	-	-	-	-	-	-	-	-	-
Bank loans	178	234	318	366	379	355	313	259	185	90	(15)
Repayment of long-term loans	-	-	-	-	-	-	-	-	-	-	-
Receivables from associates	-	-	-	-	-	-	-	-	-	-	-
Receivables from subsidiaries	-	-	-	-	-	-	-	-	-	-	-
Cash and cash equivalents	30	30	30	29	29	29	29	29	28	28	28
Other securities	-	-	-	-	-	-	-	-	-	-	-
Listed securities	-	-	-	-	-	-	-	-	-	-	-
NIBD	148	204	288	336	350	326	284	231	156	62	(43)
Invested capital	1.288	1.362	1.444	1.517	1.587	1.651	1.711	1.772	1.825	1.868	1.911
Difference	-	-	-	-	-	-	-	-	-	-	-

Source: Authors' estimates

Netcom Cash flow

<i>DKK</i> m	Q1 2011E	Q2 2012E	Q3 2013E	Q4 2014E	Q1 2015E	Q2 2016E	Q3 2017E	Q4 2018E	Q1 2019E	Q2 2020E	Q3 2021E
EBITA	149	185	164	194	226	259	271	284	294	302	310
Depreciation	308	339	373	402	431	457	479	503	523	539	555
<i>WC changes</i>											
Other receivables	-	-	-	-	-	-	-	-	-	-	-
Deferred tax assets	-	-	-	-	-	-	-	-	-	-	-
Other non-current assets	166	-	-	-	-	-	-	-	-	-	-
Inventories	(136)	(17)	(18)	(15)	(13)	(11)	(14)	(15)	(12)	(10)	(10)
Trade receivables	(117)	(38)	(42)	(37)	(35)	(32)	(28)	(30)	(25)	(19)	(20)
Tax receivable	-	-	-	-	-	-	-	-	-	-	-
Prepayments	-	-	-	-	-	-	-	-	-	-	-
Other receivables	(45)	(8)	(8)	(7)	(7)	(6)	(6)	(6)	(5)	(4)	(4)
Other assets	-	-	-	-	-	-	-	-	-	-	-
Trade payables	10	11	12	9	8	7	9	10	8	6	7
Tax payable	-	-	-	-	-	-	-	-	-	-	-
Other payables	-	-	-	-	-	-	-	-	-	-	-
Other current liabilities	(65)	23	25	22	21	19	17	18	15	12	12
Received prepayments	-	-	-	-	-	-	-	-	-	-	-
CF operations	269	495	505	569	632	693	729	764	798	826	850
Goodwill	-	-	-	-	-	-	-	-	-	-	-
Development projects	(11)	(13)	(14)	(15)	(15)	(14)	(14)	(13)	(12)	(11)	(10)
Software	-	-	-	-	-	-	-	-	-	-	-
Patents and rights	-	-	-	-	-	-	-	-	-	-	-
Other intangible assets	(71)	(13)	(15)	(13)	(12)	(11)	(10)	(10)	(9)	(7)	(7)
Intangible assets	-	-	-	-	-	-	-	-	-	-	-
Property, plant and equipment	(468)	(358)	(394)	(421)	(448)	(473)	(493)	(518)	(536)	(549)	(565)
Investments in associates	-	-	-	-	-	-	-	-	-	-	-
FCFF	(281)	111	82	121	156	195	212	223	242	259	268
Change NIBD	424	55	84	48	14	(24)	(42)	(54)	(74)	(94)	(105)
Net interest cost	17	(7)	(9)	(12)	(14)	(15)	(14)	(12)	(10)	(7)	(3)
Tax shield	-	-	2	3	4	4	4	3	3	2	1
FCFE	160	160	160	160	159,8	159,8	159,8	159,8	159,8	159,8	160

Source: Authors' estimates

Netcom Financial key ratios

<i>DKKm</i>	Q1 2011E	Q1 2012E	Q1 2013E	Q1 2014E	Q1 2015E	Q1 2016E	Q1 2017E	Q1 2018E	Q1 2019E	Q1 2020E	Q1 2021E
Turnover ratio	2,2x	1,6x	1,7x	1,7x	1,8x	1,8x	1,8x	1,8x	1,8x	1,8x	1,8x
Profitability	8%	9%	7%	8%	8%	9%	9%	9%	9%	9%	9%
ROIC	17%	14%	12%	13%	15%	16%	16%	17%	17%	17%	17%
ROE	15%	16%	14%	16%	18%	20%	20%	19%	19%	18%	17%
Leverage	-24%	13%	18%	25%	28%	28%	25%	20%	15%	9%	3%
Interest after tax	-6%	-5%	-3%	-3%	-3%	-3%	-3%	-3%	-3%	-3%	-4%
ROE	15%	16%	14%	16%	18%	20%	20%	19%	19%	18%	17%

Source: Authors' estimates

Appendix 8 –

GN PL, Balance sheet – Forecast base case

GN PL statement												
<i>DKKm</i>	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	
	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E	
Revenue	4.966	5.263	5.602	5.972	6.343	6.699	7.047	7.395	7.730	8.050	8.384	
Production costs	(2.242)	(2.305)	(2.377)	(2.445)	(2.500)	(2.576)	(2.709)	(2.843)	(2.968)	(3.083)	(3.204)	
Gross profit	2.724	2.959	3.225	3.527	3.843	4.123	4.339	4.553	4.762	4.966	5.180	
Expensed development costs	(497)	(508)	(525)	(548)	(573)	(600)	(629)	(658)	(688)	(717)	(748)	
Selling and distribution costs	(1.391)	(1.401)	(1.417)	(1.438)	(1.526)	(1.611)	(1.695)	(1.778)	(1.860)	(1.939)	(2.023)	
Management and administrative expenses	(558)	(590)	(626)	(667)	(708)	(747)	(786)	(825)	(863)	(899)	(937)	
Other operating income/(expenses)	-	-	-	-	-	-	-	-	-	-	-	
EBITA	279	461	658	875	1.036	1.165	1.229	1.291	1.352	1.411	1.473	
Restructuring	-	-	-	-	-	-	-	-	-	-	-	
Amortization of other intangible assets acquired in company acquisitions	-	-	-	-	-	-	-	-	-	-	-	
Depreciation related to GN ReSound in Q4 2006	-	-	-	-	-	-	-	-	-	-	-	
Operating profit (loss)	279	461	658	875	1.036	1.165	1.229	1.291	1.352	1.411	1.473	
Gains (losses) on disposal of operations	-	-	-	-	-	-	-	-	-	-	-	
Costs related to abandoned sales process concerning GN ReSound	-	-	-	-	-	-	-	-	-	-	-	
Profit (loss) before financial items and tax	279	461	658	875	1.036	1.165	1.229	1.291	1.352	1.411	1.473	
Share of profit (loss) in associates	-	-	-	-	-	-	-	-	-	-	-	
Financial income	-	2	2	2	2	2	2	2	2	2	2	
Financial expenses	6	(34)	(37)	(50)	(59)	(63)	(66)	(68)	(67)	(65)	(62)	
Profit (loss) before tax	284	429	623	827	979	1.104	1.165	1.226	1.287	1.348	1.413	
Tax on profit (loss)	-	-	(174)	(232)	(274)	(309)	(326)	(343)	(360)	(377)	(396)	
Profit (loss) for the year	284	429	448	596	705	795	839	883	926	971	1.017	

Source: Authors' estimates

GN Balance sheet

	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E
Assets											
Goodwill	2.754	2.754	2.754	2.754	2.754	2.754	2.754	2.754	2.754	2.754	2.754
Development projects	820	812	817	833	858	890	926	966	1.008	1.051	1.097
Software	-	-	-	-	-	-	-	-	-	-	-
Patents and rights	-	-	-	-	-	-	-	-	-	-	-
Other intangible assets	378	368	392	418	444	469	493	518	541	563	587
Intangible assets	-	-	-	-	-	-	-	-	-	-	-
Property, plant and equipment	405	431	429	458	487	515	542	569	594	617	641
Investments in associates	36	37	39	41	43	45	48	50	53	55	49
Other securities	-	-	-	-	-	-	-	-	-	-	-
Other receivables	-	-	-	-	-	-	-	-	-	-	-
Deferred tax assets	-	-	-	-	-	-	-	-	-	-	-
Other non-current assets	672	422	422	422	422	422	422	422	422	422	422
Total non-current assets	5.064	4.824	4.852	4.926	5.009	5.095	5.185	5.278	5.371	5.462	5.550
Inventories	508	519	533	546	557	573	603	633	661	687	730
Trade receivables	1.116	1.148	1.186	1.229	1.269	1.340	1.409	1.479	1.546	1.610	1.726
Receivables from subsidiaries	-	-	-	-	-	-	-	-	-	-	-
Tax receivable	-	-	-	-	-	-	-	-	-	-	-
Prepayments	-	-	-	-	-	-	-	-	-	-	-
Receivables from associates	-	-	-	-	-	-	-	-	-	-	-
Other receivables	535	558	586	621	658	694	730	766	802	887	879
Cash and cash equivalents	188	188	189	192	196	200	204	210	215	220	225
Listed securities	-	-	-	-	-	-	-	-	-	-	-
Total current assets	2.346	2.413	2.495	2.589	2.679	2.806	2.947	3.087	3.224	3.404	3.560
Other assets	-	-	-	-	-	-	-	-	-	-	-
Total assets	7.411	7.238	7.346	7.515	7.688	7.902	8.131	8.365	8.595	8.866	9.110
Equity and liabilities											
Total equity	5.360	5.079	4.817	4.703	4.698	4.783	4.912	5.084	5.301	5.561	5.868
Bank loans	852	920	1.240	1.464	1.584	1.655	1.692	1.677	1.617	1.557	1.418
Other non-current liabilities	-	-	-	-	-	-	-	-	-	-	-
Total non-current liabilities	852	920	1.240	1.464	1.584	1.655	1.692	1.677	1.617	1.557	1.418
Bank loans	-	-	-	-	-	-	-	-	-	-	-
Trade payables	327	323	320	318	314	312	315	331	345	358	372
Repayment of long-term loans	-	-	-	-	-	-	-	-	-	-	-
Tax payable	-	-	-	-	-	-	-	-	-	-	-
Other payables	-	-	-	-	-	-	-	-	-	-	-
Other current liabilities	871	916	968	1.030	1.092	1.152	1.212	1.272	1.331	1.390	1.451
Received prepayments	-	-	-	-	-	-	-	-	-	-	-
Total current liabilities	1.198	1.239	1.289	1.347	1.405	1.464	1.528	1.603	1.677	1.748	1.823
Total liabilities	2.051	2.159	2.529	2.812	2.989	3.119	3.220	3.281	3.294	3.305	3.241
Total equity and liabilities	7.411	7.238	7.346	7.515	7.688	7.902	8.131	8.365	8.595	8.866	9.110

Difference

Source: Authors' estimates

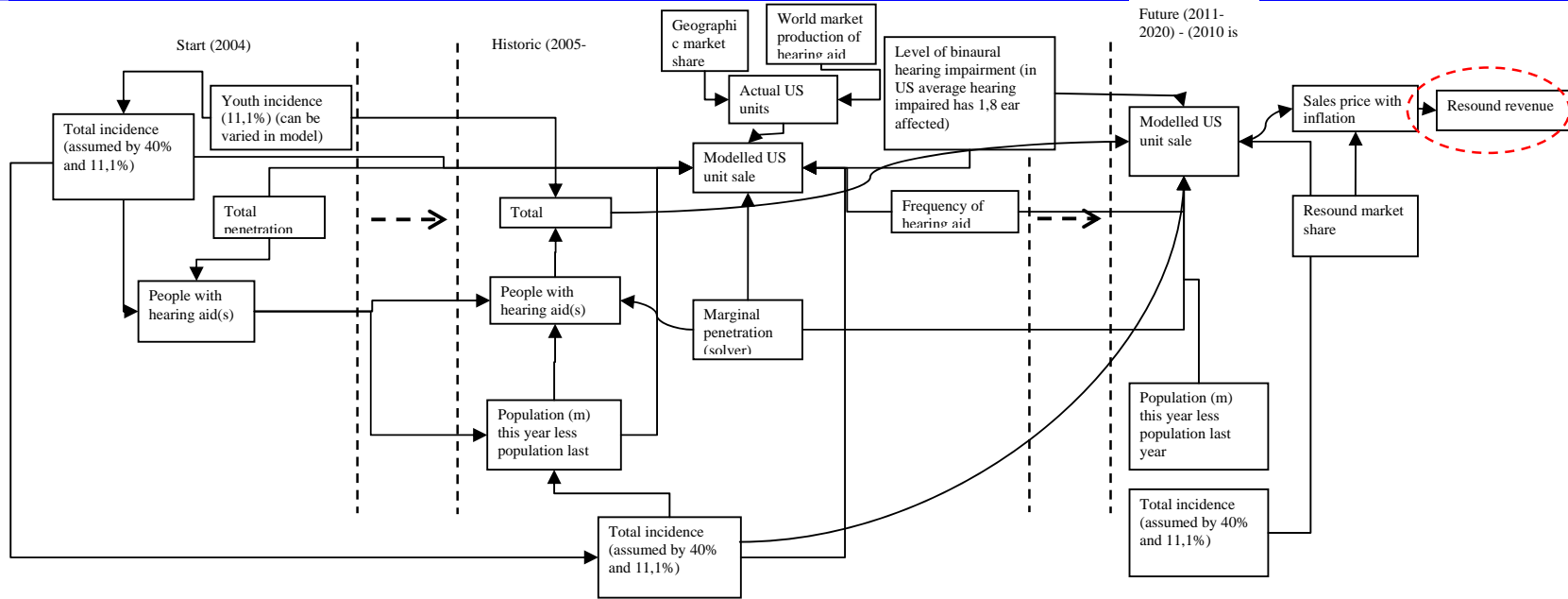
Appendix 9 – Resound revenue model

Resound revenue model

	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
	2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E	2021E
Average sales price	2.200	2.244	2.289	2.335	2.381	2.429	2.478	2.527	2.578	2.629	2.682
Resound sales growth	8,7%	3,5%	4,1%	5,6%	5,6%	5,3%	5,3%	4,9%	4,9%	5,0%	5,0%
Resound sale	2.894	2.994	3.116	3.291	3.477	3.663	3.858	4.047	4.245	4.456	4.677
Resound market share	14,00%	14,00%	14,00%	14,00%	14,00%	14,00%	14,00%	14,00%	14,00%	14,00%	14,00%
Market growth	4,4%	1,4%	2,0%	3,6%	3,6%	3,3%	3,3%	2,8%	2,9%	2,9%	2,9%
World units	9,4	9,5	9,7	10,1	10,4	10,8	11,1	11,4	11,8	12,1	12,46
US units	3,76	3,81	3,89	4,05	4,22	4,37	4,55	4,70	4,87	5,04	5,23
Europe units	4,23	4,29	4,38	4,51	4,65	4,78	4,91	5,02	5,13	5,25	5,36
Other units	1,41	1,43	1,46	1,51	1,56	1,62	1,67	1,72	1,76	1,82	1,87
US	40,0%	40,0%	40,0%	40,2%	40,4%	40,6%	40,9%	41,1%	41,4%	41,6%	41,9%
Europe	45,0%	45,0%	45,0%	44,8%	44,6%	44,4%	44,1%	43,9%	43,6%	43,4%	43,1%
Other	15,0%	15,0%	15,0%	15,0%	15,0%	15,0%	15,0%	15,0%	15,0%	15,0%	15,0%
Sum	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%	100,0%
US binarual hearing	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800
Europe binarual hearing	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500
Year frequency of hearing aid replacement	8	8	8	8	8	8	8	8	8	8	8
US											
Incidence est.											
15-64 incidence	11,50%	11,50%	11,50%	11,50%	11,50%	11,50%	11,50%	11,50%	11,50%	11,50%	11,50%
Total incidence	16,19%	16,25%	16,37%	16,49%	16,60%	16,72%	16,83%	16,94%	17,06%	17,19%	17,32%
Total penetration	20,01%	19,98%	19,87%	19,76%	19,67%	19,58%	19,50%	19,41%	19,32%	19,22%	19,12%
Difference to actual # sold hearing aids	3,76	3,81	3,89	4,05	4,22	4,37	4,55	4,70	4,87	5,04	5,23
Marginal penetration (solver)	24,00%	24,00%	24,00%	24,00%	24,00%	24,00%	24,00%	24,00%	24,00%	24,00%	24,00%
Europe											
Incidence est.		1,52%	2,00%	2,99%	3,09%	2,90%	2,63%	2,34%	2,22%	2,22%	2,21%
15-64 incidence	11,10%	11,10%	11,10%	11,10%	11,10%	11,10%	11,10%	11,10%	11,10%	11,10%	11,10%
Total incidence	17,31%	17,37%	17,47%	17,57%	17,67%	17,76%	17,85%	17,93%	18,02%	18,10%	18,19%
Total penetration	19,73%	19,67%	19,57%	19,47%	19,37%	19,28%	19,20%	19,12%	19,04%	18,95%	18,87%
Difference to actual # sold hearing aids	4,23	4,29	4,38	4,51	4,65	4,78	4,91	5,02	5,13	5,25	5,36
Marginal penetration (solver)	24,00%	24,00%	24,00%	24,00%	24,00%	24,00%	24,00%	24,00%	24,00%	24,00%	24,00%
US											
People with hearing aid(s)	9	9	9	9	9	9	10	10	10	10	10
Percentage	3,24%	3,25%	3,25%	3,26%	3,27%	3,27%	3,28%	3,29%	3,30%	3,30%	3,31%
Europe											
People with hearing aid	12	12	12	12	12	12	12	12	12	12	12
Percentage	3,41%	3,42%	3,42%	3,42%	3,42%	3,42%	3,43%	3,43%	3,43%	3,43%	3,43%
Population (m)											
US											
15-64	231	233	234	235	236	237	238	239	240	241	242
65-99	45	47	48	50	51	53	55	56	58	60	62
Europe											
15-64	267	267	266	266	265	264	264	263	263	262	262
65-99	73	74	75	77	78	79	80	82	83	84	85

Source: Authors' estimates

Resound revenue model coherence



Source: Authors' own creation

Appendix 10 – Cost of capital

Resound and Netcom WACCs and cost of equity

Resound		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
		2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E
Actual D/V	2%	7%	7%	9%	11%	12%	13%	13%	13%	13%	13%
WACC's	3	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00
<i>Miles-Ezzel WACC, årlig rebalancering</i>	8,00%	8,0%	7,9%	7,9%	7,9%	7,9%	7,9%	7,9%	7,9%	7,9%	7,9%
<i>MM WACC, konstant gældsniiveau</i>	8,00%	8,0%	7,8%	7,8%	7,8%	7,8%	7,8%	7,8%	7,8%	7,8%	7,8%
<i>Continuous rebalancing WACC</i>	8,00%	8,00%	7,89%	7,89%	7,89%	7,89%	7,89%	7,89%	7,89%	7,89%	7,89%
Ke's											
	8,44%	8,44%	8,44%	8,44%	8,44%	8,44%	8,44%	8,44%	8,44%	8,44%	8,44%
	8,44%	8,44%	8,32%	8,32%	8,32%	8,32%	8,32%	8,32%	8,32%	8,32%	8,32%
	8,44%	8,44%	8,44%	8,44%	8,44%	8,44%	8,44%	8,44%	8,44%	8,44%	8,44%
Target D / V (MV)	10,00%	10,00%	10,00%	10,00%	10,00%	10,00%	10,00%	10,00%	10,00%	10,00%	10,00%
Netcom		Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1	Q1
		2011E	2012E	2013E	2014E	2015E	2016E	2017E	2018E	2019E	2020E
Actual D/V	-13%	6%	8%	10%	11%	11%	10%	9%	7%	5%	2%
WACC's	3	4,00	5,00	6,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00
<i>Miles-Ezzel WACC, årlig rebalancering</i>	9,00%	9,0%	9,0%	9,0%	9,0%	9,0%	9,0%	9,0%	9,0%	9,0%	9,0%
<i>MM WACC, konstant gældsniiveau</i>	9,00%	9,0%	9,0%	9,0%	9,0%	9,0%	9,0%	9,0%	9,0%	9,0%	9,0%
<i>Continuous rebalancing WACC</i>	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%
Ke's											
	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%
	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%
	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%	9,00%
Target D / V (MV)	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%	0,00%

Cost of debt is set at 4%. Market risk premium is set at 4,5% based on market consensus (PricewaterhouseCoopers, Dec 07)

Source: Authors' own creation

Appendix 11 – Peer detailed financial items

WDH PL and balance statement restated

<i>DKK</i> m	2003A	2004A	2005A	2006A	2007A	2008A	2009A
Revenue	3.870	4.303	4.523	5.085	5.488	5.374	5.701
Production costs	(1.348)	(1.444)	(1.390)	(1.510)	(1.517)	(1.648)	(1.666)
Gross profit	2.521	2.859	3.133	3.575	3.971	3.725	4.035
R&D costs	(295)	(324)	(383)	(460)	(505)	(533)	(576)
Distribution costs	(1.130)	(1.263)	(1.354)	(1.513)	(1.726)	(1.798)	(1.929)
Administration cos	(242)	(270)	(297)	(275)	(335)	(354)	(381)
Profit after tax from	2	4	4	3	2	3	(0)
Amortization of go	(0)	(1)					
EBIT	856	1.005	1.103	1.330	1.408	1.042	1.149
Profit after tax from	-	-	-	-	-	-	-
Financial income			15	20	29	29	29
Financial expense	(28)	(39)	(52)	(81)	(126)	(169)	(123)
Profit before tax	828	966	1.066	1.268	1.311	903	1.055
Tax	(209)	(249)	(275)	(324)	(309)	(221)	(260)
Net profit	619	717	791	945	1.001	682	795
<i>Operating assets</i>							
Goodwill	7	43	54	87	223	400	786
Patents and licens	6	16	10	7	6	7	47
Other intangible assets				2	13	14	22
Plant and property	167	333	504	506	561	552	547
Equipment and ma	104	113	138	158	160	152	140
Other operating as	135	138	180	192	172	164	178
Furnishing of leas	29	29	27	40	71	72	89
Prepayments	4	6	8	15	14	10	23
Related companies	-	-	-	-	-	-	-
Associated compa	2	4	4	3	2	2	14
Receivables from related companies			4	6	-	-	-
Other shares	2	2			7	16	10
Other receivables	33	68	144	163	223	251	330
Deferred tax asset	61	69	101	113	135	161	146
<i>Operating lease</i>							
Inventory	573	603	632	621	735	738	797
Receivables	644	757	863	902	1.107	1.072	1.196
Receivables from associated companies					-	-	6
Tax	27	5	4	37	42	34	34
Other receivables	55	59	50	33	24	28	36
Periodeafgrænsni	26	31	36	48	51	48	72
<i>NIBL</i>							
Payables	145	165	219	181	232	219	222
Tax	36	20	16	19	29	17	34
Deferred tax liabili	50	27	36	52	41	53	58
Periodeafgrænsni	94	92	106	94	105	116	155
Invested capital	1.551	1.973	2.381	2.585	3.136	3.315	4.002
<i>Equity and liabilities</i>							
WD share	522	651	756	671	417	532	1.302
Minorities					9	-	-
Total equity	522	651	756	671	426	532	1.302
Debt	541	458	684	595	515	518	385
Debt to related companies			-	-			
Contingencies			25	32	126	137	135
Other liabilities	15	14				9	42
Debt	309	673	677	1.061	1.623	1.750	1.618
Unrealized loss or	6	1	2	-	2	45	71
Debt to related companies			-	-			
Contingencies			3	4	27	12	11
Other liabilities	297	338	369	426	587	507	594
<i>Operating lease</i>							
Unrealized gains c	31	35	2	6	20	51	4
Cash and cash eq	108	126	135	135	151	142	152
Assets determined for sale				63			
NIBD	1.029	1.322	1.624	1.914	2.710	2.784	2.700
Invested capital	1.551	1.973	2.381	2.585	3.136	3.316	4.002

Source: Company reports. Authors' own creation

WDH Financial analysis

	2003A	2004A	2005A	2006A	2007A	2008A	2009A
NOPAT	640	745	818	990	1.075	788	866
Turnover		2,8x	2,3x	2,1x	2,1x	1,7x	1,7x
Profitability	17%	17%	18%	19%	20%	15%	15%
ROIC		48%	41%	42%	42%	25%	26%
ROIC		48%	41%	42%	42%	25%	26%
ROE		137%	121%	125%	149%	160%	150%
ROE		137%	121%	125%	149%	160%	150%
ROIC w.o. goodwill		49%	42%	42%	42%	27%	30%
<i>NWC</i>							
Inventory		8x	8x	8x	9x	7x	8x
Receivables		7x	6x	6x	6x	5x	5x
Payables		30x	27x	23x	30x	23x	26x
<i>Days</i>							
Inventory		49	49	45	41	50	47
Receivables		55	61	62	60	75	69
Payables		12	13	16	12	16	14
NWC		91	96	92	89	109	102

Source: Company reports. Authors' own creation

Sonova PL and balance statement restated

CHFm	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10
Sales		551	638	679	867	1.073	1.205	1.249	1.500
Cost of sales		(271)	(270)	(267)	(289)	(341)	(363)	(382)	(442)
Gross profit	-	279	368	412	578	732	842	867	1.058
R&D		(49)	(58)	(49)	(63)	(68)	(76)	(77)	(87)
Sales and marketing		(116)	(126)	(154)	(206)	(279)	(309)	(340)	(403)
G&A		(61)	(78)	(83)	(93)	(108)	(115)	(118)	(142)
Exchange rate differences		(3)	(1)	2					
Other expenses, net		(2)	(0)	(0)	(2)	6	(9)	(0)	(7)
EBITA	-	(42)	3	128	214	284	340	331	420
Acquisitions-related amortiza		(10)	(9)		(1)	(4)	(5)	(7)	(13)
EBIT	-	(52)	(6)	128	213	280	335	325	407
Financial income						9	11	8	5
Financial expenses		(4)	(1)	(1)	6	(3)	(6)	(8)	(9)
Share of loss in associates/joint venture:			(0)	0	(1)	(1)	(2)	(2)	(1)
Income before ta:	-	(57)	(7)	127	217	284	338	322	402
Income taxes		8	2	(29)	(43)	(41)	(33)	(39)	(47)
Income after tax	-	(48)	(5)	98	174	243	306	284	355
To equity		(48)	(6)	97	172	242	273	285	355
To minorities	-	(0)	(0)	(1)	1	1	32	(1)	-
<i>Operating assets</i>									
Other current financial assets		9	12	12	13	64	16	15	18
Trade receivables		103	116	139	194	222	227	262	324
Other receivables and prepaid		16	16	20	46	50	48	58	71
Inventories		83	77	87	94	94	102	114	160
Operating leases									
Property, plant & equipment		126	119	115	117	121	128	161	202
Intangible assets		137	137	139	208	286	302	418	1.101
Investments in associates/joint		-	2	2	4	38	37	36	35
Other non-current financial assets		6	10	8	13	36	40	64	81
Employee benefit assets		4	4	3			1		-
Deferred tax assets		48	45	45	59	68	76	82	80
<i>NIBL</i>									
Trade payables		32	35	31	38	42	50	54	65
Current income tax liabilities		12	17	23	41	60	53	38	55
Short-term provisions			40	51	38	63	47	64	98
Long-term provisions		20	13	13	41	47	10	35	15
Deferred tax liabilities			18	18	31	39			
Invested capital		468	415	435	560	728	816	1.019	1.838
<i>NIBD</i>									
Short-term debt		29	28	31	12	0	1	1	81
Other current financial liabilities			4	1	2	0	0	0	3
Other short-term liabilities		72	59	62	92	106	118	126	165
Mortgages		37	35	13	0	0	1	3	390
Non-current financial liabilities		105	80	47	0	0	39	39	83
Other long-term liabilities		9,031	3,036	5	8,71	11	35	41	45
Operating leases									
Cash & cash equivalents		75	145	173	180	284	297	217	336
NIBD		177	65	(15)	(65)	(167)	(104)	(7)	431
Equity		290	349	448	622	891	915	1.022	1.402
Minority		1	1	2	0	4	5	5	6
Total equity	-	290	350	450	623	895	920	1.027	1.408
Invested capital		468	415	435	558	728	816	1.019	1.839

Source: Company reports. Authors' own creation

Sonova Financial analysis

	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09	09/10
NOPAT		(45)	(4)	98	170	239	303	286	359
Turnover			1,4x	1,6x	2,0x	1,9x	1,7x	1,5x	1,5x
Profitability		-8%	-1%	14%	20%	22%	25%	23%	24%
ROIC			-1%	24%	39%	43%	42%	35%	35%
ROIC			-1%	24%	39%	43%	42%	35%	35%
ROE			-2%	28%	39%	39%	34%	31%	35%
ROE			-2%	28%	39%	39%	34%	31%	35%
Self-financed growth			-1%	22%	33%	31%	26%	24%	27%
ROIC w.o. goodwill		#DIV/0!	1%	35%	56%	65%	63%	51%	53%
NWC									
Inventories			8x	9x	10x	11x	13x	12x	13x
Trade receivables			6x	6x	6x	6x	5x	6x	6x
Trade payables			20x	20x	28x	29x	29x	25x	28x
Days									
Inventories			48	42	36	32	29	30	28
Trade receivables			59	63	59	66	67	66	64
Trade payables			18	19	13	13	13	15	13
NWC			88	86	82	85	83	81	79

Source: Company reports. Authors' own creation

Widex PL and balance statement restated

DKKm	03/04	04/05	05/06	06/07	07/08	08/09
Net sales	1.222	1.176	1.546	1.681	2.015	2.300
Production costs	(468)	(464)	(647)	(626)	(713)	(828)
Gross profit	754	713	899	1.054	1.302	1.472
Distribution costs	(108)	(111)	(388)	(469)	(543)	(657)
Administration costs	(63)	(68)	(187)	(206)	(288)	(384)
EBIT	583	534	324	379	471	430
Profit from related companies	(54)	(52)				
Profit from associated companies	(5)	(7)	(5)	(6)	0	1
Interest income	11	9	14	26	19	52
Interest expense	(9)	(13)	(26)	(51)	(58)	(57)
Profit before tax	526	470	307	348	433	426
Tax	(177)	(150)	(97)	(114)	(144)	(155)
Net income before minorities	349	320	210	234	288	271
Minorities			0	(1)	(6)	(0)
Net income	349	320	210	232	283	270
<i>Operating assets</i>						
Patents			1	1	5	11
Goodwill	144	127	120	87	202	299
Furnishing of leased office space	5	4	9	7	12	19
Property and plant	3	3	109	111	122	189
Machinery and production facilities	28	24	30	33	41	45
Other facilities, operations material and	36	30	47	48	50	48
Receivables from related companies	122	28	7	12	32	0
Shares in associated companies	9	7	7	8	5	22
Other shares and ownership	21	31	32	42	14	18
Shares in related companies	175	300				
Other receivables			17	18	26	204
Inventory	155	182	246	257	350	417
Receivables	177	142	279	403	518	463
Receivables from related companies	124	83	20	0	0	17
Other receivables	17	4	23	20	48	81
Deferred tax asset	7	7	28	25	27	21
Provisions	1	1	14	12	18	30
Other shares and ownership			10	10	21	23
Payables	38	24	54	70	93	100
Deb to related companies	71	3	315	0	86	249
Debt to associated companies			2	2		
Taxation contribution			12	19	19	
Tax	22	3	24	106	120	137
Provisions			8	11	15	27
Dividends	300	300	200	200	220	
Invested capital	594	645	385	686	937	1.396
<i>NIBD</i>						
Equity without minorities	675	691	711	731	794	1.099
Minorities			29	19	41	55
Equity	675	691	740	750	835	1.154
Pension			29	27	33	35
Other contingencies	17	17	52	54	69	83
Credit institutions			62	51	58	33
Credit institutions			14	26	13	72
Other liabilities	208	58	82	93	215	496
Cash and cash equivalents	303	116	588	307	286	478
Deposits	5	5	6	6		
NIBD	(82)	(46)	(355)	(62)	102	242
Invested capital	594	645	385	689	937	1.396

Source: Company reports. Authors' own creation

Widex Financial analysis

	03/04	04/05	05/06	06/07	07/08	08/09
NOPAT	387	364	222	255	314	273
Turnover		1,98x	2,40x	4,36x	2,93x	2,45x
Profitability	32%	31%	14%	15%	16%	12%
ROIC	0	61%	34%	66%	46%	29%
ROIC		61%	34%	66%	46%	29%
ROE		47%	30%	31%	38%	32%
ROE		53%	31%	32%	38%	32%
ROIC w.o. goodwill		81%	43%	96%	52%	37%
NWC						
Inventories		8x	8x	7x	8x	7x
Trade receivables		7x	11x	6x	5x	4x
Trade payables		31x	65x	31x	29x	25x
Days						
Inventories		48	43	54	47	56
Trade receivables		55	34	61	73	82
Trade payables		12	6	12	13	15
NWC		91	71	102	107	123

Source: Company reports. Authors' own creation

Plantronics PL and balance statement restated

USDm	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09
Net revenue			417	560	750	800	856	766
Cost of revenues			(201)	(272)	(424)	(491)	(507)	(470)
Gross profit	-	-	216	288	326	309	349	296
R&D			(35)	(45)	(63)	(72)	(77)	(72)
SG&A			(96)	(117)	(153)	(182)	(189)	(176)
Restructuring and other related charges							(4)	(12)
Impairment of goodwill and long lived assets								(117)
Gain on sale of land						(3)		
EBIT	-	-	85	127	110	55	83	48
Interest income			2	4	2	4	6	(4)
Income before ta:	-	-	86	130	113	59	89	45
Tax			(24)	(33)	(31)	(12)	(18)	(10)
Net income	-	-	62	98	81	47	71	34
<i>Operating assets</i>								
Long term investments							25	24
Property, plant and equipment, net			42	60	94	97	99	96
Intangibles, net			3	3	109	100	92	27
Goodwill			9	9	75	73	69	14
Accounts receivable, net			64	88	118	114	131	87
Inventory, net			41	60	106	127	127	119
Deferred income taxes			14	9	12	13	14	12
Other current assets			11	7	15	18	15	30
Other assets			3	9	6	6	7	10
<i>Operating leases</i>								
<i>NIBL</i>								
Payable			19	20	49	50	48	33
Income taxes payable				11	13			
Deferred tax liability			8	8	48	37	33	8
Long-term income taxes payable							14	13
Invested capital	-	-	161	206	425	461	484	364
<i>NIBD</i>								
Accrued liabilities			36	40	43	54	67	53
Line of credit			6		22	12		
Other long-term liabilities				3	1	1	1	1
<i>Operating leases</i>								
Cash & cash equivalents			56	78	69	94	163	158
Short term investments			125	164	8	9		60
NIBD			(138)	(200)	(10)	(36)	(95)	(164)
Equity			299	406	436	497	579	525
Invested capital			161	206	425	461	484	361

Source: Company reports. Authors' own creation

Plantronics Financial analysis

	01/02	02/03	03/04	04/05	05/06	06/07	07/08	08/09
NOPAT			61	95	80	44	67	37
Turnover			#DIV/0!	3,5x	3,6x	1,9x	1,9x	1,6x
Profitability			15%	17%	11%	5%	8%	5%
ROIC				59%	39%	10%	14%	8%
ROIC				59%	39%	10%	14%	8%
ROE				33%	20%	11%	14%	6%
ROE				33%	20%	11%	14%	6%
ROIC w.o. goodwill				63%	41%	12%	17%	9%
NWC								
Inventories			#DIV/0!	14x	12x	8x	7x	6x
Trade receivables			#DIV/0!	9x	9x	7x	8x	6x
Trade payables			#DIV/0!	29x	37x	16x	17x	16x
Days								
Inventories			#DIV/0!	27	29	48	54	61
Trade receivables			#DIV/0!	42	43	54	48	63
Trade payables			#DIV/0!	12	10	22	21	23
NWC			#DIV/0!	56	62	80	81	100

Source: Company reports. Authors' own creation