

Foundation Ownership at Novo Nordisk¹

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4. May 2016

Overview

Novo Nordisk is a large Danish life science company specializing in diabetes care. Its financial performance has been good over the past decades - outperforming both the closest rivals Eli Lilly and Sanofi as well as the S&P 500 index. It is now the largest Nordic firm by market value. The company is majority-owned by the Novo Nordisk Foundation through the holding company Novo. This case study considers the causes of the company's success and to what extent they are related to foundation ownership. The company has apparently benefitted from a long run commitment to diabetes care, strong values, employee loyalty, and strict governance principles which may have contributed to its success along with the special characteristics of insulin production.

¹ This paper is part of The Research Project on Industrial Foundations at the Center for Corporate Governance, Copenhagen Business School. I am grateful for interviews with chair of Novo Nordisk, Dr. Goran Ando, vice chair of Novo Nordisk Jeppe Christiansen, former CEO of Novo Nordisk Mads Øvlisen, chair of the Novo Nordisk Foundation and former chair of Novo Nordisk Sten Scheibye. Thanks also for helpful comments by Chief Communications Officer Steffen Lüders and Chief of Staff Thomas Alslev, the Novo Nordisk Foundation. I am grateful to Signe Marie Degn for research assistance.

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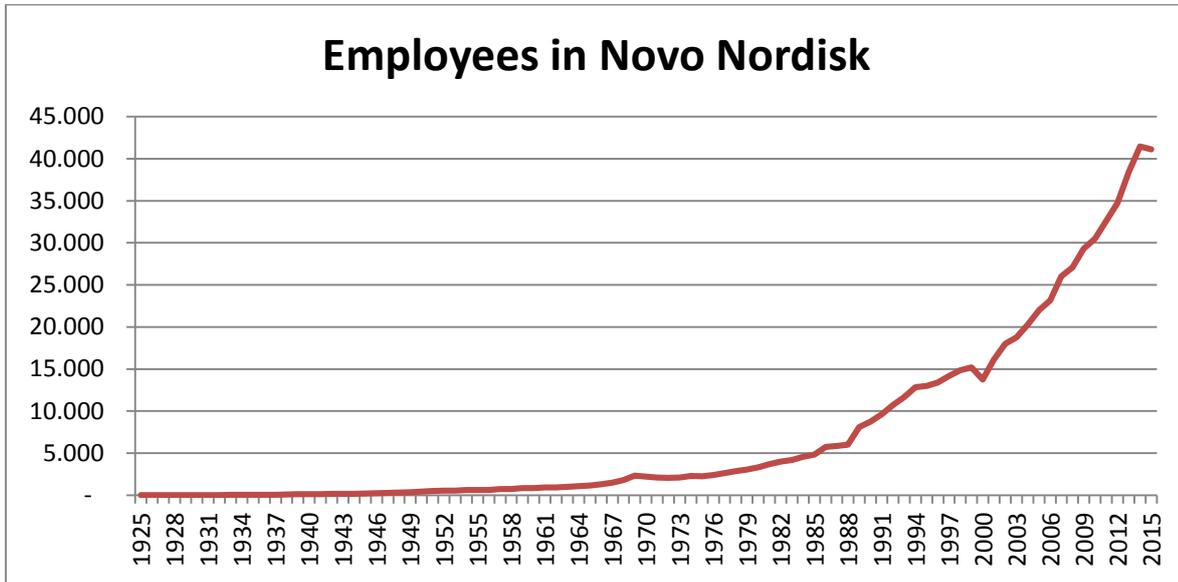
Introduction

Novo Nordisk is a multinational pharmaceutical company headquartered in Denmark. It is a global market leader in diabetes care, but also active in haemophilia, growth disorders and obesity. Novo Nordisk employs approximately 41,000 people in 75 countries. With sales of USD 15 billion it is the World's 17th largest pharmaceutical company.

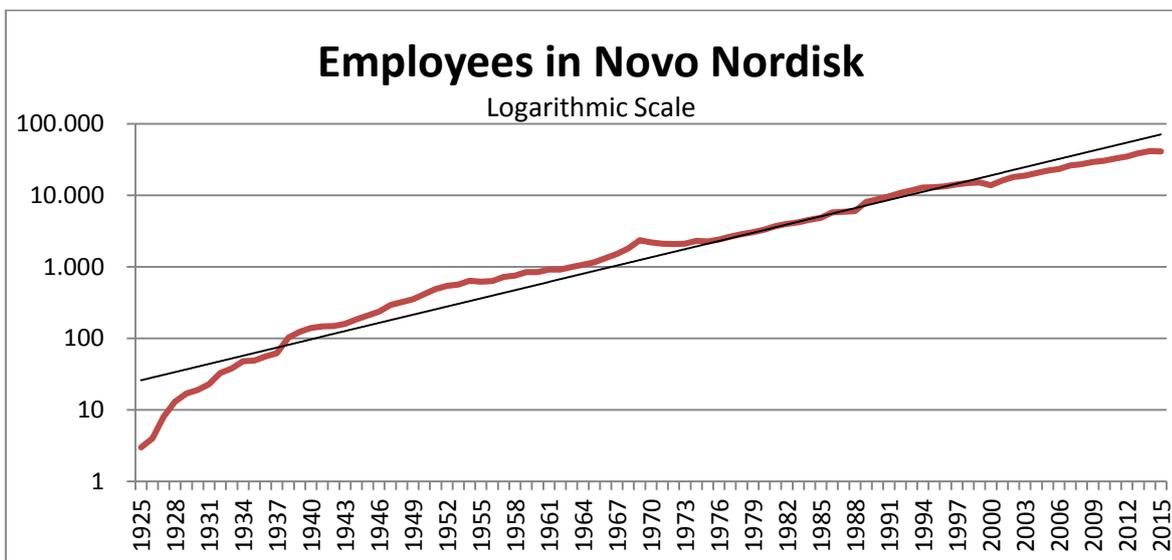
The company's growth has been impressive, for example the number of employees was doubled over the period 2005-2015. For an overview see the timeline below. Much of it has been in a single therapeutic area, diabetes care, which still accounts for the bulk of the company's business and earnings. This is a unique situation, since most other pharmaceutical companies are plagued by constant patent expiration and competition from generic producers. However, it is costly and difficult to produce insulin, and there are economies of scale in production, which shield insulin producers from some of the most intense competition. Insulin production is biological rather than chemical which means that it is more complex and that the production process also needs to be regulated. For new types of insulin production efficiency will increase over time as more efficient strands of yeast are cultivated, and new generations of insulin are regularly brought to the market. For potential imitators and entrants this constitutes significant barriers to entry. Nevertheless, there are several global competitors, including Eli Lilly and Sanofi, and constant product development is necessary to keep up. Novo Nordisk is very research intensive with R&D expenditures of about 15% of sales.

The company Nordisk Insulin started producing in 1923 using methods developed in Canada. The co-founder August Krogh was a Nobel Prize laureate in physiology and the company was thus research-based from the beginning. The company was founded as a non-profit foundation with the aim of helping diabetes patients. Shortly after in 1925 two senior employees broke out to start their own competing business, Novo, which eventually grew to become much bigger than the original company. Eventually, in 1989, the two companies were reunited by merger to Novo Nordisk. Starting in 1941 Novo started producing industrial enzymes, which became a successful business that was spun out to a separate company, Novozymes, in 2000. Similarly, the IT division NNIT was separated out as an independent company in 2015. See the timeline below for more details.

We plot the evolution in company employment in the graph below.



We see that growth after the founding phase – i.e. after the war - has been approximately linear in logarithms which indicates a constant growth rate. In logarithms (see below) there seems to be a slightly concave tendency, indicating that the growth rate levels off over time, but this may well reflect the artificial effect of spinoffs. The jump in 1989 is attributable to merger with Nordisk. The seeming drop in 2000 is due to the spinoff of Novozymes, and the seeming drop in 2015 is due to the spinoff of the IT division NNIT. The long run trend is growth of around 12% a year.



Novo Nordisk Timeline

1923 Nordisk Insulinlaboratorium is founded by Nobel laureate August Krogh, Hans Christian Hagedorn and August Kongsted. Its first insulin Leo is launched.

1925 Novo Terapeutisk Laboratorium is founded by Thorvald and Harald Pedersen, former employees of Nordisk Insulinlaboratorium and August Krogh respectively. Its insulin Novo and Novo Syringe are launched.

1926 Nordisk establishes the Nordisk Insulin Foundation with the object of supporting physiological and endocrinological research and diabetes treatment in Scandinavia.

1936 Nordisk develops a prolonged action insulin by adding protamin.

1941 Novo launches first enzyme product for cleaning hides prior to tanning.

1946 Nordisk develops a neutral insulin with prolonged action based on protamine (NPH).

1951 Harald and Thorvald Pedersen establish the Novo Foundation to support scientific, social and humanitarian causes and to provide the best possible base for the company.

1952. Novo launches microbial enzymes used to remove starch from fabrics in the textile industry.

1953 Novo launches Lente – a long-acting insulin-zinc suspension.

1960 Novo Enzyme is launched for use in the detergent industry.

1969 Medical journal The Lancet questions the safety of enzymes in detergents. Media crisis. Sales drop.

1971 US health authorities determine that detergent enzymes are safe.

1973 Novo introduces Monocomponent (MC) insulin – the purest insulin available.

Nordisk markets growth hormone for the treatment of growth hormone insufficiency.

1974 Novo's B shares are quoted on the Copenhagen Stock Exchange.

1981 Novo becomes the first company in Scandinavia to be quoted on the New York Stock Exchange.

1982 Human Monocomponent insulin is launched – the world's first insulin preparation identical to human insulin.

1985 NovoPen is launched – an injection system with replaceable insulin cartridges.

1989 Nordisk Insulinlaboratorium, the Nordisk Insulin Foundation and the Novo Foundation merge to become the Novo Nordisk Foundation. The objects are to provide a stable basis for the Novo Group's operations and to support scientific causes. Novo Industri A/S and Nordisk Gentofte A/S merge to become Novo Nordisk A/S.

2004 Novo Nordisk's Articles of Association are amended to specify that the company will *"strive to conduct its activities in a financially, environmentally and socially responsible way"*.

2009 Victoza for once-daily treatment of adults with type 2 diabetes is launched in Europe.

2015 NNIT Novo Nordisk IT is spun off .

Purpose

Diabetes care has been the purpose of Novo Nordisk since the formation of Nordisk Insulinlaboratorium as a foundation-owned company. Prices were to be kept as low as possible, at cost. Any profits were to be reinvested in the company or paid out to the foundation, which would use it for research or diabetes care. The foundation board was composed of scientists. Board positions were honorary without fees.

The subsequently founded Novo Foundation was intended to:

“§ 3. ... benefit social humanitarian or scientific goals... and (if necessary) former employees and descendants of the founders...”

“§ 6 take into consideration the interests of company as well as possible.. to secure reasonable dividends for the shareholders .. and to preserve continuity.”

The founders of Novo A/S – Thorvald and Harald Pedersen – endowed the company with what is seen as strong values such as for example taking care of employees and behaving decently. The values are continuously measured, zealously enforced and intensively communicated within the organization. The company has tried to keep a lid on executive compensation and fringe benefits such as luxury cars.

The company developed a company philosophy early on and updates it regularly. In the 1974 annual report, the company’s corporate rationale and Business Policy were stated for the first time (see below).

Corporate Rationale and Business Policy 1974

It is Novo’s Corporate Rationale

- to carry out research with the aim of creating knowledge as a basis for the production, purification, modification and formulation for products and preparations..- principally from animal, vegetable and microbial sources- for use in medicine and in industrially manufactured products and industrial processes thus contributing towards the fulfilment of the society’s needs in these areas

It is Novo’s Business policy

- to market, world-wide, products and preparations, as well as process know-how and equipment, preferably through its own sales channels*
- to operate with such profitability that sufficient financial reserves are secured*
- to remain a company with internationally decentralized activities*
- to remain an independent company prepared to participate in appropriate co-operations*
- to maintain in an optimal organizational structure a company spirit and environment attracting and motivating highly qualified employees*
- to communicate as freely as possible with both employees and the public*
- to have its activities on high ethical standards*

We note the emphasis on research, company spirit, employees, transparency and ethical standards.

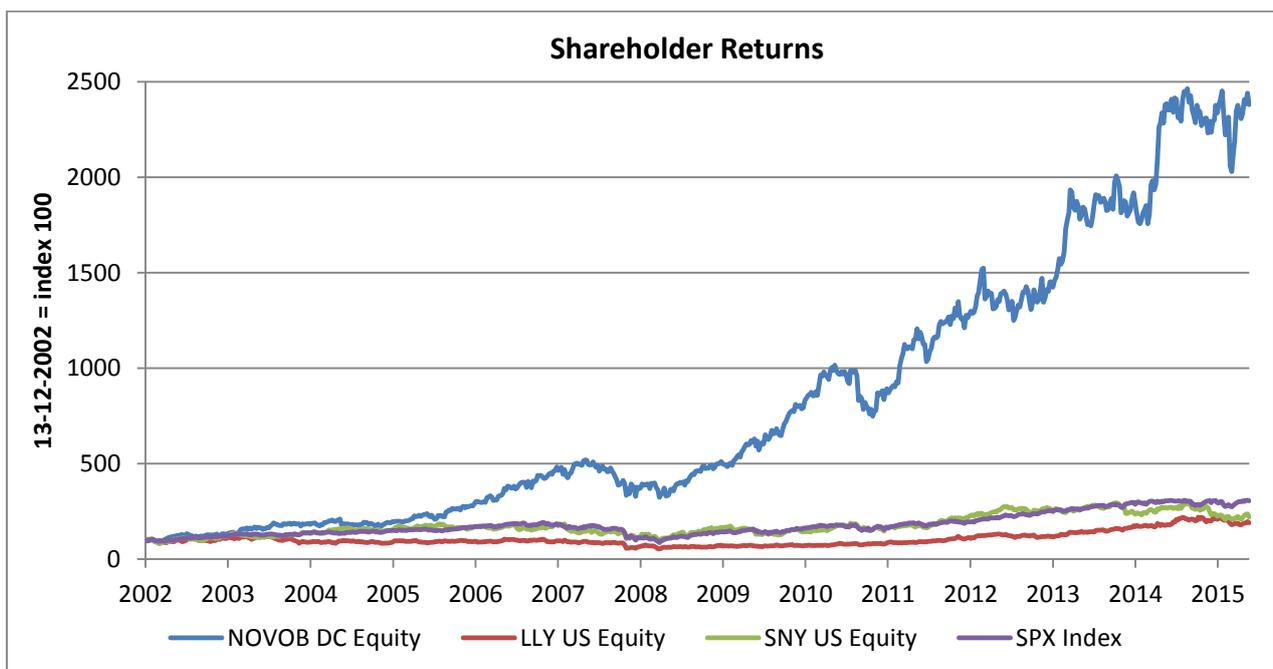
Novo Nordisk believes strongly in values based management that emphasizes the triple bottom line, i.e. that performance should be measured not only in financial terms, but should also include social and environmental performance. Sustainability goals are written into the company's bylaws: *"The Company strives to conduct its activities in a financially, environmentally, and socially responsible way"*. This includes both attention to the environment and to stakeholders like customers and employees. The company usually scores very highly on sustainability rankings.

Social performance is conceived as having three dimensions: improving access to medical treatment and quality to care for patients, offering a healthy and engaging working environment, and providing assurance of responsible business practices. In terms of access, an important part of CSR in Novo Nordisk A/S is a differential pricing policy for the least developed countries as classified by the UN. The purpose of the policy is to offer human insulin in these countries at or below a market price of 20% of the average prices for human insulin in the western world. In 2014, 48 countries were on the UN least developed countries list.

The company produces consolidated financial, social and environmental statements, which assess how it is doing in each of these areas. The environmental report measures consumption of water and energy, carbon dioxide emissions etc. The social report measures employee turnover and company reputation with patients, doctors and other constituencies. In terms of employee satisfaction, Novo Nordisk ranked second in the Science Careers Top Employers Survey in 2014, up from 11th position in 2013.

Financial Performance

Novo Nordisk has performed well financially with a share price that increased more than 20x since the restructuring in 2002. This is better than its main rivals Eli Lilly and Sanofi and better than the S&P 500 in general (see the figure below).



Source: Bloomberg.

In the table below we report key accounting figures and ratios 2005-2015. We observe that the company has trebled in sales during the period, while profit margins and accounting profitability (ROA, ROE) are high and have gone up further. ROA increased from 20% to 40%, for example. Payout ratios are also high and have been increasing from 30% to 50%.

Novo Nordisk A/S Key Financials

USD billion	2005	2006	2007	2008	2009
FINANCIAL PERFORMANCE					
Net sales	5,624	6,515	7,682	8,934	9,538
Operating profit	1,347	1,533	1,642	2,427	2,789
Net profit for the year	977	1,085	1,565	1,892	2,011
Total assets	6,989	7,515	8,765	9,925	10,222
Equity	4,603	5,065	5,910	6,468	6,673
FINANCIAL RATIOS					
Research and development costs ¹	15.10%	16.30%	20.40%	17.20%	15.40%
Gross margin	72.80%	75.30%	76.60%	77.80%	79.60%
Net profit margin	17.40%	16.70%	20.40%	21.20%	21.10%
Equity ratio	65.90%	67.40%	67.40%	65.20%	65.30%
Return on equity	21.70%	22.30%	27.40%	29.60%	31.30%
Cash to earnings	82.40%	73.00%	105.70%	114.20%	114.50%
Payout ratio	33.20%	34.40%	32.80%	37.80%	40.90%
Return on assets	19.28%	20.40%	18.73%	24.45%	27.28%

USD billion	2010	2011	2012	2013	2014	2015
FINANCIAL PERFORMANCE						
Net sales	10,803	12,373	13,459	14,881	15,804	16,044
Operating profit	3,358	4,173	5,084	5,608	6,138	7,350
Net profit for the year	2,560	3,188	3,697	4,484	4,713	5,182
Total assets	10,915	12,066	11,328	12,524	13,714	13,647
Equity	6,571	6,984	7,009	7,580	7,171	6,982
FINANCIAL RATIOS						
Research and development costs ¹	15.80%	14.50%	14.00%	14.00%	15.50%	12.60%
Gross margin	80.80%	81.00%	82.70%	83.10%	83.60%	85.00%
Net profit margin	23.70%	25.80%	27.50%	30.10%	29.80%	32.30%
Equity ratio	60.20%	57.90%	61.90%	60.50%	52.30%	51.20%
Return on equity	39.60%	46.00%	54.90%	60.50%	63.90%	79.90%
Cash to earnings	118.10%	105.90%	87.00%	88.80%	103.50%	98.20%
Payout ratio	39.60%	45.30%	45.30%	47.10%	48.70%	46.60%
Return on assets	30.77%	34.58%	44.88%	44.77%	44.76%	53.86%

¹Percentage of sales

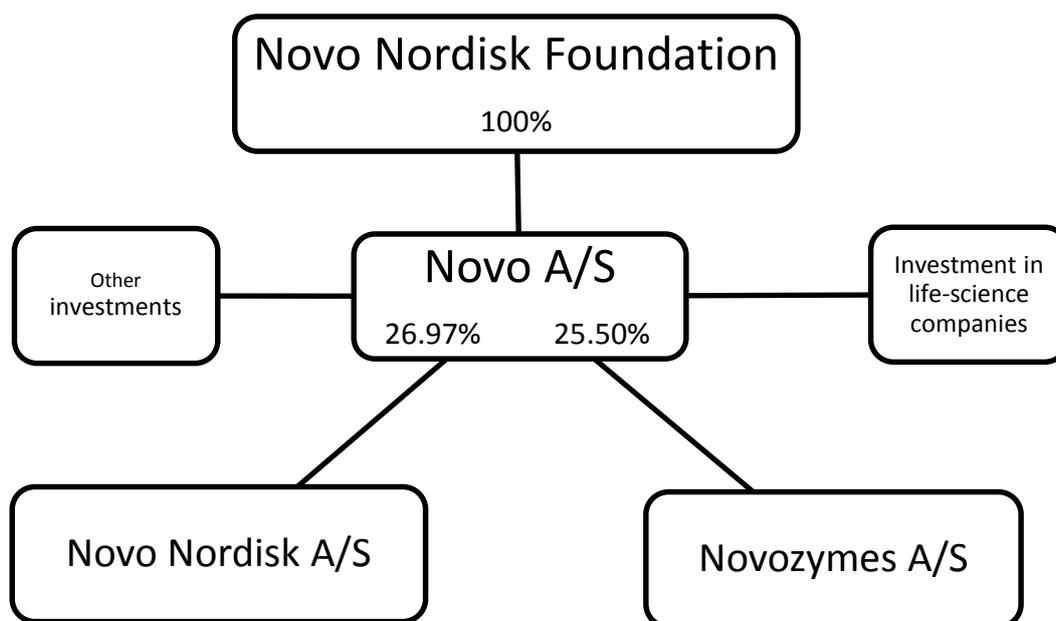
Source: Novo Nordisk Annual Report 2014 and Novo Nordisk Annual Report 2009

Source: www.novonordisk.com

Ownership

We reproduce the ownership structure of the Novo Group in the figure below.

The Novo Nordisk foundation is the owner of the holding company Novo A/S 100 %. Novo A/S is seen as the foundation's financial branch which takes charge of business activities. The foundation itself is mainly concerned with philanthropy.



Note: As of 31.12.2015 Novo A/S owns 26.97% of Novo Nordisk A/S (equal to 74.47% of votes) and 25.50% of Novozymes A/S (equal to 70.73% of votes).

Source: www.novonordisk.com

The holding company Novo A/S holds a majority of the votes in Novo Nordisk which makes Novo Nordisk a controlled company. It also controls the sister company Novozymes. In addition it has substantial financial assets which are invested partly in venture capital and life science companies and partly in other assets.

The Novo Nordisk Foundation

The Novo Nordisk Foundation was founded by merger of the Novo and Nordisk Insulin foundations in 1989. It is described as an independent foundation with corporate interests (or what some researchers call an “industrial foundation”). The holding company Novo is the foundation’s financial branch. The Novo Nordisk Foundation awards grants while its fully owned subsidiary, Novo A/S, manages the Foundation’s commercial activities. Besides a controlling interest in Novo Nordisk A/S and Novozymes A/S, Novo invests in life science venture capital, stocks and other assets. The Novo Nordisk Foundation primarily awards grants for research within biomedicine, biotechnology and general practice. The grants are primarily financed through the dividends from Novo A/S. In 2014, the Foundation awarded grants worth of 180 million USD. The Foundation’s objectives are:

- 1. To provide a stable basis for the commercial and research activities conducted by the companies in the Novo Group;*
- 2. To support physiological, endocrinological and metabolic research and other medical research;*
- 3. To contribute to the continuing operation of the research hospital of Novo Nordisk A/S and*
- 4. To support other scientific endeavours and humanitarian and social purposes*

Recently, in 2016, the foundation has announced a new charitable strategy. In 2016, the Foundation will increase donations to about DKK 2 billion (€268 million) or double the nearly DKK 1 billion (€134 million) paid out by the Foundation in 2015. The Board has established guidance that allows the Foundation to donate up to 4% of its accessible assets per year.

The split of Novo Nordisk and Novozymes reduced the overlap between the Foundation and the operating companies by establishing separate boards for the new entities.³

Novo A/S

Novo A/S is the 100% owned holding company of the Novo Nordisk Foundation. Its rationale is to administer the assets of the Novo Nordisk Foundation.

Novo A/S was founded in 1999 prior to the demerger of Novo Nordisk A/S and it is fully owned by the Novo Nordisk Foundation. Besides managing the Foundation’s endowment and its controlling interests in Novo Nordisk A/S and Novozymes A/S, it provides seed and venture capital to development stage companies as well as investment in stock and bonds more generally. In 2015 Novo A/S posted a net profit of 2.16 billion \$ on free reserves of roughly 9 billion \$ and total assets of 57 billion \$ (total assets including the value of Novo Nordisk and Novozymes stock). The foundation has diversified its portfolio and dividends from Nordisk accounted for only 1/3 of its profits in 2015.

Novo’s “Novo Seeds” branch provides pre-seed grants, seed investments as well as scientific and commercial support to promising early-stage life science projects. The *Novo Ventures* branch invests in

³ <http://www.novonordiskfonden.dk/en/content/history-novo-nordisk-foundation>

promising life science companies – private or public. Novo Finance is the group's financial investment branch.

Novo's large investments are targeted towards well-established science companies that have positive cash flow, strongly positioned products and attractive prospects. The goal is *"to create value through active support and long-term ownership"*. These include stakes in Chr. Hansen Holding A/S, Inogen, Orexo AB, Sonion, Symphogen A/S, Veloxis Pharmaceuticals A/S and Xellia Pharmaceuticals.

The Novo Group's charter commits companies in the group to

- deliver products and services that make a significant difference in improving the way people live and work.
- be perceived as innovators – in technology, in products, in services and/or in market approach.
- be among the best in its business and challenging places to work.
- deliver competitive financial performance.
- value-based management.
- open and honest dialogue with its stakeholders.
- continuous improvement of financial, environmental and social performance.
- reporting in accordance with relevant, internationally approved, conventions.

Novo's stated mission is

- to ensure that the Foundation receives sufficient dividends to cover its grants.
- to ensure that the Foundation obtains a competitive return on its holdings in Novo Nordisk A/S and Novozymes A/S as well as other companies and financial assets.
- to actively support the individual company in achieving its own goals, including competitive financial results.
- to expand the business areas of the Novo Group according to the Foundation's vision, which is to make a significant contribution to research and development aimed at improving human health and welfare.
- to support the application of life sciences by investing in seed and venture portfolio companies.
- to maintain the 'Charter for companies in the Novo Group'.

Governance

Novo A/S represents the interests of the Novo Nordisk Foundation through participation on the boards of the companies in the Novo Group.

Although Novo owns about 70% of the votes in Novo Nordisk, it seeks to take into consideration the interests of the minority shareholders and exercise its ownership in an unobtrusive manner. The Novo Nordisk Foundation and Novo together aim to hold only a few seats on the Board of Directors of Novo Nordisk and two out of nine in the case of Novozymes. Decision power is delegated to the companies. Consequently, the boards of Novo Nordisk and Novozymes can act without having to seek approval from the main shareholder for programs, projects, budgets, etc.

It is a guiding principle that a director cannot be elected to more than two of the three bodies in the Group: The Foundation, Novo A/S, and the operating companies. This ensures what Hansmann and Thomsen (2013) call managerial distance between the foundation and its subsidiaries. At each level, there are checks, balances and independent supervision.

On the **Novo Nordisk board** (reproduced in Appendix 1) we note that the chair and vice chair, Goran Ando and Jeppe Christiansen, are members of the board of the holding company, Novo A/S. In addition, the CEO of the holding company Novo may also be a board member, but this position is currently vacant. Only one of eight shareholder-elected board members is Danish. Five are women. A majority - Six - have a background in pharmaceutical companies. The chair is a medical doctor with extensive experience in the management of pharmaceutical companies. As is mandatory by Danish company law for this size of board, three board members are elected by the employees. Two of them have relevant academic degrees and managerial experience.

From an international perspective it is noticeable that none of the **executives** (listed in appendix 2) are board members, but this follows the standard two tier board structure normally used in Denmark. The executive board is less international (and more Danish) than the supervisory board. In 2015, the Harvard Business Review selected Lars Rebien Sørensen as the world's top-performing CEO, in part for the impressive growth and financial performance of the company and in part for his deep engagement with social and environmental issues. He has been CEO of the company since 2000 – an impressively long period and he has been with the company since 1982. High stability is characteristic of foundation-owned companies and may contribute to their performance.

Two members of the **board of Novo A/S** (appendix 3) also sit on the board of the subsidiary company Novo Nordisk and another two also sit on the board of the foundation. We observe that the former chairman of Novo Nordisk Sten Scheibye chairs the board of Novo A/S as well as the board of the Novo Nordisk Foundation (see the foundation board composition below). Steen Risgaard, vice chair of the foundation, is also a board member of the holding company Novo. Goran Ando, the chair of Novo Nordisk is an ordinary member of the holding company board. Jeppe Christiansen, vice chair of Novo Nordisk, is likewise a board member. Per Wold-Olsen – the only non-group board member of the holding company Novo A/S - is an experienced pharmaceutical executive. The executive management at Novo A/S is currently vacant following the dismissal of the CEO and resignation of the CFO.

On the **board of the Novo Nordisk foundation** (appendix 4) the chair and vice chair Sten Scheibye and Steen Risgaard also sit on the board of the foundation's holding company Novo A/S. Both have considerable experience in the Group. Sten Scheibye is the former chair of Novo Nordisk. Steen Risgaard joined Novo Nordisk in 1982 and served as CEO of Novozymes – the sister company – 2000-2013. The CEO and two of the board members – Bo Ahrén and Lars Fugger – are doctors of medicine and have considerable research experience. The chairman also holds a Ph.D. Their expertise is highly relevant in assessing proposals for the foundation's large R&D donations, which are mostly given to universities. Other members include a lawyer and an economist with no prior relationship to the Group and three well educated employee representatives.

Below we chart board overlaps in the Novo Group. As is evident, most board members are only represented at one level, but the foundation is represented with two board members in the holding company, Novo A/S, which is again represented with two members in Novo Nordisk. Only one board member – an employee representative – sits on both the Novo Nordisk and the foundation board.

Board overlaps in the Novo Group

Note: X: Shareholder elected, Y: Employee representatives.

	Novo Nordisk Foundation Board of Directors	Novo A/S Board of Directors	Novo Nordisk A/S Board of Directors	Novo Nordisk Executive Management
Sten Scheibye	X	X		
Steen Riisgaard	X	X		
Bo Ahrén	X			
Karsten Dybvad	X			
Lars Fugger	X			
Marianne Philip	X			
Désirée J. Asgreen	Y			
Lars Bo Kjøppler	Y			
Göran Ando		X	X	
Jeppe Christiansen		X	X	
Per Wold-Olsen		X		
Bruno Angelici			X	
Liz Hewitt			X	
Thomas Paul Koestler			X	
Sylvie Grégoire			X	
Mary Szela			X	
Anne Marie Kverneland	Y		Y	
Søren Thuesen Pedersen			Y	
Stig Strøbæk			Y	
Liselotte Hyveled			Y	
Lars Rebién Sørensen				X
Jesper Brandgaard				X
Maziar Mike Doustdar				X
Lars Fruergaard Jørgensen				X
Jerzy Gruhn				X
Jesper Høiland				X
Jakob Riis				X
Mads Krogsgaard Thomsen				X
Henrik Wulff				X

Incentives

Executives at Novo Nordisk are incentivized both with bonuses and share allocations that account for more than half of their overall compensation. See the table below. In addition they have shareholdings which also make their overall wealth sensitive to the company's stock price. A 1/3 increase in the stock price would yield an income equivalent to their total remuneration.

Executive Remuneration 2015 USD Million							
	Fixed base salary	Cash bonus	Pension	Benefits	Total	Shares allocated ¹ Market value	Total Shareholdings Market value
Lars Rebien Sørensen	1.576	1.576	0.788	0.045	3.984	2.438	23.324
Jesper Brandgaard	0.892	0.595	0.372	0.045	1.903	1.620	11.075
Lars Fruergaard Jørgensen	0.773	0.520	0.327	0.045	1.665	0.818	6.021
Jakob Riis	0.773	0.416	0.297	0.045	1.531	0.818	5.039
Mads Krogsgaard Thomsen	0.892	0.595	0.372	0.045	1.903	1.620	16.665
Retired executives total	2.051	1.784	0.922	0.119	4.876	2.438	12.472
Executive Management total	7.329	5.679	3.226	0.357	23.131	9.752	74.596
Other members of the Senior Management Board in total	10.867	3.062	3.300	2.720	25.569	10.495	41.684

¹ Shares allocated in 2015 from the long-term incentive program. Source:

<http://www.novonordisk.com/content/dam/Denmark/HQ/Commons/documents/Novo-Nordisk-Annual-Report-2015.PDF> p. 51

The overall compensation level seems relatively high for a Danish company, but is modest in international comparison

In contrast to the executives, members of the board of directors receive a fixed annual fee plus fees for extra committee work. See the table below.

Remuneration of the Board of Directors in 2015 USD Million						
	Fixed base fee	Fee for ad hoc tasks and committee work	Travel allowance	Total	Shareholdings	
Göran Ando ^{2,3}	0.253	-	0.015	0.268	0.773	
Jeppe Christiansen	0.178	0.045	-	0.223	0.208	
Bruno Angelici	0.089	0.015	0.015	0.119	0.149	
Sylvie Grégoire ¹	0.074	0.030	0.030	0.134	0.045	
Liz Hewitt	0.089	0.104	0.015	0.208	0.164	
Liselotte Hyveled	0.089	0.015	-	0.104	0.297	
Thomas Paul Koestler	0.089	0.015	0.030	0.134	1.070	
Eivind Kolding ^{1 2}	0.089	-	-	0.074	0.223	
Anne Marie Kverneland	0.089	-	-	0.089	0.624	
Søren Thuesen Pedersen	0.089	0.015	-	0.104	0.089	
Stig Strøbæk	0.089	0.030	-	0.134	0.119	
Mary Szela ¹	0.074	0.015	0.0297315	0.134	0.059	
Total⁴	1.308	0.342	0.164	1.814⁵	3.821	

1. Sylvie Grégoire, Eivind Kolding and Mary Szela were first elected in March 2015 2. Novo Nordisk provides secretarial assistance to the chair in Denmark and the U.K. 3. As Göran Ando also holds the position of chair of the Board, he has not received a fee as chair of the Nomination Committee and the Remuneration Committee. 4. Total also includes remuneration (\$0.178) of Helge Lund and Hannu Ryöppönen who resigned as of March 2015. 5. Excluding social security taxes paid by Novo Nordisk amounting to less than DKK 1 million. 2. Eivind Kolding was dismissed as CEO of Novo A/S in January 2016 has left the board of Novo Nordisk.

Source: <http://www.novonordisk.com/content/dam/Denmark/HQ/Commons/documents/Novo-Nordisk-Annual-Report-2015.PDF> p. 49 and p. 90

What drives the company's success?

It is difficult to escape the impression that Novo Nordisk is a success financially as well as socially.

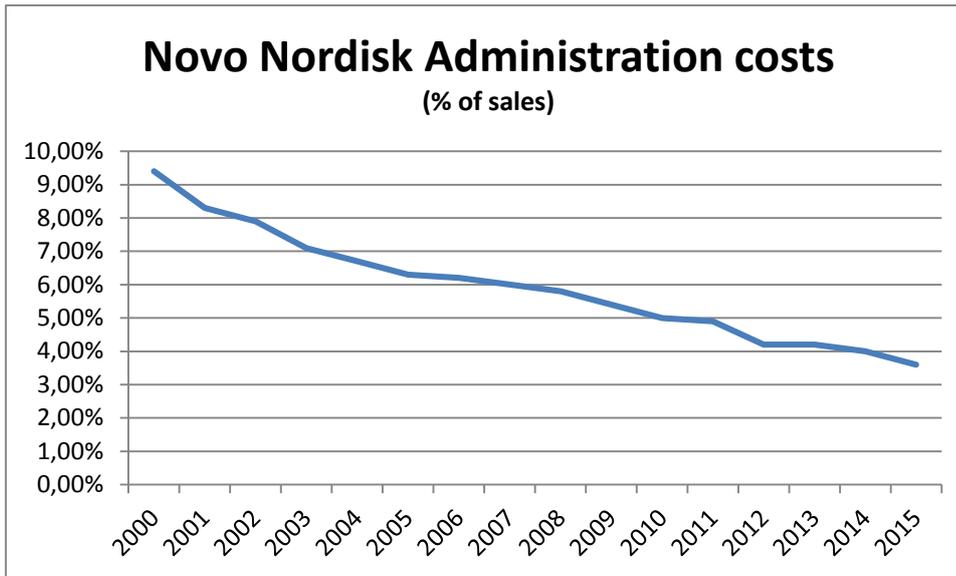
Obviously, this success cannot be attributed solely to foundation ownership. There are many foundation-owned companies, and Novo Nordisk is doubtlessly one of the best. There is no guarantee that its impressive performance will continue in the future. What we can say however is that foundation ownership somehow enabled the company to succeed, and it seems worthwhile to consider how.

Firm Commitment. As stressed by Colin Mayer (2013) foundation ownership may support long-term commitment to the business or social mission of a company. Novo Nordisk has been committed to a single therapeutical area, diabetes care, and a single drug, insulin, since it was founded. However, product development and new generation insulin have gradually replaced older products. The original animal insulin was replaced by human insulin which is currently being replaced by insulin analogues and new generation insulin. When larger pharmaceutical companies waived and lost their focus, the commitment of Novo Nordisk to diabetes care has allowed it to gain market share. The same was observed on a smaller scale with growth hormones in which the company captured market share from competitors that lost focus.

The commitment to diabetes care is deeply rooted in the organization and was maintained even at times when top management was considering avenues for diversification to new products. There was always enough momentum to ensure product development. This turned out to be fortunate given the global diabetes epidemic.

The quality management principle of “continuous improvement” appears to have blended harmoniously into this enduring commitment. A series of small and large improvements – for example the synthesizing of human insulin, the Novo pen for self-inoculations by patients, or establishing its own sales force in the US – has allowed the company to stay abreast of competition. Without this constant innovation, the company would have lost out, but it is also clear that success rates in incrementally developing new insulin products are substantially higher than in entering new therapeutical areas. The advantages of focus - or single-mindedness – are evident not only in the substantial R&D effort in diabetes but also in production. The bulk of its manufacturing takes place in a single, high cost location in Denmark, although there are also factories in 8 other countries around the world, including a recent 2 billion \$ investment in Clayton, North Carolina.

A strong corporate culture is evident in the company's commitment to value based management. Key values are written down, extensively communicated and widely shared in the organization. For example, a large majority of the workforce will agree that the overall purpose is fighting diabetes. It is difficult to quantify what this means for competitiveness, but one of the potential benefits has been the ability to put a lid on administration costs in a rapidly growing organization. Administration costs have declined relative to sales (cf the graph below), and this has contributed to higher profit rates. One reason may be that shared values enable alignment and coordination with fewer bureaucratic controls, although economies of scale doubtlessly also play a role.



Source: Novo Nordisk Annual Reports

Another potential advantage of strong values may have been relative immunity to the overconfidence that may accompany financial success. Pay has been kept at modest levels, and the company has largely avoided conflicts with regulators. When CEO Lars Rebien was asked to comment on being the best CEO in the world, he responded that he had been lucky and that “at home I am just Lars”.

The values appear to be rooted in Danish culture since the majority of senior managers are Danes and have worked together for a long time. But they are also discussed with employees of international subsidiaries and endorsed by them. An informal and decentralized Scandinavian management style is practiced throughout the organization. For the company’s long-term development, the diversity of senior management will no doubt have to increase, if it is to grow into a global multinational corporation. At present, the homogeneity of the top management team is balanced by a very international board.

The advantages of commitment might have been less pronounced if the company had been more exposed to patent expiry and disruption. However, the company has been able to renew itself, for example by fairly recently capturing a greater share of the all-important US market (see below).

Spinoffs. To be sure, the allure of diversification has been ever present in the company’s history – enzymes, growth hormones and more recently obesity treatment or an independent IT business – presented new business opportunities. In two cases – Novozymes and NNIT – these opportunities were captured by spinning off separate (and successful listed companies). Dividends generated by Novo Nordisk and Novozymes have also enabled the Novo Group to diversify at the holding company level through acquisitions and venture capital investment in life science companies.

Social Responsibility. The prevailing view in the company is that social responsibility is tantamount to long-run value creation although there may be short-term tradeoffs. The company is well aware that its grand mission of curing diabetes would make Novo Nordisk superfluous if it is every accomplished. Nevertheless, it continues push forward with research and development to do just that, and this continuous striving pushes the company to be at the forefront of the technological developments. It also supplies a large part

of the world with low-cost insulin on an essentially non-profit basis, which both supports its grand mission and provides the company with a toehold in some of tomorrow's growth markets. While the company does occasionally lay off employees in exceptional circumstances, effective lifetime employment appears to be the general rule. This helps reinforce the strong culture mentioned above.

Within the company, Novo Nordisk's CSR effort is believed to have paid off most clearly in the loyalty and passion of its workforce. The long tenure of key employees helps to maintain a coherent corporate culture and to avoid excesses of executive compensation, corruption and the like - despite the company's success. Retention is high and recruitment costs are low.

In contrast, customers appear to know less about the company's CSR profile, but are highly influenced by learned intermediaries (doctors), who value the company's professional commitment to insulin and other drugs rather than its CSR profile. The strong CSR orientation appears not to create any special goodwill or advantage among public authorities. Neither does the company's sense of social responsibility preclude it from influencing political processes. It is active in Washington, Brussels and Copenhagen.

However, CSR is believed to be important in creating overall confidence in the company, which was essential in obtaining permission to produce genetically engineered insulin. Early on, consumer protests led by Ralph Nader against enzymes in detergents were a strong demonstration of the costs of a breakdown in confidence. Investments in good stakeholder relations may be seen as acquiring a license to operate, but former CEO Mads Øvlisen is adamant that this quid-pro-quo logic is insufficient and instead argues that the company should be responsible because this is "the right thing to do".

The strong CSR orientation may be said to be part of a Scandinavian management style, and the symbiosis with Danish society may have been an important success driver in other respects. Donations by the Novo Nordisk Foundation to Danish universities stimulate the Danish research environment in life science and its venture capital investment has helped Danish biotech off the ground. Both have in turn provided a broader pool of qualified employees for the company and alerted policy makers to the company's priorities.

Good Governance. The Novo Group maintains what Hansmann and Thomsen (2013) term "managerial distance" which they find to be positively associated with company performance. At each level – foundation board, holding company board and company boards – a majority of board members are independent of its majority owner. Nevertheless, there is some overlap so that the majority owner is represented with a couple of board members or executives in the subsidiaries, which facilitates monitoring and information flows. Obviously, this inside information locks in the parent company and prevents it from trading the company's stock to avoid insider trading. However, as a perpetuity shareholder, the holding company, Novo A/S, only trades its shares in exceptional circumstances.

A single individual is normally represented at maximum two levels in the Group, which provides additional checks and balances to avoid unfettered power. There is also a mix between group insiders – i.e. former executives and board members in the Novo Group – and independent directors with no such experience. The insiders are believed to assure continuity with the Group's values and standards, which are formalized for example in The Novo Group charter and the Novo Nordisk Way of Management.

Continuity and longtermism is evident in the long tenure of top managers like the CEO Lars Rebien, CFO Jesper Brandgaard and Chief Research Officer Mads Krogsgaard. However, lifetime employment does not

appear to extend to this group. The long standing vice CEO of Novo Nordisk, Kaare Schultz, the CSR and HR top manager Lise Kingo and Novo's recently appointed CEO Eivind Kolding were all fired in recent years albeit with lucrative pay packages.

Having listed subsidiaries ensure an alternative monitoring that can alert the group to potential problems. Substantial donations by the foundation and diversification at the holding company level imply that not all funds are reinvested in the company and that there are in fact opportunity costs of capital. This may have helped foster more efficient use of capital in the company.

References

Almind, Gert and Jan Lindsten. 2011. Novo Nordisk Fondens Historie. Funderinger.

Hansmann, Henry and Thomsen, Steen Managerial Distance and Virtual Ownership: The Governance of Industrial Foundations (March 2013). SSRN: <http://ssrn.com/abstract=2246116>.

Mayer, Colin. Firm Commitment. Oxford University Press. Oxford 2013.

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Appendix 1 Novo Nordisk A/S Board of Directors 2016

Göran Ando	Chairman and Doctor of Medicine. Chairman of the board of Symphogen A/S. Member of the board of Novo A/S, Molecular Partners AG, EUSA Pharma Ltd. and ICMEC. Former CEO of Celltech Group plc and former executive vice president of Pharmacia (Pfizer)
Jeppe Christiansen	Vice chairman and MSc in Economics. Vice chairman of Haldor Topsøe A/S and member of the boards of Novo A/S, KIRKBI A/S and Symphogen A/S. CEO of Maj Invest A/S
Bruno Angelici	BA in Business Administration, degree in Law, MBA and AMP. Chairman of the board of Vectura Group plc and member of the board of Smiths Group plc, the Supervisory Board of Wolters Kluwer and the Global Advisory Board at Takeda Pharmaceutical Company Limited. Former executive vice president of AstraZeneca
Liz Hewitt	BSc in Economics and Chartered Accountant FCA. Member of the boards of Savills plc and Melrose Industries plc. Former Group Director Corporate Affairs for Smith & Nephew plc
Thomas Paul Koestler	Bachelor of Science in Biology and PhD in Medicine & Pathology. Chairman of the board of Melinta Therapeutics Inc. Member of the boards of Momenta Pharmaceuticals Inc., ImmusanT Inc., Arisaph Pharmaceuticals Inc. and Edgemont Pharmaceuticals LLC. Executive with Vatera Holdings LLC and former president of Schering-Plough Research Institute
Sylvie Grégoire	Pharmacy Doctorate degree, BA in Pharmacy and Science College degree. Member of the board of Falenica AG, Perkin Elmer Inc. Chairman of the strategic committee of Tarix Orphan LLC. Former president of Human Genetic Therapies Shire PLC, former executive chairman of IDM Pharma Inc., former CEO of GlycoFi Inc. and former executive vice president of Technical Operations in Biogen Inc.
Mary Szela	MBA and nursing degree. Member of the boards of Coherus Biosciences Inc., Receptos Pharmaceuticals Inc., Aegerion Pharmaceuticals Inc. and Suneva Medical Inc. CEO of Aegerion Pharmaceuticals Inc. and former CEO of Melinta Therapeutics Inc.
Anne Marie Kverneland	Employee representative. Degree in medical laboratory technology. Employee-elected member of the board of Novo Nordisk Foundation. Joined Novo Nordisk A/S as a laboratory technician and is currently a full-time shop steward
Søren Thuesen Pedersen	Employee representative. BSc in Chemical Engineering. External Affairs Director in Quality Intelligence at Novo Nordisk A/S
Stig Strøbæk	Employee representative. Diploma as an electrician. Joined Novo Nordisk A/S as an electrician and is currently working full-time as a shop steward
Liselotte Hyveled	Employee representative. Master of Science and Master of Medical Business Strategies. Project Vice President for the Falster-acting insulin aspart and Prandial BioEdge projects at Novo Nordisk A/S

Appendix 2 Novo Nordisk A/S Executive Management 2016

Lars Rebien Sørensen	President & CEO. MSc in Forestry and BSc in International Economics. Vice chairman of the board of Carlsberg A/S
Jesper Brandgaard	Executive Vice President and CFO. MSc in Economics and Auditing and MBA. Chairman of the boards of SimCorp A/S and NNIT A/S
Maziar Mike Doustdar	Executive Vice President, Novo Nordisk International Operations. BA in International Business
Lars Fruergaard Jørgensen	Executive Vice President, Corporate Development. MSc in Finance and Business Administration. Chairman of the board of NNE Pharmaplan A/S
Jerzy Gruhn	Executive Vice President, Novo Nordisk Europe. MSc in Biology
Jesper Høiland	Executive Vice President, Novo Nordisk USA. MSc in Management
Jakob Riis	Executive Vice President, China, Pacific & Marketing. MSc in Forestry. Chairman of the board of Copenhagen Institute of Interaction Design and member of the board of ALK-Abéllo A/S
Mads Krogsgaard Thomsen	Executive Vice President and CSO. DVM, PhD and DSc and has served as adjunct professor of pharmacology. Chairman of the board of Steno Diabetes Center A/S and member of the board of the University of Copenhagen and of the editorial board of international, peer-reviewed journals
Henrik Wulff	Executive Vice President, Novo Nordisk Product Supply. MSc in Industrial Management and Engineering. Chairman of the board of Novo Nordisk Pharmatech A/S and member of the boards of NNE Pharmaplan A/S and Ambu A/S

Appendix 3. Novo A/S Board of Directors 2016

Sten Scheibye	Chairman and PhD in Organic Chemistry, MSc in Chemistry and Physics and a BComm. Chairman of the board of the Novo Nordisk Foundation, the Danish Industry Foundation, the Rich. Müller Foundation, RMIG A/S and the Knud Højgaard's Foundation. Former CEO of Coloplast A/S
Göran Ando	Doctor of Medicine. Chairman of the board of Novo Nordisk A/S and Symphogen A/S and member of the board of Molecular Partners AG, EUSA Pharma Ltd. and ICMEC. Former CEO of Celltech Group plc and former executive vice president of Pharmacia (Pfizer)
Jeppe Christiansen	MSc in Economics. Vice chairman of the board of Novo Nordisk A/S and a member of the boards of Haldor Topsøe A/S (vice chairman), Kirkbi A/S and Symphogen A/S. CEO of Maj Invest A/S
Steen Riisgaard	MSc in Microbiology. Chairman of the boards of ALK-Abello A/S, Cowi A/S, Egmont International Holding A/S and Xellia Pharmaceuticals A/S. Chairman of WWF (the World Wildlife Fund) Denmark, vice chairman of the boards of the Novo Nordisk Foundation and the Villum Foundation. Serves on the board of Aarhus University, Corbion and VKR Holding. Former CEO of Novozymes A/S
Per Wold-Olsen	MBA in Economics Administration and in Management and Marketing. Chairman of the board of GN Store Nord A/S and of Medicines for Malaria Venture. Serves on the board of Exiqon A/S and Gilead Sciences Inc. President of the Human Health Intercontinental Region, Merck & Co. Inc.

Appendix 4. Novo Nordisk Foundation Board of Directors 2016

Sten Scheibye	Chairman. PhD in Organic Chemistry, MSc in Chemistry and Physics and a BComm. Chairman of the board of Novo A/S, the Danish Industry Foundation, the Rich. Müller Foundation, RMIG A/S and Knud Højgaards Foundation. Former CEO of Coloplast A/S
Steen Riisgaard	Vice chairman. MSc in Microbiology. Chairman of the boards of ALK-Abello A/S, Cowi A/S, Egmont International Holding A/S and Xellia Pharmaceuticals A/S. Chairman of WWF (the World Wildlife Fund) Denmark, vice chairman of the Villum Foundation. Serves on the Board of Aarhus University, Corbion, Novo A/S and VKR Holding. Former CEO of Novozymes A/S
Bo Ahrén	Doctor of Medicine. Chairman of the Novo Nordisk Foundation's Nordic Research Committee and the Exploratory pre-seed committee, Member of the Novo Nordisk Foundation's price committee and the Committee for Novo Nordisk Foundation Laureate Research Grants. Active researcher within the field of diabetology and elected to the board as a representative of medical research
Karsten Dybvad	MSc in Economics. Chairman of the board of Copenhagen Business School and member of the board of PensionDanmark. CEO of the Confederation of Danish Industry
Lars Fugger	Doctor of Medicine. Chairman of the Committee on Medical and Natural Science Research and member of the Novo Nordisk Laureate Research Grant Committee and the Committee on the Novo Nordisk Foundation Challenge Programme. Elected to the board as a representative of medical research
Marianne Philip	Law degree. Chairman of the boards of Scan Office A/S, Danish Committee for Good Governance of Foundations and Gerda & Victor B. Strands Fond. Member of the boards of Bitten and Mads Clausens Foundation, Codan A/S, Codan Forsikring A/S, Nordea Invest, Brenntag Nordic A/S, Copenhagen Municipality Trade Council and Duke University, Law School. Adjunct professor at the Center for Corporate Governance and partner in Kromann Reumert
Désirée J. Asgreen	Employee representative. MSc in Engineering. Project director at Novo Nordisk A/S
Anne Marie Kverneland	Employee representative. Degree in medical laboratory technology. Employee-elected member of the board of Novo Nordisk A/S. Joined Novo Nordisk A/S as a laboratory technician and is currently a full-time shop steward at Novo Nordisk A/S
Lars Bo Kjøppler	Employee representative. Food technician and qualified lead auditor in food, food safety and quality management. Employee representative on the board of Novozymes A/S. Shop steward for technicians at Novozymes A/S

Novo Nordisk Foundation CEO 2016	
Birgitte Nauntofte	CEO. Dentist (DDS), PhD and Dr. Odont. Vice chairman of the board of Steno Diabetes Center and former chairman of the board of the Kennedy Center and former member of the board of the Danish Pharmaceutical University. Former vice dean at the Faculty of Health Sciences and former professor of Clinical Oral Physiology at University of Copenhagen. Several board memberships related to research evaluation