

A list of Working Papers on the last  
pages

No. 107

**The Largest Nordic Manufacturing Companies**

by

Lars Oxelheim

This is a preliminary paper. It is intended for private circulation,  
and should not be quoted or referred to in publications without  
permission of the authors. Comments are welcome.

December, 1983



# **THE LARGEST NORDIC MANUFACTURING COMPANIES**

by Lars Oxelheim, IUI

## **CONTENTS**

	<u>Page</u>
<b>1 INTRODUCTION</b>	<b>2</b>
<b>2 DEFINITIONS AND DATA PROBLEMS</b>	<b>2</b>
<b>3 THE LARGEST NORDIC MANUFACTURING COMPANIES - DISTRIBUTIONS OF SIZE AND ACTIVITY</b>	<b>3</b>
3.1 Danish Manufacturing Companies	6
3.2 Finnish Manufacturing Companies	8
3.3 Norwegian Manufacturing Companies	11
3.4 Swedish Manufacturing Companies	14
<b>4 STRUCTURAL DIFFERENCES - A COMPARISON</b>	<b>18</b>

## 1 INTRODUCTION

Today industry in most countries finds itself in the midst of a rapid process of structural change. New competitors have emerged and demand for many existing products has declined. To survive - integration and diversification have evolved as key strategies. Moreover, turbulence in the international capital and foreign exchange markets since the middle 70s has increased uncertainty associated with business and finance.<sup>1</sup> Companies based in small open, often regulated, economies like those in the Nordic countries might be extra sensitive to this new risk. The way of handling the situation, at the company level, might cause structural changes expressed in the degree of internationalization and concentration at an aggregate level. One effect of the increased uncertainty may be a tendency to take advantage of economies of scale in the banking and financial dimensions. Firms tend to grow larger as financial organizations to reduce their exposure.<sup>2</sup> This is one reason for us to be specially interested in the population of large firms in the Nordic countries. It is a necessary background for evaluating their efforts to cope with the new business environment.

## 2 DEFINITIONS AND DATA PROBLEMS

To be classified as manufacturing companies in this study, more than 50 per cent of revenues has to originate from manufacturing. Furthermore, for practical data gathering reasons we require that all companies investigated are listed on the local stock markets. What this means in terms of limiting our analysis will be discussed in section 4.

---

<sup>1</sup> See Eliasson-Sharefkin-Ysander, "Policy Making in a Disorderly World Economy", IUI Conference Volume 1983:1.

<sup>2</sup> See Eliasson G, 1983, Det moderna företaget - styrsystem i stora företagsorganisationer, Working Paper, (forthcoming IUI publication).

The main size variable will be value added in nominal as well as in relative figures. For the multinational group, this variable is transformed to reflect the importance of the company relative to domestic value added in manufacturing. Some of the companies studied report value added, others do not. There are also different definitions in use. In order to facilitate comparisons the value added is defined as the sum of the operating result (before depreciation), wages, salaries, social costs and other remunerations paid to the employees, and to the board of the company. Still, serious problems in calculating the value added remain, due to the accounting situation in the Nordic countries. Finnish companies, for example, made up consolidated accounts for the first time in 1982. Summing up the data problems, crucial data from 34 out of 40 companies have had to be obtained by direct contact with the companies.

The choice of 1976, as the point in time from which comparisons will be made, is based on economic political as well as practical reasons. 1976 can be seen as a relevant starting point for a period characterized by several structural changes in basic conditions at the macro economic level; for instance changes in the pattern of real rates of interests, the pattern of the distribution of current account surpluses and deficits between OPEC and the rest of the world, the pattern of budget deficits, the pattern of exchange rates and so on. In one way or another these changes originated in the first oil crisis in 1973, and were beginning to make themselves felt around 1976.

### **3 THE LARGEST NORDIC MANUFACTURING COMPANIES - DISTRIBUTIONS OF SIZE AND ACTIVITY**

The ten largest manufacturing groups, by value added in 1982, are ranked and listed in Tables 1-4 together with an ISIC-classification<sup>1</sup> of their economic activities. The ranking lists will also

---

<sup>1</sup> International Standard Industrial Classification of All Economic Activities.

provide figures for 1976. As already stated, lack of data has confined our sample to companies listed on the stock markets. In some cases the selection is even narrower, due to lack of sales figures etc.

All companies on the lists are groups with a substantial part of their activities abroad. In discussing the degree of internationalization and concentration, one important question concerns how much of total value added that is actually a contribution to the Gross Domestic Product of the country of the parent company.

Total value added has been split<sup>1</sup> into a domestic and a foreign part by the relative number of employees in the country of the parent company. This is of course a rough estimate, but it should be satisfactory to illustrate the importance of the top ten groups for local GDP. The large size of total wage costs for employees compared to gross profits supports this way of estimating the size of the value added contribution to local GDP. Finally, caution is called for in interpreting the real growth figures presented below, due to the potential lack of consistency in the consolidated, unofficial figures used in the calculations.

By these measures value added in domestic operations of the ten largest companies accounts for 14, 23, 22 or 33 per cent of value added in manufacturing in Denmark, Finland, Norway and Sweden respectively. If we look at total domestic and foreign value added the corresponding coverages are 17, 28, 31 or 62 per cent respectively. Total value added of the 10 Swedish companies is fifty per cent larger than the entire Norwegian manufacturing sector, thirty per cent larger than the entire Danish manufacturing sector and slightly larger than the entire Finnish manufacturing sector.

---

<sup>1</sup> The results are quite robust concerning the choice of the relative size of the number of employees in the country of the parent company compared to the choice of the relative size of the total amount paid to employees in the same country in the form of wages, salaries and other remunerations. The first mentioned alternative is used because of the difficulties of separating social costs into a foreign and a local part, due to deficiencies in internal company financial reports.

### 3.1 Danish Manufacturing Companies

Total value added of the ten largest Danish manufacturing companies are listed in Table 1. Their total value added corresponds to about 17 per cent of the manufacturing part of the Danish GDP in 1982, but this figure is considerably smaller than it is in Sweden. In 1976 the corresponding figure was 13 per cent. The top five group of 1982 accounted for slightly more than 13 per cent in 1982 and 9 per cent in 1976.

Lack of data or not being listed on the stock market explains why some very large Danish companies or groups, such as the A.P. Möller Group (with the Lindø-shipyard), Danfoss, Grundfos, Lego and the Lauritsen Group have not been included in this study. In section 4 we discuss briefly how this affects our ranking. The by far largest company in Denmark, all categories, is Det Østasiatiske Kompagni. In 1982 this company, a trading company by the definitions used here, was almost twice as large as the largest Danish manufacturing company<sup>1</sup> by total sales.

The domestic part of value added from the ten Danish manufacturing companies is displayed in Table 1, column 3. Relative sizes are exhibited in column 6 in the same table. The top ten group accounts for slightly less than 14 per cent of the manufacturing part of Danish GDP in 1982. In 1976 the contribution was almost 11 per cent. The top five group of 1982 gave a contribution of slightly less than 11 per cent in 1982, while the contribution from that group was slightly less than 8 per cent in 1976.

The main product categories in the top ten group are food processing and manufacturing based on chemicals. A third major product group is products based on minerals (except metal). The first mentioned product group (with De Forenede Bryggerier and De

---

<sup>1</sup> The AP Möller Group is not included in this comparison, due to the fact that this group does not provide total sales figures. Sales is of course not a good measure of size, especially if we compare manufacturing and trading companies.

Table 1 Ten largest Danish manufacturing companies according to value added in 1982

1	2	3		4	5		6		7	8
Total value added Rank 1982	Group	Value added in MDKK, 1982 Current prices Total; of which in Denmark		Value added in Denmark Rank 1982 (Rank 1976 within top group 1982)	Real growth <sup>a</sup> in value added % 1976-1982 total in Denmark		Value added contribution to manufacturing part of the Danish GDP % 1982 1976		ISIC	Main products branches
1.	De Forenede Bryggerier <sup>b</sup>	2 828	2 076	2. ( 1.)	./.	10 16	2.7	3.1	313,362 500,610	Food processing, glass, construction
2.	F.L. Smidt & Co.	2 631	2 157	1. ( 2.)		40 40	2.8	1.9	369,381 382	Bricks, cement, machinery
3.	De Danske Sukkerfabriker <sup>c</sup>	2 053	1 950	3. ( 4.)		109 103	2.5	1.2	311,382	Food processing, machinery
4.	Novo Industrier	1 443	1 154	4. ( 7.)		103 96	1.5	0.7	351,385	Chemicals, metal products
5.	Superfos	1 215	1 057	5. ( 3.)		3 3	1.4	1.3	311,351 352,382	Food processing Chemicals, machinery
6.	Store Nordiske Telegraf-selskap	993	806	6. ( 8.)		101 86	1.0	0.5	383	Electronics
7.	Nordiske Kabel & Traad-fabriker	602	572	8. ( 5.)	./.	35 36	0.7	1.1	356,371 381	Iron, steel, metal products, chemicals
8.	Aalborg-Portland <sup>d</sup>	581	581	7. ( 6.)	./.	24 24	0.7	1.0	369	Bricks, cement
9.	Jens Villadsens Fabriker	552	145	10. (10.)	./.	15 15	0.2	0.2	356,500	Chemicals, construc-tion, building material
10.	Sadolin & Holmblad	404	283	9. ( 9.)	./.	23 23	0.4	0.5	352	Chemicals
Total for the top ten group		13 302	10 819			18 17	13.9	11.7		
The total contribution to Danish GDP from the manufacturing industries in Denmark. (Current prices.)		78 100 <sup>e</sup>					100.0	100.0		
Real growth in total domestic manu-facturing value added in Denmark					10					

<sup>a</sup> Deflated with indices for wholesale prices.

<sup>b</sup> 1976/77.

<sup>c</sup> 1976/77 - 1981/82.

<sup>d</sup> Associated in F.L. Smidt & Co. Group

<sup>e</sup> Preliminary figures. Manufacturing companies with more than five employees.



Danske Sukkerfabrikker) contributed 5.2 per cent of the Danish manufacturing value added in 1982. The companies based on chemicals (Superfos, Novo Industrier, Jens Willadsens Fabriker and Saldolin & Holmblad) 3.5 three per cent. The contribution from the large companies based on minerals was about same size (F.L. Smith & Co. and its associated, the Aalborg-Portland Group).

Real growth in value added of the top ten companies is displayed in column 5, Table 1. Measured by real growth in total value added, De Danske Sukkerfabrikker, Novo Industrier and Store Nordiske Telegrafsekskab exhibit the highest real growth rate. Growth in Novo Industrier contrasts with weak or negative figures for the other chemical firms on the list. The same pattern can also be recognized in profitability figures, where Novo Industrier is at the top of a list of Danish industrial companies. A plausible explanation is perhaps the high share of biochemicals in Novo. The group has increased its number of employees with almost 70 per cent from 1976 to 1982. An even larger increase can be noted for Store Nordiske Telegrafsekskab, which more than doubled its number of employees during the period.

The real growth in domestic value added exhibits the same pattern as for total value added. Five of the top ten companies are showing a negative real growth for the period 1976 to 1982. This is probably an indication of an ongoing structural change according to main industrial activities. Like the situation in Sweden, electronics, machinery and biochemicals are product groups with increasing shares, while heavy chemicals is going the other way. The negative real growth for five companies in the top ten group should be compared with an increase of ten per cent in real Danish manufacturing value added. However, as a group, the top ten companies are exhibiting a real growth of 17 per cent, as a result of the strong growth in the three companies previously mentioned. Finally, the concentration tendencies are not as obvious as, for instance, in Sweden. There is no outstanding, fast growing contributor. The biggest contributor in 1976 was De Forenede Bryggerier, but that group is showing a negative real growth for

the period up to 1982. The other food processing company at the top ten list, De Danske Sukkerfabrikker, is the fastest growing group on the list. However, it did start from a very low nominal contribution in 1976.

### 3.2 Finnish Manufacturing Companies

Finnish manufacturing groups with the largest total value added are listed and ranked in Table 2. Together these top ten companies had a value added in 1982 that corresponded to almost 28 per cent of the manufacturing value added in Finland. In 1976 the figure was 22 per cent. The figures for the top five group of 1982 were these years 18 and 14 per cent respectively.

Column 3, Table 2, exhibits the contribution from the top ten companies on the above mentioned list to the domestic part of value added. Relative sizes are displayed in column 6 in the same table. In 1982 the top ten group accounted for more than 23 per cent of the domestic value added from Finnish manufacturing companies. In 1976 the contribution was slightly less than 20 per cent. The contribution from the top five group was more than 16 per cent in 1982 and slightly less than 14 per cent in 1976. On both occasions, the members of the group were the same.

Only three main branches of the ISIC-classification are represented in the top ten group. Three groups (Wärtsilä, Kone and Tampella) are built around machinery, metal products and electronics. Wärtsilä includes a ship-yard and has been making profits by building ice-breakers despite the bad times for the ship building sector. The remaining seven groups are all working with products based on wood like pulp, paper and paper products. About 18 per cent of the domestic manufacturing value added in 1982 was generated by this last-mentioned group of companies. Except for Rauma Repola, they have all increased the relative size of their contribution to GDP since 1976. One hypothesis is that the industry

Table 2 Ten largest Finnish manufacturing companies according to value added in 1982

1	2	3		4	5		6		7	8
Total value added Rank 1982	Group	Value added in MFIM, 1982 Current prices Total; of which in Finland		Value added in Finland Rank 1982 (Rank 1976 within top group 1982)	Real growth <sup>a</sup> in value added % 1976-1982 Total in Finland		Value added contribution to manufacturing part of the Finnish GDP % 1982 1976		ISIC	Main products branches
1.	Nokia	2 703	2 216	1. ( 2.)	65	41	4.0	3.1	341,355 383,121	Paper, paper products, rubber, electronics
2.	Enso-Gutzeit	2 061	1 855	2. ( 3.)	36	36	3.3	2.7	331,341 351,352	Wood, wood products, paper, chemicals
3.	Rauma Repola	1 843	1 788	3. ( 1.)	2	./.	3.2	3.5	331,341 381,121	Wood, wood products, paper, metal products
4.	Kymi Kymmene	1 801	1 639	4. ( 5.)	51	71	2.9	1.9	341,351 371,381	Paper, iron, steel, metal products, electronics
5.	Wärtsilä	1 800	1 620	5. ( 4.)	46	32	2.9	2.4	361,362 371,383	Pottery, glass, iron, steel, electronics, transport equipment
6.	Kone	1 563	547	10. (10.)	52	56	1.0	0.7	381,382 321,383	Metal products, machinery, electronics, textiles
7.	Tampella	982	894	6. ( 6.)	7	4	1.6	1.7	382,341 381,321	Machinery, paper, metal products, textiles
8.	Yhtyneet Paperitehtaat	876	832	8. ( 9.)	51	46	1.5	1.1	341,382 351,121	Pulp and paper, chemicals, machinery
9.	G.A. Serlachius	842	775	9. ( 8.)	24	15	1.4	1.3	341,381 382,356	Pulp and paper products, machinery, plastics
10.	Metsäliiton Teollisuus	839	839	7. ( 7.)	23	23	1.5	1.3	121 341	Paper and paper products
Total for the top ten group		15 310	13 005		32	30	23.3	19.7		
The total contribution to Finnish GDP from the manufacturing industries in Finland. (Current prices.)		55 977 <sup>b</sup>					100.0	100.0		
Real growth in total domestic manufacturing value added in Finland					9.6					

<sup>a</sup> Deflated with indices for wholesale prices.

<sup>b</sup> Preliminary figures.

based on paper has been forced to increase the manufacturing content of its product value due to the price increases on wood. A global excess capacity exists today which also accelerates this internal structural change. In a listing of the 25 biggest losers<sup>1</sup> - all categories of Nordic companies - six companies with products based on wood will be found. Four of these companies are Finnish. In 1982 Enso-Gutzeit had rank 4 on such a list, and on a list for companies listed on the stock markets it ranks first.

The real growth in value added is exhibited in column 5, Table 2. There are no companies with negative real value added growth in the top ten group. The need for integration, to improve the competitive power, appears to be the reason for at least the product group based on wood. The real growth in total value added for the top ten group was 32 per cent from 1976 to 1982. The real growth in the domestic value added contribution from that group was of almost the same size, while Finnish manufacturing value added showed a real growth of less than ten per cent.

Concentration tendencies appear to be rather strong in Finland, while tendencies toward an increasing degree of internationalization are hard to find.

The largest manufacturing group in terms of total sales is Neste. Since it is not on the stock market it is excluded from the top ten list presented above. On a value added ranking in Finland it would have been sixth in 1982. The Nokia Group at the top of the value added list is ranked as number two according to total sales in manufacturing companies. Within the group of all categories of companies Nokia was ranked as number six in 1982. With Neste at the top, there were four wholesalers in between with higher total sales.

---

<sup>1</sup> Pre-tax income. Veckans affärer nr 27, augusti 1983.

### 3.3 Norwegian Manufacturing Companies

The ten Norwegian manufacturing companies with the largest total value added are ranked in this capacity in Table 3. Value added of the top ten group makes up about 31 per cent of total manufacturing value added in Norwegian GDP. This is less than in Sweden but more than in Denmark and Finland. In 1976 the figure was 18 per cent. The figures for the top five group of 1982 were 25 and 15 per cent respectively.

The domestic part of value added in Norwegian manufacturing companies is displayed in Table 3, column 3. Relative sizes are exhibited in column 6 in the same table. It can be seen that the top ten group accounts for more than 22 per cent of the manufacturing part of the Norwegian GDP in 1982. In 1976 the contribution was about 16 per cent. The top five group of 1982 contributed 17 per cent in 1982, while the contribution in 1976 was almost 13 per cent from that group.

Almost all branches are represented at the top ten list for Norway. The biggest contributor, Norsk Hydro, has petroleum and other chemicals as their main products. Within this product group are also Norgas and Dyno Industrier. Another important product group is machinery and metal products (Kvaerner Industrier). In 1982 this group contributed almost three and a half per cent of manufacturing value added. Iron, steel and nonferrous metals (Elkem and Orkla Industrier) contributed almost as much. Food processing (Borregaard), Electronics (Elektrisk Bureau) and sawmills, pulp and paper (the Norske Skogsindustrier Group) are other product groups represented at the top ten list with contributions around one to two per cent in 1982.

Column 5 in Table 3 exhibits the real growth in value added 1976 to 1982. On total value added, only one negative figure is found. This is for Borregaard and is explained by the sale of a foreign subsidiary. Norsk Hydro and Norgas, both operating mainly in chemicals, including petroleum products for Norsk Hydro, show the high-

Table 3 Ten largest Norwegian manufacturing companies according to value added in 1982

1	2	3		4	5		6		7	8
Total value added Rank 1982	Group	Value added in MNOK, 1982 Current prices Total; of which in Norway		Value added in Norway Rank 1982 (Rank 1976 within top group 1982)	Real growth <sup>a</sup> in value added % 1976-1982 Total in Norway		Value added contribution to manufacturing part of the Norwegian GDP % 1982 1976		ISIC	Main products branches
1.	Norsk Hydro	7 087	3 756	1. ( 1.)	136	49	7.2	4.5	3512,3513 3530,3720 2200	Petroleum products, chemicals, nonferrous metal
2.	Kvaerner Industrier	1 831	1 794	2. ( 3.)	49	47	3.4	2.2	3819,3821 3824,3841 6122	Machinery, metal products
3.	Elkem	1 659	1 261	3. ( 2.)	2	./.	2.1	2.7	3710,3720 3900,3215 3811	Iron, steel, ferroalloys nonferrous metals, metal products
4.	Norcem	1 161	987	5. ( 5.)	47	27	1.9	1.4	3411,3560 3690,2900	Chemicals, bricks, cement
5.	Borregaard	1 085	1 074	4. ( 4.)	./.	21	2.1	2.0	3115,3122 3121,3411 3412	Food processing, pulp and paper
6.	Elektrisk Bureau Group	884	787	6. ( 6.)	56	40	1.5	1.0	3832	Electronics
7.	Norgas	653	359	9. ( 9.)	128	26	0.7	0.5	3511,3522 3811	Chemicals, metal products
8.	Norske Skogsindustrier	635	629	7. ( 7.)	24	24	1.2	0.9	3311,3411 3412,6122	Saw mills, pulp and paper
9.	Dyno Industrier	563	512	8. ( 8.)	18	10	1.0	0.8	3529,3560 6123,6131 6270	Chemicals (trading)
10.	Orkla Industrier	402	358	10. (10.)	625	546	0.7	0.1	3710,3720 2309,5021	Iron, steel, nonferrous metals
Total for the top ten group		15 960	11 517		61	28	22.1	16.1		
The total contribution to Norwegian GDP from the manufacturing industries in Norway. (Current prices.)		52 276 <sup>b</sup>					100.0	100.0		
Real growth in total domestic manufacturing value added in Norway					./.		5.4			

<sup>a</sup> Deflated with indices for wholesale prices.

<sup>b</sup> Preliminary figures.

est real growth rate. Norsk Hydro increased the number of employees with about 75 per cent, an increase that mainly originated in foreign subsidiaries. The same pattern is applicable to Norgas, with an increase of about 120 per cent. Orkla Industrier exhibits the fastest real growth of more than 600 per cent. However, this was from a very low nominal level so their value in 1982 only corresponds to position ten on the list.

Looking at real growth in domestic value added, the highest negative figure is noted for Elkem - minus 15 per cent. For the period the group has carried through a slight reduction of the number of employees in Norway and expanded abroad. Elkem which is now the leading company in the world in ferro-alloys is bringing an important contribution to the Norwegian manufacturing value added by exporting more than 90 per cent of its total sales out of Norway. This is also so for Norsk Hydro (84 per cent). Norsk Hydro is growing faster abroad than at home and has increased the percentage of employees abroad from 16 per cent 1976 to 47 per cent in 1982. In 1982, Elkem belonged to the big losers<sup>1</sup> in the Nordic countries, and on a ranking of all categories of companies it was ranked 11 in this capacity, while Norsk Hydro was ranked 10 on a correspondent list of companies with the biggest profits<sup>1</sup> in 1982. Looking at a ranking of the 25 biggest losers in the Nordic countries, three more Norwegian iron, non-ferrous metals and steel companies<sup>2</sup> are found. These companies are state-owned.

The real growth in domestic value added for the top ten group was 28 per cent in 1982, which should be compared to a decline since 1976 of more than five per cent in the total contribution to Norwegian GDP from the manufacturing industries in Norway.

Norway has a heavy and rapidly expanding top five group. The tendency towards concentration is obvious from the table and as

---

<sup>1</sup> Pre-tax income.

<sup>2</sup> Norsk Jernverk, Sydvaranger and the ÅSV Group.

obvious seems a tendency towards internationalization to be. Only two companies out of ten did not increase the percentage of employees abroad in combination with an increase in the total number of employees within the group.

### 3.4 Swedish Manufacturing Companies

In 1982 the top ten group of Swedish companies had a total value added that corresponded to 62 per cent of manufacturing value added in Sweden. In 1976 the figure was 40 per cent. The figures for the top five group were 43 and 27 per cent respectively.

From Table 4, column 6 it can be seen that in 1982 the top ten group contributed almost 33 per cent of the domestic part of value added in Swedish manufacturing companies. In 1976 the contribution was only 22 per cent. The top five contributors in Sweden (Volvo, Asea, Saab-Scania, Ericsson, Electrolux) contributed more than 25 per cent in 1982 and the same companies accounted for slightly more than 16 per cent in 1976. Thus, this top five group accounts for almost the whole increase in the contribution from the top ten group to Swedish GDP.

Looking at a ranking according to the domestic value added contribution some other companies must be considered. Thus Svenska Cellulosa (SCA) and Bofors replace Atlas Copco and Alfa Laval from the top ten group according to total value added in 1982. With this scaling, the new top ten group accounts for 34 per cent of domestic manufacturing value added in 1982. In 1976 those companies contributed with 23 per cent. The list of 1976 was almost the same as this list of 1982. The only change was that the Stora Kopparberg replaced the SKF in 1976. With rank 12 that year, SKF was also behind Swedish Match in size.



Table 4 Ten largest Swedish manufacturing companies according to value added in 1982

1	2	3		4	5		6		7	8
Total value added Rank 1982(1976)	Group	Value added in MSEK, 1982 Current prices Total; of which in Sweden		Value added in Sweden Rank 1982 (Rank 1976 within top group 1982)	Real growth <sup>a</sup> in value added % 1976-1982 Total in Sweden		Value added contribution to manufacturing part of the Swedish GDP % 1982 1976		ISIC	Main products branches
1.	( 1) Volvo	13 653	10 239	1. ( 1.)	42	48	8.2	4.7	3840	Transport equipment
2.	( 5.) Electrolux	12 187	4 485	5. ( 7.)	96	106	3.6	1.6	3810,3820 3710,3720	Machinery, iron, steel
3.	( 2.) Ericsson	10 751	4 623	4. ( 4.)	36	44	3.7	2.3	3830	Electronics
4.	( 4.) Asea	9 772	6 352	2. ( 2.)	47	19	5.1	3.9	3830	Electronics
5.	( 3) SKF	7 780	1 735	10. (12.)	6	14	1.4	1.1	3820,2301 3710,3810	Machinery, metal products
6.	( 6) Saab-Scania	6 837	5 606	3. ( 3.)	16	10	4.5	3.5	3840,3850	Transport equipment
7.	( 8) Sandvik	4 896	2 007	8. ( 8.)	24	3	1.6	1.4	3710,3810	Metal products iron, steel
8.	( 9.) Skånska Cementgjuteriet	4 312	3 622	6. ( 5.)	27	35	2.9	1.8	3690,5012	Construction, bricks, cement
9.	(13.) Alfa Laval	3 510	1 369	12. (13.)	28	31	1.1	0.7	3810,3820	Machinery, metal products
10.	(12.) Atlas Copco	<u>3 256</u>	<u>951</u>	15. (14.)	<u>15</u>	<u>./. 1</u>	<u>0.8</u>	<u>0.7</u>	3820	Machinery
Total for the top ten group		76 954	40 989		29	26	32.9	21.7		
The total contribution to Swedish GDP from the manufacturing industries in Sweden. (Current prices.)			124 976				100.0	100.0		
Real growth in total domestic manufacturing value added in Sweden						./. 7.7				

<sup>a</sup> Deflated with indices for producer prices within categories according to ISIC.

Stora Kopparberg and Swedish Match were members of the top ten list measured by total value added in 1976. Like the circumstances for the list concerning domestic value added, these two companies - built up around saw-mills, paper and paper products - have been passed and replaced by companies within the machinery group. Without discussing causality, it should be noted that Swedish Match has reduced their number of employees with 27 per cent since 1976, which has strongly affected the value added. From a proportional point of view the reduction has been slightly larger in Sweden than abroad. The reduction from 1976 to 1982 (44 per cent) was even larger in Stora Kopparberg.<sup>1</sup>

The main products represented in the top ten group exhibits the following pattern. Transport equipment (Volvo and Saab-Scania) contributed almost 13 per cent to domestic manufacturing value added in 1982. Electronics (Ericsson and ASEA) in 1982 added another 9 per cent. Slightly less or 7 per cent was accounted for by the third major product category - machinery (Electrolux, SKF, Alfa Laval and Atlas Copco). To complete the list - the remaining product groups to be mentioned are building materials (Skånska Cementgjuteriet) and iron and steel and metal products (Sandvik).

Surprisingly, the forest, pulp and paper industries are no longer represented in the top ten ranking according to total value added. In 1976, the sector for wood products was represented by Stora Kopparberg and Swedish Match. In 1982 that sector had a representative next to the top ten list. Thus Svenska Cellulosa was ranked 11, a position that the group defended from 1976.

Electrolux and ASEA show the largest real growth in value added. From 1976 to 1982, Electrolux almost doubled its total value added in real terms. With a real increase in total value added of 42 per cent, Volvo defended its leading position. The pattern for ASEA was almost the same.

---

<sup>1</sup> The mining and steel section was transferred to SSAB January 1, 1978.

In terms of real growth in domestic value added, Electrolux, Volvo and Ericsson displayed the highest figures. Ericsson has replaced ASEA among the fast growing companies mentioned above. As an intermediary explanation it should be noted that ASEA has increased the relative size of its number of employees outside Sweden from 20 to 35 per cent, while Ericsson has gone the other way and decreased the relative size of foreign employment, from 60 to 57 per cent.

Negative real growth figures for the period and according to total value added are not found in the top ten group. But just below that group such figures can be found for companies previously mentioned. These companies are Svenska Cellulosa, Bofors, Swedish Match and Stora Kopparberg. A common trait is that their products are based on wood or chemicals. Negative figures in real growth in domestic value added are exhibited for the same groups but also for Aga, with a decrease of 17 per cent, and Atlas Copco, with only a slight decrease.

How much of the real growth in value added - both total and domestic - can be explained by expansion due to gains in competitiveness power or to mergers is difficult to estimate. A study of the increase in the number of employees - with an increase of 40 per cent in Electrolux and with 31 and 20 per cent for ASEA and Volvo, respectively - reveals that these companies<sup>1</sup> have been the most expansive among the members in the top ten group, measured by that variable.

The main conclusion, concerning the Swedish top ten companies is that companies based on wood and chemicals have suffered in their positions as important contributors to the manufacturing part of Swedish GDP. The top ten companies from 1982 have strengthened their positions since 1976 and increased their share

---

<sup>1</sup> During the period under investigation they have all made major mergers and have incorporated large firms. Volvo has incorporated the Beijer Group, ASEA has incorporated the Fläkt Group and Electrolux has incorporated the Gränges Group.

of domestic manufacturing value added with eleven per cent. Looking at the five largest contributors it can be seen that these companies account for almost the whole increase in the manufacturing contribution from the top ten group. They exhibit a very high rate of real growth, while the total manufacturing contribution to Swedish GDP has decreased with eight per cent in real terms from 1976 to 1982. Their major products are transport equipment and electronics. However, these products tend to have a decreasing importance within the top five companies, potentially as a result of ambitions of diversification and integration in the groups. Thus the companies at the top exhibit a tendency to transform into conglomerates.<sup>1</sup>

#### 4. STRUCTURAL DIFFERENCES - A COMPARISON

In Table 5 the top ten companies in the Nordic countries have been grouped by main activities. We find that ISIC-group 38 (machinery, metal products and electronics) is represented with nine companies in Sweden. A similar activity concentration is seen for Finland with seven firms in ISIC-groups 33 and 34 (products based on wood) and with the remaining three in group 38. The top ten group in Denmark exhibits a more diverse pattern, but four out of ten are in ISIC-group 35 (chemicals). Even less pronounced is the manufacturing pattern in Norway. As in Denmark most companies are found in group 35, but except for ISIC-group 32 (textiles and apparels) and 39 (other kinds of manufacturing) the Norwegian top ten list has representatives in all activity groups.

---

<sup>1</sup> Due to this fact the "pure" contribution from manufacturing will be overestimated. In Volvo, for instance, the trading part was high in 1982. The energy sector and other trading parts did account for almost 50 per cent of total sales that year.

Another potential source of error concerns the effect of price changes on inventories. These changes can affect the time distribution of value added. In an investigation (See: Statistiska Meddelanden, SERIE N 1982:2 pkt 5 appendix, p. 51-52) for 1979 and 1980 the Swedish Central Bureau of Statistics estimated these effects to correspond to an increase of the contribution to GNP from the manufacturing industries of about 5 per cent those years.

Table 5 The top ten companies of 1982 separated into activity groups

Main activity (activity code- <i>ISIC</i> )	Number of companies in			
	Denmark	Finland	Norway	Sweden
Food processing (31)	2		1	
Textiles & apparel (32)				
Saw mills, pulp and paper (33, 34)		7	1	
Chemicals (35)	4		3	
Goods from minerals (excl. metal) (36)	1		1	1
Iron, steel and non-ferrous metals (37)			2	
Fabricated metal products, machinery and equipment (38)	3	3	2	9
Other kinds of manufacturing (39)				
<b>Total</b>	<b>10</b>	<b>10</b>	<b>10</b>	<b>10</b>

Among the top ten groups, those in Sweden and Norway exhibit the largest real growth in domestic value added compared to the rest of the manufacturing industries - indicating a growing relative importance of these groups as GDP contributors. The real growth figures are put together in Table 6. It can be seen that the Finnish top ten group has had the highest real growth in domestic value added, but the gain in share is reduced, due to a high real growth (almost 10 per cent) for the rest of Finnish manufacturing industries. The highest real growth in total value added is displayed for the Norwegian top ten group. This real growth is mainly explained by the immense real growth abroad in Norsk Hydro and Norgas during the period.

The highest relative contribution to domestic value added in total manufacturing is found in Sweden with the top ten group accounting for almost 33 per cent. The Finnish and Norwegian top ten groups have a contribution each about 23 per cent, while the Danish top ten group contributed 14 per cent in 1982.

Table 6 Real percentage growth<sup>x</sup> in value added 1976-1982

Country	Real growth in total value added for top ten group	Real growth in domestic value added for top ten group	Real growth in value added in local manufacturing industries
Denmark	18	17	10
Finland	32	30	10
Norway	61	28	./ 5
Sweden	29	26	./ 8

<sup>x</sup> Calculated with reservations for potential deficiencies due to the lack of published corporate data to be used.

Value added as a share of total sales seems to have diminished for the top ten groups in all Nordic countries (Iceland excl.). The decreases are exhibited in Table 7. Six to eight companies out of ten have diminished their share from 1976 to 1982. This systematic tendency could partly be explained by cyclical factors. In Sweden, however, the pattern is very pronounced. Volvo, for instance, has halved its share, while ASEA, Electrolux and Ericsson have reduced their relative share with 20-25 per cent. Finland exhibits the same pattern with decreases of between 25 to 30 per cent for Rauma Repola, Kymi Kymmene and for Tampella. For Sweden with almost the whole top ten group based on high technology products this observation is consistent with other facts, namely the decreasing share in total activities of production, the increasing importance of assembling production based on purchased components, and the increasing importance of trade and other service activities<sup>1</sup>.

<sup>1</sup> See Eliasson, G., 1983, Det moderna företaget - styrsystem i stora företagsorganisationer. IUI Working Paper (forthcoming).

Table 7      **Decrease in the share of value added as percentage of total sales 1976-1982**

Country	Number of top ten companies with a decrease in the share of value added in total sales. Percentage change in ratios		
	>10 %	0-10 %	< 0 %
Denmark	5	3	2
Finland	4	5	1
Norway	5	3	2
Sweden	6	2	2

The relative sizes - both within and between countries - in terms of total sales are illustrated in Table 8 for the top ten companies. The Swedish companies are found to be giants. Because of a few extremely large companies in some countries, both average total sales and median total sales are presented. In Sweden, for instance, Volvo because of much trade, is pulling up the sales average to more than 23 000 MSEK in 1982. Only two companies, both Swedish, (Electrolux and ASEA) have a size comparable to that figure. The small difference between the median and the average total sales for the Finnish top ten group indicates the absence of such outliers in Finland.

As previously noted the pattern of concentration is most pronounced in Sweden, which is also indicated in a ranking of all Nordic companies according to their total sales in 1982. Figures from such a ranking are also exhibited in Table 8. Volvo is by far the largest group in the Nordic countries - twice as big as Electrolux, which is the second largest. Furthermore, in such a ranking, eight of the companies at the Swedish top ten list are represented among the 25 largest Nordic companies - all categories - in 1982. Among those 25, Norsk Hydro is the only representative from the top ten lists in the other Nordic countries.

Table 8 Relative size of the top ten companies in 1982

		Denmark	Finland	Norway	Sweden
Average total sales in the top ten group	MSEK	3 000	5 200	4 600	23 300
Median total sales in the top ten group	MSEK	1 700	4 600	2 800	16 600
The highest and the lowest ranking - among all industrial companies in the country - for the top ten companies presented in the material	HIGHEST	4.	2.	1.	1.
	LOWEST	34.	22.	37.	26.
The highest and the lowest ranking - among all Nordic groups <sup>x</sup> - for the top ten companies presented in the material	HIGHEST	66.	35.	8.	1.
	LOWEST	309.	121.	270.	38.

<sup>x</sup> Banks and subsidiaries are excluded in this ranking according to total sales.

The question to be raised here is, of course, which companies are excluded by the definitions used in this study. Differences among the Nordic countries according to the owner structure will potentially affect the representativity of the top ten companies presented as the main manufacturing value added contributors. Looking at a ranking of the 200 biggest Nordic companies according to total sales provides some information about differences in ownership between the Nordic countries. Such a ranking indicates that the structure in Sweden and Finland in 1982 seems to be the same with almost 80 per cent of the companies privately owned. What remains is almost equally distributed between cooperatives, state-owned companies and subsidiaries of foreign groups. In Denmark slightly more than half of the companies on such a list are privately owned, while almost 30 per cent are cooperatives. Denmark



also has a relatively high percentage of foreign subsidiaries. In Norway, with around 70 per cent privately owned companies, there are few cooperatives, while - more than twice as many companies as in Sweden - are state-owned.

In what sense will these differences in ownership affect the result presented concerning the main domestic manufacturing value added contributors? In answering that question let us start with Denmark. As a trading company the by far biggest Danish company according to total sales, Det Østasiatiske Kompagni, is excluded from this study. However, with more than 26 000 employees, which is almost twice the number of employees in the largest top ten manufacturing company it is of course an important value added contributor. Limiting the study to companies listed on the stock market has excluded some important manufacturing companies from the study. Among those excluded are, as already mentioned, Danfoss Grundfoss, Lego, the Lauritsen Group and the A.P. Møller Group.<sup>1</sup> These would probably all have rewarded a rank among the top ten had it been possible to include them.

In terms of total sales there are, besides the Lauritzen Group at least two more manufacturing companies in front of the largest value added contributor. However, these (Dansk Esso and Dansk Shell both, subsidiaries of foreign groups) are relatively small value added contributors. Finally, some manufacturing cooperatives as, for instance, Mejeriselskabet Danmark and Tulip Slagterierne are candidates for ranks between five and ten.

Looking at a ranking list over all Finnish companies, such a list will have a state-owned manufacturing company (Neste) at the top followed by four wholesalers (Kesko, SOK, Hankkija-Yhtymä and OTK-ryhmä). Nokia is ranked 6 on that list. The companies in front of Nokia are small value added contributors. Neste, as a

---

<sup>1</sup> In 1982 this group - with several hundred companies with more than 20 000 employees and with shipping and oil prospectation as main activities - had a roughly estimated value added in Denmark equivalent to 4-5 per cent of the Danish manufacturing value added.

manufacturing company, would have been ranked 3 on the Finnish top ten list according to total value added in 1982. Valmet, within machinery, Kemira within chemicals and Ahlström within forestry and wood products are qualified for positions at the end of the top ten list, but have been excluded as state-owned or, concerning Ahlström, as not listed on the stock market.

On a list over the largest Norwegian companies - all categories - there are some large companies that are excluded from this study, despite being manufacturing companies. These are oil companies, which are subsidiaries to foreign groups (Elf Aquitaine, Norske Shell, Norsk Agip, Norske Esso and Total Marine) or 100 % state-owned (Statoil). However, these groups are relatively small by value added standards and would in case of inclusion be candidates for positions at the end of the top ten list. More important as value added contributors are Årdal og Sunndal Verk (aluminium) and Kongsberg Våpenfabrikk within the machinery sector. These state-owned companies are contributors of a size corresponding to a rank in the middle of the top ten list of Norway.

Considering the Swedish top ten list according to total value added, there are no further candidates for a top position even if all types of companies are open for inclusion. The Axel Johnsen Group, the Statsföretag Group and Svenska Varv are contributors of a size qualifying for a position on the second half of the Swedish top ten list in 1982. These are manufacturing companies. Enlarging the scope to all kinds of companies there are three wholesalers, KF, ICA and SABA, which are candidates for the same positions.

Finally, some other significant features of the companies on the Nordic top ten lists are to be mentioned. A rating of the companies according to their return on total assets, in per cent in 1982, shows Novo at the Nordic top.

A ranking of the forty top ten companies according to total nominal profits - pre-tax income - exhibits three Swedish companies (Volvo, Skånska Cementgjuteriet and Saab-Scania) in front of

Norsk Hydro. The Finnish top ten company with the highest total nominal profit in 1982 was Wärtsilä, which is ranked 10. The best Danish Group, Novo is ranked 12.

A ranking according to the biggest loss - pre-tax income - in nominal terms gives the highest rank to Enso-Gutzeit, with another Finnish company as number three. Elkem is ranked 2 on such a list. None of the Danish or Swedish top ten companies are showing a loss in 1982.

Electrolux was the biggest employer of the top ten companies in 1982 with more than 100 000 employees. Ranking our 40 top ten companies, the first non-Swedish representative, Nokia, is ranked 9. Norsk Hydro, the largest Norwegian employer, comes in on rank 10. The biggest Danish employer, De Forenede Bryggerier comes in as number 20.

A ranking list according to total export in per cent of total sales exhibits Elkem at the top, with more than 90 per cent on export. Second comes Norsk Hydro. Kymi Kymmene is displaying the highest percentage of the Finnish top ten companies with 74 per cent on export. Novo had in 1982 the highest percentage, 66 per cent, among the Danish companies. The Swedish companies exhibit relatively low figures, with the highest percentage, 42 per cent, for Sandvik.

Looking at the figures for the relative number of employees abroad provides an explanation why the exportation from the Swedish top ten companies exhibits so low figures. The median percentage of employees abroad was in 1982 57 for the Swedish top ten companies, while it was 17, 11 and 10 per cent for the Danish, Norwegian and Finnish top ten groups respectively. The activities (machinery, metal products and electronics) in the Swedish companies make it necessary to work close to the foreign market compared, for instance, to the main activities (manufacturing based on wood) for the Finnish companies.

WORKING PAPERS (Missing numbers indicate publication elsewhere)

1976

1. Corporate and Personal Taxation and the Growing Firm  
by Ulf Jakobsson
7. A Micro Macro Interactive Simulation Model of the Swedish  
Economy.  
Preliminary model specification  
by Gunnar Eliasson in collaboration with Gösta Olavi
8. Estimation and Analysis with a WDI Production Function  
by Göran Eriksson, Ulf Jakobsson and Leif Jansson

1977

12. The Linear Expenditure System and Demand for Housing  
under Rent Control  
by Per Högberg and N. Anders Klevmarken
14. Rates of Depreciation of Human Capital Due to Nonuse  
by Siv Gustafsson
15. Pay Differentials between Government and Private Sector  
Employees in Sweden  
by Siv Gustafsson

1979

20. A Putty-Clay Model of Demand Uncertainty and Investment  
by James W. Albrecht and Albert G. Hart

1980

25. On Unexplained Price Differences  
by Bo Axell
34. Imperfect Information Equilibrium, Existence, Configuration  
and Stability  
by Bo Axell

1981

36. Energi, stabilitet och tillväxt i svensk ekonomi (Energy,  
Stability and Growth in the Swedish Economy)  
by Bengt-Christer Ysander
37. Picking Winners or Bailing out Losers? A study of the  
Swedish state holding company and its role in the new  
Swedish industrial policy  
by Gunnar Eliasson and Bengt-Christer Ysander

38. Utility in Local Government Budgeting  
by Bengt-Christer Ysander
40. Wage Earners Funds and Rational Expectations  
by Bo Axell
42. The Structure of the Isac Model  
by Leif Jansson, Tomas Nordström and Bengt-Christer Ysander
43. An Econometric Model of Local Government and Budgeting  
by Bengt-Christer Ysander
44. Local Authorities, Economic Stability and the Efficiency of Fiscal Policy  
by Tomas Nordström and Bengt-Christer Ysander
45. Growth, Exit and Entry of Firms  
by Göran Eriksson
52. Swedish Export Performance 1963-1979. A Constant Market Shares Analysis  
by Eva Christina Horwitz
56. Central Control of the Local Government Sector in Sweden  
by Richard Murray
59. Longitudinal Lessons from the Panel Study of Income Dynamics  
by Greg J. Duncan and James N. Morgan

1982

61. Var står den nationalekonomiska centralteorin idag?  
av Bo Axell
63. General Search Market Equilibrium  
by James W. Albrecht and Bo Axell  
General Equilibrium without an Auctioneer  
by James W. Albrecht, Bo Axell and Harald Lang
64. The Structure and Working of the Isac Model  
by Leif Jansson, Thomas Nordström and Bengt-Christer Ysander
65. Comparative Advantage and Development Policy Twenty Years Later  
by Anne O. Krueger
67. Computable Multi-Country Models of Production and Trade  
by James M. Henderson
69. Relative Competitiveness of Foreign Subsidiary Operations of a Multinational Company 1962-77  
by Anders Grufman

71. Technology, Pricing and Investment in Telecommunications  
by Tomas Pousette
72. The Micro Initialization of MOSES  
by James W Albrecht and Thomas Lindberg
75. The MOSES Manual  
by Fredrik Bergholm
76. Differential Patterns of Unemployment in Sweden  
by Linda Leighton and Siv Gustafsson
77. Household Market and a Nonmarket Activities (HUS)  
- A Pilot Study  
by Anders Klevmarken
78. Arbetslöshetsersättningen i Sverige  
- motiv, regler och effekter  
av Anders Björklund och Bertil Holmlund

1983

79. Energy Prices, Industrial Structure and Choice of  
Technology; An International Comparison with Special  
Emphasis on the Cement Industry  
by Bo Carlsson
81. ELIAS - A Model of Multisectoral Economic Growth  
in a Small Open Economy  
by Lars Bergman
84. Monopoly and Allocative Efficiency with Stochastic Demand  
by Tomas Pousette
86. The Micro (Firm) Foundations of Industrial Policy  
by Gunnar Eliasson
87. Excessive Government Spending in the U.S.: Facts and  
Theories  
by Edward M. Gramlich
88. Control of Local Authority Expenditure - The Use of Cash  
Limits  
by Noel Hepworth
89. Fiscal Containment and Local Government Finance in  
The U.K.  
by Peter Jackson
90. Fiscal Limitations: An Assessment of the U.S.  
Experience  
by Wallace E. Oates
91. Pricing and Privatization of Public Services  
by George E. Peterson

92. Export Performance of the Nordic Countries  
1965-80  
by Eva Christina Horwitz
93. Was Adam Smith Right, After All?  
Another Test of the Theory of Compensating  
Wage Differentials  
by Greg J. Duncan and Bertil Holmlund
94. Job Mobility and Wage Growth:  
A Study of Selection Rules and Rewards  
by Bertil Holmlund
95. Sweden's Laffer Curve:  
Taxation and the Unobserved Economy  
by Edgar L. Feige and Robert T. McGee
96. The Machine Tool Industry - Problems and Prospects  
in an International Perspective  
by Bo Carlsson
97. The Development and Use of Machine Tools in Historical  
Perspective  
by Bo Carlsson
99. An Equilibrium Model of Search Unemployment  
by James W. Albrecht and Bo Axell
100. Quit Behavior under Imperfect Information: Searching,  
Moving, Learning  
by Bertil Holmlund and Harald Lang
101. Norway in a Scandinavian Perspective -  
What Would Have Happened without Oil?  
by Gunnar Eliasson
102. Collecting Data for Micro Analysis.  
Experiences from the Hus-Pilot Study  
by N. Anders Klevmarken
103. The Swedish Micro-To-Macro Model  
- Idea, Design and Application  
by Gunnar Eliasson
104. De utlandsetablerade företagen och den svenska ekonomin  
av Gunnar Eliasson
105. Estimation of Wage Gains and Welfare Gains from  
Self-Selection Models  
by Anders Björklund and Robert Moffitt
106. Public Policy Evaluation in Sweden  
by Bengt-Christer Ysander
107. The Largest Nordic Manufacturing Companies  
by Lars Oxelheim