

Ekholm, Karolina; Hesselman, Marie

**Working Paper**

## The Foreign Operations of Swedish Manufacturing Firms: Evidence from a Survey of Swedish Multinationals 1998

IUI Working Paper, No. 540

**Provided in Cooperation with:**

Research Institute of Industrial Economics (IFN), Stockholm

*Suggested Citation:* Ekholm, Karolina; Hesselman, Marie (2000) : The Foreign Operations of Swedish Manufacturing Firms: Evidence from a Survey of Swedish Multinationals 1998, IUI Working Paper, No. 540, The Research Institute of Industrial Economics (IUI), Stockholm

This Version is available at:

<https://hdl.handle.net/10419/95054>

**Standard-Nutzungsbedingungen:**

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

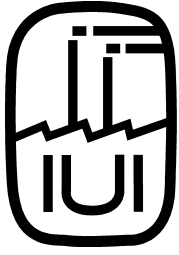
Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

**Terms of use:**

*Documents in EconStor may be saved and copied for your personal and scholarly purposes.*

*You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.*

*If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.*



THE RESEARCH INSTITUTE OF INDUSTRIAL ECONOMICS

Working Paper No. 540, 2000

**The Foreign Operations of Swedish Manufacturing Firms:  
Evidence from a Survey of Swedish Multinationals 1998**

by Karolina Ekholm and Marie Hesselman

IUI, The Research Institute of Industrial Economics  
P.O. Box 5501  
SE-114 85 Stockholm  
Sweden

# **The Foreign Operations of Swedish Manufacturing Firms: Evidence from a Survey of Swedish Multinationals 1998\***

Karolina Ekholm and Marie Hesselman  
The Research Institute of Industrial Economics (IUI)

JEL codes: F21, F23

Keywords: Foreign direct investment, multinational firms, foreign affiliates

## **1 Introduction**

This paper presents the results of a survey of Swedish multinationals conducted in 1999. The survey was carried out in order to update an existing database on Swedish manufacturing firms with producing foreign affiliates collected by the Research Institute of Industrial Economics (IUI). The database covers information about the Swedish parts and the producing foreign affiliates of manufacturing firms with at least 50 employees. The first survey was conducted in the early 1970's and up until today, seven surveys have been conducted. The following years are covered: 1965, 1970, 1974, 1978, 1986, 1990, 1994 and 1998.<sup>1</sup>

The purpose of this paper is twofold. First, it serves as a documentation of the survey covering 1998. Second, we use the database to present descriptive evidence of trends in the activities of Swedish multinationals within the manufacturing sector.

## **2 The survey for 1998**

Since the beginning, the aim of the surveys of Swedish manufacturing firms with foreign producing affiliates has been to study the universe of firms meeting the applied criteria. These criteria are the following: the firm's main activity should be within the manufacturing sector, the total number of employees should be at least 50, the firm should have at least one producing affiliate abroad and the domicile be located in Sweden. In the 1970's and 1980's the answering rate was very high, that is, over 90 percent. In the 1990's, the answering rate has fallen, however. For 1998, the final answering rate is still uncertain, but at the time this

---

\* The survey this paper is based on was financed by the Marianne and Marcus Wallenberg Foundation, whose generous support is gratefully acknowledged. Ekholm also acknowledges financial support from the European Commission through the TMR programme (FDIMNC).

report was being written, it was nearly 78 percent. Most of the firms having dropped out are small firms with only a few producing affiliates abroad. However, a number of very large corporations had still not answered when this was being written, which means that aggregate numbers must be interpreted with caution. In those cases where the missing information from large corporations was judged to affect numbers in a substantial way, we have decided to suppress the information for 1998. The reason for this is that the change in numbers that will occur when information from these corporations is eventually incorporated in the database would reveal too much about specific corporations.

Another notable change compared to earlier surveys is that we were not able to collect information about as high a share of the firms' producing affiliates abroad. Whereas virtually all the producing affiliates of the surveyed firms were covered in the 1970's and 1980's, the 1998 survey for 1998 only gave detailed information about two thirds of them. Hence, the drop-out rate in the latest survey is higher for producing affiliates than for corporations.

For corporations refusing to answer the questionnaire, we have collected information about their number of producing affiliates abroad, the location of these affiliates and the number of employees in each location. We have also collected basic information about these corporations based on their annual reports for 1998.

Compared with previous surveys, a number of changes were made in the one for 1998. An important change was the inclusion of a control group in the targeted group of firms. The control group consists of manufacturing firms with more than 50 employees, no producing affiliates abroad, but an export share of total sales of at least ten percent. It was included because it was considered important to be able to compare the activities of multinational firms with firms producing in Sweden only but still selling a substantial proportion of their output on foreign markets.

The inclusion of the control group may have increased the degree to which the targeted group of multinationals coincides with the true population of Swedish multinationals. In the process of collecting the data, we encountered several cases where firms supposed to belong to the control group turned out to have producing affiliates abroad. In the end, the number of firms with producing affiliates abroad that received a questionnaire was 153, 119 of which had answered when this paper was written. This can be compared with the previous survey, dealing with the year 1994. In that survey, the population was set to 154 firms, 133 of which answered. In terms of the share of employees in the Swedish

---

<sup>1</sup> In the first survey, data for 1970 as well as 1965 were collected.

manufacturing sector covered by the firms in the sample, the figure for 1998 is 20 percent (the corresponding figure for 1994 is 23 percent).

A new feature of the survey was an emphasis on the composition of skills in the labor force. In the surveys for 1974, 1978 and 1994, the firms were asked to decompose their work force into blue-collar and white-collar workers. This time, we decided to ask the firms to decompose the group of white-collar workers into a high-skilled and a low-skilled category.

One factor that seemed to make the collection of data more difficult compared to previous surveys was the fairly widespread changes in ownership of Swedish firms occurring at the same time as the survey was conducted. Many of the firms that merged with or were acquired by foreign firms declined to participate in the study although they were still Swedish in 1998. The change to foreign ownership means that these firms would not meet the criteria for being included in the survey in the future, which raises some concern about whether it will be feasible to continue to carry out the survey in the same way as has been done up until now. If carried out in a similar way, many of the large corporations on which the database now contains information will not be part of the population.

### **3 International trends in FDI**

Before presenting the results from the survey, we shall present some information about international trends in FDI. The total outstanding FDI stock has increased by more than 700 percent since 1980.<sup>2</sup> In particular, there has been a very rapid increase in the FDI stock from 1985 and onwards.

Western Europe and North America dominate, both as the origins of and the destinations for FDI. Table 1 and 2 show that approximately 80 percent of the total value of stocks in 1998 originated in these two regions, while they were also recipients of more than 60 percent of the stock. Their prominence as outward foreign investors was even greater in 1980, when they together owned more than 90 percent of the outstanding FDI stock.

In relative terms, Western European countries have become more important as home countries of investing firms, whereas the US has lost some of its importance. Japan, which is included in the group of other developed countries, has also increased its share of the total outward FDI stock substantially. Central and Eastern Europe as well as Africa host only a small share of total FDI, although there has been a substantial increase in Central and Eastern Europe's share of the total inward FDI stock in recent years.

Table 1. Total outward FDI stock and its regional shares 1980-1998 (percent)

	1980	1985	1990	1995	1998
Total stock (1000 billion USD)	513	686	1714	2840	4117
<i>Regional distribution:</i>					
Western Europe	44.3	44.0	50.7	51.5	52.6
North America	47.5	42.9	30.3	28.7	27.9
Other developed countries	5.6	9.0	14.7	11.3	9.7
Asia & the Pacific	1.9	2.1	2.8	6.8	7.7
Latin America	0.6	1.1	0.8	1.0	1.4
Central & Eastern Europe	N/A	N/A	0.0	0.2	0.3
Africa	0.1	0.9	0.7	0.5	0.4
Total	100	100	100	100	100

Source: UNCTAD (1999)

Table 2. Total inward FDI stock and its regional shares 1980-1998 (percent)

	1980	1985	1990	1995	1998
Total stock (1000 billion USD)	507	782	1768	2790	4088
<i>Regional distribution:</i>					
Western Europe	39.6	32.4	44.4	41.0	38.4
North America	27.1	31.9	28.7	23.6	24.9
Other developed countries	7.1	5.4	5.8	6.4	4.8
Asia & the Pacific	14.0	17.5	12.3	16.4	17.7
Latin America	9.4	9.8	6.5	9.1	10.2
Central & Eastern Europe	N/A	N/A	0.2	1.5	2.2
Africa	2.7	3.0	2.1	2.0	1.8
Total	100	100	100	100	100

Source: UNCTAD (1999)

Table 3 presents the ratio of outward to inward FDI stock for individual countries based on data from UNCTAD (1998). If the ratio were one, the outward stock would be matched by an inward stock of equal size.<sup>3</sup> For most of the countries listed in the table, the outward stock has grown faster than the inward stock since 1980. Two notable exceptions are the Netherlands and the US, which have traditionally been important home countries of multinational firms. Japan stands out because of its very high ratio between outward and inward FDI. It is consistently the country with the highest ratio, which reflects the fact that

<sup>2</sup> See UNCTAD (1999).

inward FDI in Japan was fairly low when Japan invested heavily abroad in the 1980's and

Table 3. The ratio of outward FDI stock to inward FDI stock for selected countries and years

	1980	1985	1990	1995	1998
Japan	6.00	9.28	20.5	7.11	9.78
Switzerland	2.53	2.12	1.95	2.51	2.94
Finland	1.38	1.37	2.19	1.77	2.11
<b>Sweden</b>	<b>1.03</b>	<b>2.12</b>	<b>3.97</b>	<b>2.35</b>	<b>1.74</b>
Germany	1.18	1.62	1.36	1.62	1.70
Italy	0.82	0.76	0.97	1.53	1.62
Netherlands	2.20	1.79	1.48	1.45	1.55
UK	1.28	1.57	1.06	1.46	1.53
Norway	0.09	0.15	0.88	1.15	1.36
France	0.79	0.94	1.27	1.28	1.35
US	2.65	1.36	1.10	1.3	1.14
Denmark	0.49	0.50	0.80	1.03	1.13
Belgium/Luxembourg	0.83	0.52	0.70	0.76	0.78
Austria	0.17	0.51	0.43	0.67	0.66
Spain	0.24	0.23	0.24	0.33	0.58
Portugal	0.05	0.05	0.05	0.15	0.36
Ireland	N/A	0.04	0.39	0.34	0.27

*Note:* The countries are listed according to their ranking in 1998.

*Source:* UNCTAD (1998)

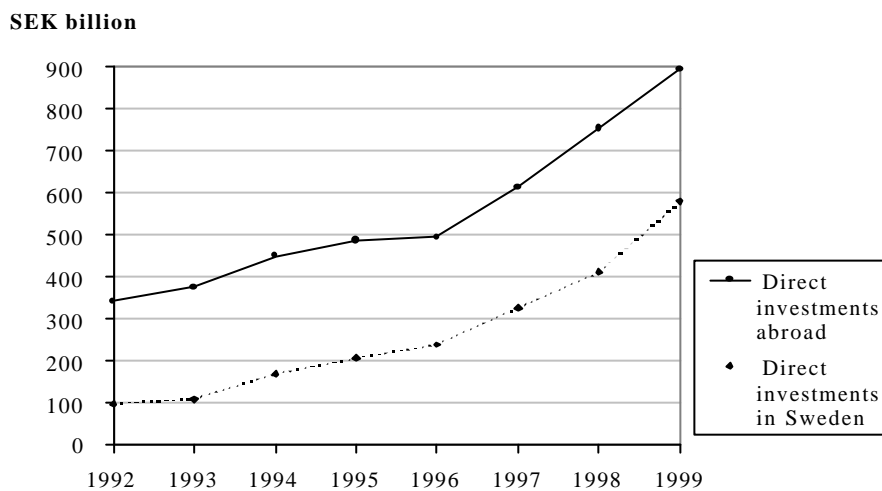
Sweden has consistently had a ratio between outward and inward FDI exceeding one and is found among the countries with the highest ratio throughout the 1980's and 1990's. However, according to the figures in the table, the ratio was very close to one in 1980, which is somewhat surprising given that Sweden had small inflows of FDI up until the early 1990's. Still, the table shows a substantial decrease in the ratio between outward and inward FDI for Sweden between 1990 and 1998, which is consistent with increased inflows of FDI during this period.

<sup>3</sup> Note, however, that the stocks are measured at historical costs.

#### 4 Swedish trends in FDI

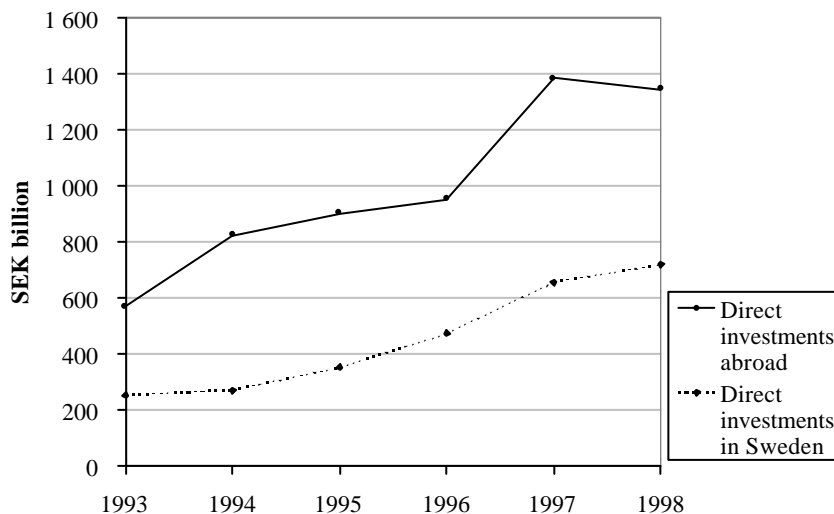
In this section, we shall specifically focus on the development in Sweden with respect to FDI. To begin with, we shall examine the development of the stocks of outward and inward FDI. Figures 1 and 2 show the development of these stocks since the end of 1992. Figure 1 shows the stocks at book value and figure 2 at market value. Both figures show large increases in both outward and inward FDI during the period, although there is a decrease in the market value of the outward FDI stock between 1997 and 1998.

Figure 1. The stocks of Swedish outward and inward FDI (book value) 1992-1999



Source: Riksbanken

Figure 2. The stocks of Swedish outward and inward FDI (market value) 1993-1998



Source: Riksbanken



Furthermore, the figures reveal that the outward stock has consistently been higher than the inward stock, although the stock of inward FDI has grown faster. The market value of direct investments in Sweden tripled between 1993 and 1998, while the market value of Swedish direct investments abroad more than doubled.

Turning to the geographical distribution of Swedish FDI in Table 4, there is no evidence of any substantial shift since 1990. The main part of Swedish-owned direct investment assets is found in other developed countries. In this respect, the Swedish pattern does not diverge from the one in other countries. In 1998, about 91 percent of the total assets were located in other OECD-countries; the US being the single most important host country. The Nordic countries have traditionally been important recipients of Swedish FDI and it is interesting to note that their importance seems to have increased rather than decreased.

Table 4. Total Swedish-owned direct investment assets abroad and their regional distribution (in percentages)

	1990	1994	1998
Total assets (billion SEK)	282	442	727
<i>Regional distribution:</i>			
Non-OECD countries	12	14	9
OECD countries	88	86	91
EU	55	58	55
US	15	13	19
Nordic countries	12	10	18
Total	100	100	100

*Note:* EU and the Nordic countries are overlapping categories.

*Source:* Riksbanken

Studying the geographical pattern of foreign direct investment assets in Sweden in Table 5, we see a similar distribution as for Swedish assets abroad. Companies from other OECD countries owned 95 percent of the total assets.

Because a foreign direct investment is a flow of financial capital, it does not necessarily correspond to investments made by firms originating in a particular country. For instance, if a Swedish firm is financing a foreign investment with funds raised locally, the

investment is not defined as a foreign direct investment.<sup>4</sup> Activity data thus give more accurate information on the expansion of foreign activities by multinational enterprises (MNEs).

Table 5. Total foreign direct investment assets in Sweden and their regional distribution (in percentages)

	1990	1994	1998
Total assets (billion SEK)	71	166	416
<i>Regional distribution:</i>			
Non-OECD countries	6	5	5
OECD countries	94	95	95
EU	38	49	65
US	10	10	8
Nordic countries	31	24	33
Total	100	100	100

*Note:* EU and the Nordic countries are overlapping categories.

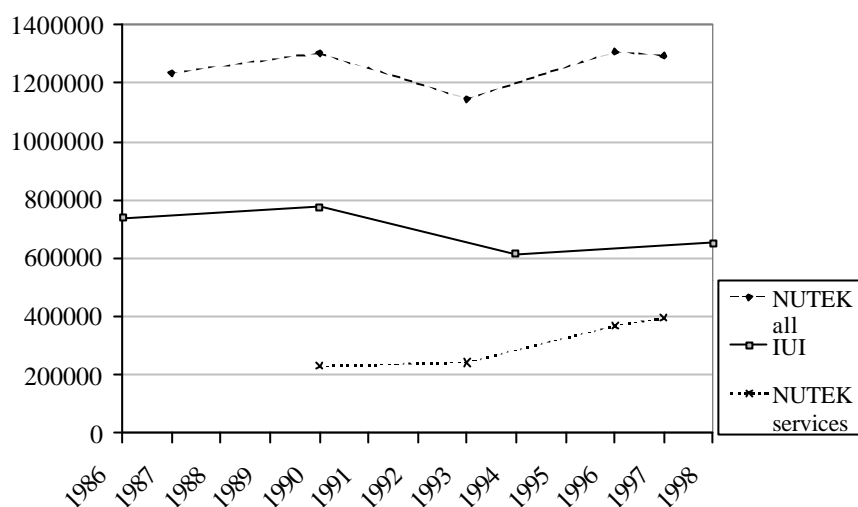
*Source:* Riksbanken

Activity data on Swedish MNEs are available from two sources: the IUI database and NUTEK, which has surveyed all Swedish-owned enterprises with at least one affiliate abroad since 1987. The data available from the two sources differ with respect to the targeted population. IUI's data cover Swedish *manufacturing* firms with at least one *producing* affiliate abroad, whereas NUTEK surveys all firms with at least one affiliate abroad, irrespective of whether it is a sales affiliate, a producing affiliate or some other type of affiliate. IUI's data also differ from NUTEK's data in that they contain much more detailed information about the firms' foreign activities.

Figure 3 makes a comparison between IUI and NUTEK data based on the total number of employees of the firms. The total number of employees is higher for the NUTEK data since it is based on a larger number of firms. The development of the total number of employees over time, however, is quite similar. Both IUI and NUTEK found a decrease in the total number of employees in the early 1990's, whereas there has been a small increase since then. It is interesting to note that MNEs belonging to the service industries – which are not covered by the IUI surveys – have continued to expand throughout the period.

<sup>4</sup> Except for the case in which the firm uses past earnings in the subsidiary. Such reinvested earnings are included in the data on foreign direct investment reported by the Swedish central bank (Riksbanken).

Figure 3. Number of employees in all Swedish owned enterprises having subsidiaries abroad 1986-1998



Source: IUI database and NUTEK

## 5 The Swedish MNEs' production and employment

Let us now turn to the results from the IUI survey of the foreign activities of the Swedish manufacturing firms. Table 6 shows the distribution of employment and net sales of MNEs between Sweden and abroad.<sup>5</sup> As is evident from this table, there has been a more or less successive decline in the Swedish share of employment and net sales. Hence, those Swedish manufacturing firms that have producing affiliates abroad have become increasingly prone to locate their activities abroad rather than in Sweden.

Table 6. Swedish and foreign share of MNEs employees and net sales 1970-1998 (percent)

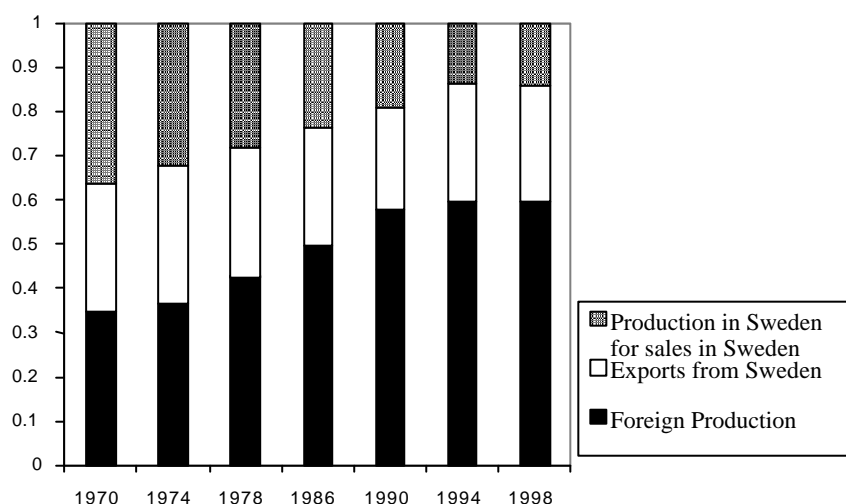
	<i>Employees</i>		<i>Net sales</i>	
	Sweden	Abroad	Sweden	Abroad
1970	N/A	N/A	61.6	38.4
1974	59.8	40.2	58.8	41.2
1978	57.6	42.4	51.3	48.7
1986	50.8	49.2	42.7	57.3
1990	39.4	60.6	34.8	65.2
1994	39.8	60.2	29.0	71.0
1998	34.4	65.6	29.3	70.7

Source: IUI database

<sup>5</sup> Net sales are defined as external revenues; external meaning that all sales within the group are eliminated.

Figure 4 reproduces the distribution of the firms' total sales between Sweden and abroad. Here, the foreign part of total sales is divided into exports from the Swedish parent and production in foreign affiliates. The figure shows that there has been a successive decline in the share consisting of production in Sweden destined for the Swedish market. Hence, the MNEs have, on average, reduced their propensity for domestic production for the Swedish market. There is no similar clear trend in the share that consists of production in Sweden destined for foreign markets, i.e. exports. This suggests that the decreased relative importance of Sweden as a location for production is mainly related to a decreased relative importance of the Swedish markets for the firms in the sample and less with a decreased relative importance of Sweden as a location for production for foreign markets.

Figure 4. Distribution of the Swedish MNEs' sales in Sweden and abroad, 1970-1994



Source: IUI database

Figure 4 reveals that, while the foreign share of production increased successively between 1970 and 1994, it basically remained constant between 1994 and 1998 (there was even a small decrease). It is important for the interpretation of this development to examine whether this reflects a more or less constant share for the firms included in the database before 1998 or a change in the sample of firms. Table 7 decomposes the change in the foreign share of production into the contribution from firms remaining in the sample for two consecutive survey years and the contribution from entering and exiting firms. The overall change in the foreign share of production ( $\Delta FS$ ) is decomposed according to the following formula:

$$(1) \quad \Delta FS = \sum_{i \in S} \mathbf{q}_{i,t-1} \Delta f s_i + \sum_{i \in S} f s_{i,t} \Delta \mathbf{q}_i + \sum_{i \in N} \mathbf{q}_{i,t} f s_{i,t} - \sum_{i \in X} \mathbf{q}_{i,t-1} f s_{i,t-1},$$

where  $\mathbf{q}$  denotes the share of firm  $i$ 's net sales in total net sales and  $f s_i$  denotes firm  $i$ 's foreign share of its net sales. Set  $S$  consists of firms that are present in the sample at  $t$  as well as  $t-1$ , while sets  $N$  and  $X$  consist of firms that are only present in the sample at  $t$  and  $t-1$ , respectively.

The first two terms in (1) constitute the change that can be attributed to either a change in the shares of foreign production (the within effect) or a change in the relative size of firms (the between effect) that remain in the sample. The last two terms constitute the change that can be attributed to changes in the firm sample, i.e. exiting and entering of firms.

Table 7. Decomposition of changes in the foreign share of production (percentage points)

	<i>DFS</i>	<i>Within</i>	<i>Between</i>	<i>Entering/exiting</i>
1970-1974	2.7	3.3	-0.1	-0.5
1974-1978	7.5	5.2	1.8	0.5
1978-1986	8.5	7.4	6.3	-5.2
1986-1990	7.9	6.0	9.5	-7.6
1990-1994	5.9	4.6	2.0	-0.8
1994-1998	-0.3	0.6	17.7	-18.6

Source: IUI database

Both the within and the between effect contribute positively to the overall change in the foreign share of production throughout the time period (except for the small negative between effect in 1970-1974). The effect of entering and exiting firms, on the other hand, is generally negative (with the exception of 1974-1978). This may either be due to a lower average share of foreign production or a smaller average size of entering as compared to exiting firms. It is evident from Table 7 that the small decline in the foreign share of production between 1994 and 1998 stems from a change in the firm sample rather than a declining share for given firms. In particular, the between effect is positive and large during this period, which implies that of the remaining firms, those firms that have a relatively high share of foreign production have become relatively larger. At the same time, however, the effect of exiting and entering firms is strongly negative.

Tables 8 and 9 show the regional distribution of employees and production of foreign affiliates of Swedish MNEs.<sup>6</sup> These tables bear out the fact that Swedish MNEs are very oriented towards Western Europe as regards the location of foreign affiliates. At the beginning of the time period, about two thirds of the employment and production in foreign affiliates were found in other Western European countries. In 1998, that share had decreased to slightly above 50 percent. The decreased relative importance of Western Europe as a foreign location for Swedish MNEs has been mirrored by an increased relative importance of North America (or, more precisely, the US). In 1998, about a quarter of the foreign employees and production came from affiliates in North America.

Other regions have only held minor shares of the MNEs' foreign activities. Latin America held as much as 10-15 percent of foreign employment and production in the 1970's and 1980's, but this share fell to below 10 percent in the 1990's. Asia's share of foreign employment and production has remained low throughout the period. This might be somewhat surprising, since other evidence suggests that Asia became a very important market for several of the large Swedish manufacturing firms in the 1990's. NUTEK, for instance, reports a higher share of foreign employment for Asia. The difference, however, may be explained by the fact that our firm sample does not cover service companies and sales affiliates of manufacturing companies.

In 1994, Central and Eastern Europe appear as possible locations for the firms in the sample for the first time. This region then immediately surpassed Africa in terms of its relative importance as a location for Swedish MNEs. Between 1994 and 1998, there was a marked increase in Central and Eastern Europe's share of the foreign employment and production of Swedish MNEs. In 1998, about 7.5 percent of the MNEs' foreign employment and about 2.5 percent of their foreign production were found in Central and Eastern European countries. These shares were higher than the corresponding ones for Asian countries.

Tables 10 and 11 show the same type of distributions as Tables 8 and 9. However, now the distribution is shown at country rather than regional level. More specifically, the tables show the shares of foreign employees and production for the countries that are the most important locations of Swedish MNEs. Not surprisingly, it is primarily the large European countries and the US that enter the tables. With respect to developing countries,

---

<sup>6</sup> Note that these tables are based on questionnaires relating to individual affiliates. Since the surveyed firms have not filled out questionnaires for all of their producing affiliates, this information only covers a subset of the foreign production reported in tables 6 and 7.

very few hold more than a tiny fraction of the foreign employees and production. Brazil and India are included in the tables due to their importance as host countries in the early 1970's.

Table 8. The regional distribution of foreign employees of Swedish MNEs 1970-1998 (percentages)

	1970	1974	1978	1986	1990	1994	1998
Western Europe	68.5	66.8	65.7	57.9	61.5	56.8	51.8
North America	6.8	7.7	11.0	20.7	22.5	23.7	25.5
Other developed countries	2.9	3.2	2.3	3.3	2.3	2.4	1.5
Eastern Europe	0.0	0.0	0.0	0.0	0.0	3.9	7.4
Asia	7.7	7.1	2.6	3.1	3.5	5.1	5.1
Latin America	12.3	13.4	17.2	12.0	9.7	7.4	7.9
Africa	1.8	1.8	1.2	3.0	0.5	0.7	0.8

Source: IUI database

Table 9. The regional distribution of production abroad of Swedish MNEs 1970-1998 (percentages)

	1970	1974	1978	1986	1990	1994	1998
Western Europe	72.5	72.5	70.2	67.2	72.0	63.0	53.3
North America	11.9	9.8	13.3	20.8	19.6	25.5	34.5
Other developed countries	1.8	3.2	2.5	2.5	1.6	2.5	1.1
Eastern Europe	0.0	0.0	0.0	0.0	0.0	1.0	2.4
Asia	3.4	2.2	1.2	1.2	1.1	1.5	1.4
Latin America	9.2	10.9	12.2	7.7	5.4	6.1	7.1
Africa	1.2	1.4	0.6	0.6	0.3	0.4	0.2

Source: IUI database

Tables 10 and 11 explicitly show what was apparent from tables 8 and 9, namely that the US has gained importance as a location for Swedish firms in relative terms. As concerns the European countries, however, there does not seem to be a clear trend. France, Germany, the Netherlands, and the UK seem to have decreased their shares of foreign activities of Swedish MNEs since the 1970s. However, for the three last countries, there is an increase in the share of foreign activities between 1986 and 1990. The temporary increase in Western Europe's share of foreign activities between 1986 and 1990, evident from Tables 8 and 9, corresponds to this development. Part of the explanation for this is probably that the uncertainty about Sweden's status within the European Union that prevailed in the late 1980's gave Swedish MNEs stronger incentives to locate activities in EU countries (see Braunerhjelm and Ekholm, 1999). However, it is an open question why this resulted in a particularly large expansion of activities in the UK and Germany.

There are some notable differences between the distribution of foreign employment and foreign production. One reason for differences in the distribution is that some firms have

not reported the value of production for their affiliates. Hence, the distribution for employment is based on a larger number of observations than the distribution of production.

The most notable difference between the two distributions is found for Belgium. Belgium's share of foreign production is much higher than its share of foreign employment. This difference remains if we calculate the distribution of foreign employment based on the same observations as for production. One interpretation is that Belgium hosts relatively capital intensive affiliates, generating a relatively high production value with fairly small labor inputs.

Table 10. The share of affiliate employees in selected countries, 1970-1998 (percentages)

	1970	1974	1978	1986	1990	1994	1998
<b>Developed countries:</b>							
Belgium	3.3	3.7	4.1	3.4	2.9	3.4	3.6
France	7.1	9.0	10.6	5.8	4.4	4.1	6.0
Germany	17.9	15.3	13.5	10.7	14.2	12.0	13.3
Italy	8.5	8.1	6.9	11.6	9.3	11.1	10.0
Netherlands	4.1	3.8	5.8	3.0	3.6	3.4	2.4
UK	7.6	7.0	9.6	6.2	11.5	8.4	5.3
US	5.4	6.0	9.2	19.1	21.0	22.4	22.1
Other developed countries	24.3	24.8	19.3	22.1	19.4	18.1	16.0
<b>Developing countries:</b>							
Brazil	11.6	13.0	10.3	6.9	5.9	5.7	4.8
India	6.7	5.7	1.5	1.8	1.4	1.8	2.2
Other developing countries	3.5	3.6	9.2	9.4	6.4	9.6	14.3

Source: IUI database

Table 11. The share of affiliate production in selected countries, 1970-1998 (percentages)

	1970	1974	1978	1986	1990	1994	1998
<b>Developed countries:</b>							
Belgium	7.5	9.2	8.5	10.7	10.9	10.7	13.3
France	10.9	11.6	8.9	7.5	6.6	6.1	4.0
Germany	21.1	20.6	17.0	14.5	20.6	14.1	12.4
Italy	9.2	7.2	5.0	12.6	5.7	10.0	9.1
Netherlands	6.2	6.7	9.3	4.7	5.8	4.8	2.0
UK	4.6	4.1	8.6	4.9	10.0	8.3	4.0
US	9.1	6.6	11.0	18.2	17.3	24.0	29.0
Other developed countries	17.6	19.5	17.7	17.4	16.3	13.0	15.1
<b>Developing countries:</b>							
Brazil	5.2	6.7	8.5	4.9	4.3	4.0	5.8
India	3.0	1.6	0.6	0.6	0.5	0.3	0.4
Other developing countries	4.6	6.2	4.9	4.0	2.0	4.7	4.9

Source: IUI database

The industry distribution of employment in foreign affiliates is shown in Tables 12 and 13. While the figures reported in Table 12 are based on the industry classification of the affiliate, the figures in Table 13 are based on the industry classification of the parent. The two dominating industries in terms of their share of foreign employees are electronics and



fabricated metals. Almost a third of the foreign employees are found in the electronics and electrical products industry and a quarter is found in metal products and machinery. The dominance of the latter industry has however diminished over time.

Table 12. Distribution of foreign employees by industry (percentages), 1970-1998 (according to the industry classification of the affiliate)

	1970	1974	1978	1986	1990	1994	1998
Paper & pulp, iron & steel	1.8	2.7	3.0	2.0	6.7	5.4	7.1
Fabricated paper & wood products	6.7	7.3	9.5	10.7	12.2	8.8	9.5
Chemical, plastic & rubber	13.2	11.3	7.7	11.8	9.7	10.9	3.3
Fabricated metal products & machinery	50.3	42.3	41.0	32.9	32.6	28.7	24.6
Electronics & electrical machinery	20.5	26.3	26.5	32.3	27.4	31.7	29.8
Transport	2.4	5.1	8.0	6.3	7.1	7.8	15.1
Other manufacturing	5.1	5.0	4.3	4.0	4.3	6.7	10.6

Source: IUI database

Table 13. Distribution of foreign employees by industry (percentages), 1970-1998 (according to the industry classification of the parent)

	1970	1974	1978	1986	1990	1994	1998
Paper & pulp, iron & steel	8.0	10.3	5.8	2.6	7.0	5.5	4.5
Fabricated paper & wood products	2.0	2.5	5.6	8.0	13.3	8.5	9.0
Chemical, plastic & rubber	7.5	6.0	6.4	7.2	8.4	9.6	4.1
Fabricated metal products & machinery	38.5	30.3	34.2	27.8	27.9	26.3	24.5
Electronics & electrical machinery	21.6	27.5	28.3	37.1	33.6	35.9	31.1
Transport	2.8	5.3	8.2	7.1	7.1	7.5	15.7
Other manufacturing	19.6	18.1	11.5	10.2	2.7	6.7	11.1

Source: IUI database

There was a substantial increase in the basic industries' share of foreign employees between 1986 and 1990.<sup>7</sup> This increase can be explained by a number of large acquisitions of foreign companies by the paper and pulp industry. The transport equipment industry's share of foreign employees has also increased substantially during the period. The fairly large decrease in the chemical industry's share is partly explained by cross-border mergers in the pharmaceutical industry.

Table 14 shows a cross-tabulation of the geographical and sectoral distribution of affiliate employment. It reveals that the large decrease in the share of fabricated metal products and machinery has been most pronounced in Western Europe. At the beginning of

<sup>7</sup> The basic industries are the paper & pulp and the iron & steel industries.

the period, the fabricated metal products and machinery industry accounted for almost half of the affiliate employment in Western Europe. In 1998, it only accounted for about a quarter. Another striking development is the increased importance of North America as a host of affiliates in the electronics and electrical machinery industry. In 1970, only 0.1 percent of the affiliate employment was found in the electronics industry in North America. In 1998, the corresponding number was 10.9 percent.

Table 14. Distribution of foreign employees in Swedish MNEs by region and industry, 1970-1998 (percentages)

		<i>Western Europe</i>	<i>North America</i>	<i>Other developed countries</i>	<i>Developing countries</i>
1970	Fabricated metal products & machinery	36.7	5.7	0.5	7.4
	Electronics & electrical machinery	13.5	0.1	2.4	4.5
	Other manufacturing	18.3	0.9	0.1	9.9
1974	Fabricated metal products & machinery	30.3	4.7	0.3	6.9
	Electronics & electrical machinery	16.3	1.8	2.4	5.9
	Other manufacturing	20.1	1.2	0.6	9.5
1978	Fabricated metal products & machinery	27.8	5.6	0.4	7.1
	Electronics & electrical machinery	14.8	2.5	1.5	7.6
	Other manufacturing	23.2	2.7	0.5	6.3
1986	Fabricated metal products & machinery	21.7	4.1	0.5	6.5
	Electronics & electrical machinery	16.7	9.8	2.1	3.7
	Other manufacturing	19.5	6.8	0.8	7.8
1990	Fabricated metal products & machinery	20.1	8.1	0.4	4.0
	Electronics & electrical machinery	13.2	8.6	1.1	4.6
	Other manufacturing	28.3	5.8	0.7	5.1
1994	Fabricated metal products & machinery	15.3	8.1	0.3	5.1
	Electronics & electrical machinery	16.6	9.6	1.3	4.5
	Other manufacturing	25.0	6.1	0.7	7.4
1998	Fabricated metal products & machinery	12.9	5.5	0.4	5.1
	Electronics & electrical machinery	12.8	10.5	0.0	6.4
	Other manufacturing	26.2	9.5	0.9	9.8

*Note:* For each year the shares summarize to 100 percent.

*Source:* IUI database

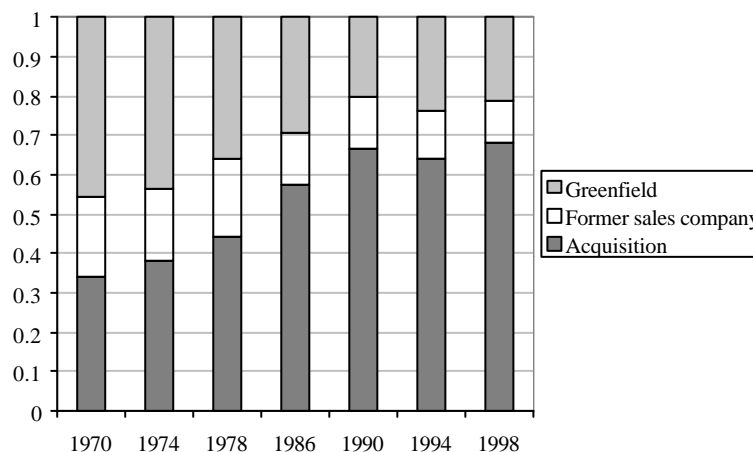
It is also noteworthy that there seems to be no clear trend with respect to the industry distribution of affiliate employment in developing countries. Throughout the period, the distribution over the three broad industry categories, fabricated metal products, electronics, and other manufacturing, is fairly even, with shares between 5 and 10 percent of total affiliate employment.

## 6 Entry mode of FDI

The recent worldwide increase in FDI seems to be more related to cross-border mergers and acquisitions (M&A:s) than greenfield investments (UNCTAD, 2000). Figure 5 shows the share of foreign affiliates of Swedish MNEs that have been established through acquisitions and greenfield investments, respectively. It also separates out the share of foreign (producing) affiliates that were formerly sales affiliates belonging to the same parent firm. The figure shows an increase in the share of acquisitions, from about a third of the affiliates in 1970 to about two thirds in 1998. The share consisting of affiliates that were formerly sales companies has decreased somewhat over time, while the large decrease is in the share of affiliates that have been established through greenfield investments.

The trend revealed in Figure 5 suggests that the relative importance of acquisitions as an entry mode increased up until 1990, but that it has remained more or less constant since then. This is somewhat surprising since there has been a wave of cross-border mergers and acquisitions at the international level during the 1990's.

Figure 5. Distribution of companies according to entry mode, 1970-1998



Source: IUI database

Table 15 shows the distribution of affiliates according to entry mode, distinguishing between affiliates located in developed and developing countries. What is evident from this table is that the overall increase in the relative importance of acquisitions as an entry mode really stems from the developed countries. In developing countries, the relative importance of different entry modes has not changed a great deal over time. There has been an increase in the relative importance of acquisitions, especially between 1990 and 1998. However, for the whole time period, the share of affiliates established through acquisitions in developing countries increased by about 20 percentage points, which can be compared with the increase by almost 40 percentage points pertaining to developed countries.

Table 15. Distribution of companies according to mode of entry 1970-1998, by region (percentages)

		<i>Former sales company</i>	<i>Acquisition</i>	<i>Greenfield</i>
1970	Developed countries	20.4	34.6	45.0
	Developing countries	20.2	31.5	48.3
	<b>Total</b>	<b>20.4</b>	<b>33.9</b>	<b>45.7</b>
1974	Developed countries	15.9	41.9	42.2
	Developing countries	26.7	21.0	52.3
	<b>Total</b>	<b>17.8</b>	<b>38.2</b>	<b>44.0</b>
1978	Developed countries	17.7	48.3	34.0
	Developing countries	27.7	25.8	46.5
	<b>Total</b>	<b>19.5</b>	<b>44.3</b>	<b>36.2</b>
1986	Developed countries	11.2	61.8	27.0
	Developing countries	23.9	30.4	45.7
	<b>Total</b>	<b>13.1</b>	<b>57.2</b>	<b>29.7</b>
1990	Developed countries	11.4	70.8	17.8
	Developing countries	28.4	33.3	38.3
	<b>Total</b>	<b>13.4</b>	<b>66.4</b>	<b>20.2</b>
1994	Developed countries	10.9	68.6	20.5
	Developing countries	19.2	41.6	39.2
	<b>Total</b>	<b>12.3</b>	<b>63.9</b>	<b>23.8</b>
1998	Developed countries	10.1	73.6	16.3
	Developing countries	12.5	51.5	36.0
	<b>Total</b>	<b>10.7</b>	<b>68.1</b>	<b>21.2</b>

*Note:* The percentages in each row summarize to 100.

*Source:* IUI database

## 7 Swedish MNEs and the patterns of trade

In this section, we present evidence on the trade patterns of Swedish MNEs. First, we examine the exports from the parent companies and then the extent of intra-firm trade.

Table 16. Exports from parent companies of the Swedish MNEs, by industry and region

		<i>Western Europe</i>	<i>North America</i>	<i>Other developed</i>	<i>Asia</i>	<i>Latin America</i>	<i>Other developing</i>
1970	Paper and pulp, iron and steel	83.8	10.1	1.3	0.6	2.7	1.5
	Chemicals	84.7	7.4	0.8	0.0	7.1	0.0
	Electrical Products	56.2	5.0	6.6	0.0	31.0	1.2
	Other industries	80.2	10.5	1.6	1.3	4.5	1.9
1974	Paper and pulp, iron and steel	81.9	6.4	2.5	3.4	4.9	0.9
	Chemicals	74.1	6.1	6.1	6.6	6.7	0.4
	Electrical Products	57.9	5.7	2.8	8.1	24.5	1.0
	Other industries	62.2	19.4	4.0	6.6	6.5	1.3
1978	Paper and pulp, iron and steel	89.0	4.5	0.6	4.6	1.2	0.1
	Chemicals	77.9	9.0	4.7	5.5	2.9	0.0
	Electrical Products	55.2	8.2	2.8	19.3	13.9	0.6
	Other industries	71.0	11.5	3.1	9.6	4.3	0.5
1986	Paper and pulp, iron and steel	93.5	2.9	0.9	2.2	0.4	0.1
	Chemicals	58.0	12.8	6.0	16.7	6.2	0.3
	Electrical Products	56.7	9.7	4.2	16.6	12.4	0.4
	Other industries	61.2	27.9	2.7	5.1	2.8	0.3
1990	Paper and pulp, iron and steel	89.8	6.8	0.6	2.6	0.2	0.0
	Chemicals	79.6	6.6	5.4	5.8	2.3	0.3
	Electrical Products	54.7	13.8	4.0	13.8	13.7	0.0
	Other industries	67.1	16.7	4.1	9.8	2.3	0.0
1994	Paper and pulp, iron and steel	88.0	2.8	1.7	5.9	0.4	1.2
	Chemicals	64.0	10.7	10.8	12.1	1.6	0.8
	Electrical Products	40.0	7.3	6.9	34.5	8.7	2.6
	Other industries	57.2	17.1	5.6	15.5	3.8	0.8
1998	Paper and pulp, iron and steel	89.9	1.7	4.3	4.1	0.2	0.8
	Chemicals	77.2	12.9	0.2	5.2	1.4	3.1
	Electrical Products	N/A	N/A	N/A	N/A	N/A	N/A
	Other industries	67.2	20.5	3.4	2.7	2.8	3.4

*Note:* The percentages in each row summarize to 100.

*Source:* IUI database

Table 16 depicts the parent firms' exports distributed on regions and industries. From this table, it is evident that Western Europe is strongly predominant as a recipient region. Not surprisingly, North America is the second most important recipient region. In particular, a substantial part of exports in the chemical industry and the industry group "other industries" is directed towards North America. With respect to the developing countries, Latin America's share of parent firm exports has decreased, while Asia's share has increased. The share of exports to Asia seems considerably lower in 1998 than in 1994.<sup>8</sup> This decrease corresponds primarily to increases in the shares of Western Europe and North America.

Table 17. Regional distribution of Swedish exports in 1998 (percentages)

<i>Region</i>	<i>Swedish MNEs</i>	<i>Share of total Swedish exports</i>
Western Europe	70.5	68.8
North America	17.6	9.8
Other developed countries	3.5	3.4
Asia	3.0	7.1
Latin America	2.4	2.8
Other developing countries	3.0	8.1

*Source:* Statistics Sweden and IUI database

Table 17 shows a comparison of the regional distribution of the exports from parent companies of Swedish MNEs and the regional distribution of total Swedish exports. The two distributions are fairly similar. However, North America receives a substantially higher share of exports from our sample of Swedish MNEs compared to total Swedish exports (17.6 percent compared to 9.8 percent). Asia and the category "other devel" a substantially lower share of exports from Swedish MNEs compared to total Swedish exports. One possible explanation for these differences is that the affiliate activities located in North America are more integrated with, and hence complementary to, their activities in Sweden than activities located in Asia and other developing countries. However, examining whether this is in fact the case is beyond the scope of this paper.

There has been a successive increase in the average share of exports to affiliates for the whole sample. Exports to affiliates as a share of total parent exports have almost doubled since 1970 and constitute almost 60 percent of parent exports in 1998 (see Table 18).<sup>9</sup> At the

<sup>8</sup> The figures for the electronic industry have been suppressed due to confidentiality.

<sup>9</sup> The 1994 figure of 59.6 percent is close to NUTEK's estimation of 62 percent for the same year (Statistics Sweden, 1998).

industry level, there is a considerable variation in the share of exports to affiliates between survey years. However, there seems to be a tendency for this share to be generally higher for machinery and transportation equipment.

Table 18. Exports to affiliates as a share of total parent exports, by industry, 1970-1998 (percentage)

	1970	1974	1978	1986	1990	1994	1998
Paper & pulp, iron & steel	19.6	19.9	15.1	15.1	17.4	29.9	13.9
Fabricated paper & wood products	36.3	45.5	23.7	16.9	23.2	19.7	15.4
Chemical, plastic & rubber	35.0	37.6	44.9	42.1	40.7	62.6	N/A
Fabricated metal products & machinery	52.9	50.1	61.9	64.1	63.9	71.4	67.8
Electronics & electrical machinery	46.2	47.5	41.1	40.8	59.5	64.2	61.7
Transportation equipment	39.3	51.3	61.4	71.4	76.1	75.5	79.1
Other manufacturing	20.4	14.9	18.6	28.3	24.5	18.4	36.2
All industries	33.8	35.3	40.0	48.8	49.5	59.6	60.3

Note: Affiliates include both sales and producing companies.

Source: IUI database

As in the case with the foreign share of production, we are interested in finding out whether the change in the average share of exports to affiliates is mainly driven by changes within given firms or by changes in the sample of firms. Again, we decompose the total change into three different components: a within effect, a between effect, and an effect stemming from the exiting and entering of firms. We calculate these components according to the following formula:

$$(2) \quad \Delta EA = \sum_{i \in S} \mathbf{I}_{i,t-1} \Delta ea_i + \sum_{i \in S} ea_{i,t} \Delta \mathbf{I}_i + \sum_{i \in n} \mathbf{I}_{i,t} ea_{i,t} - \sum_{i \in x} \mathbf{I}_{i,t-1} ea_{i,t-1},$$

where  $\mathbf{I}_i$  is firm  $i$ 's share of total exports for all firms in the sample and  $ea_i$  is the ratio between exports to affiliates and total exports for firm  $i$ . As previously, the first term captures the within effect. Here, it measures the change in the share of exports to affiliates for the remaining firms weighted by their export share in the base year. The second term captures the between effect, here measuring the change in the relative size of remaining firms with respect to their overall exports, multiplied with their share of exports to affiliates in the end year. The two last terms together constitute the effect of exiting and entering firms.

Table 19 shows the changes in percentage that can be attributed to the different components. Again, we see that the increase in the share of intra-firm exports of total parent

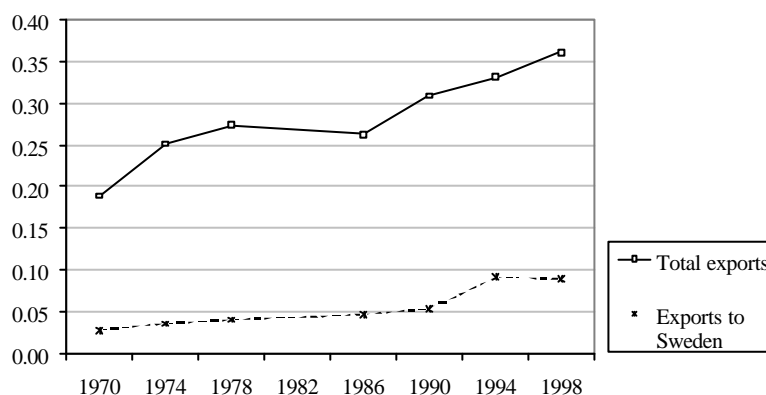
exports can be primarily attributed to changes within or between remaining firms. The contribution of exiting and entering firms is mainly negative. Much as in the case with the foreign share of production, we find that underlying the small change in the average share of intra-firm exports between 1994 and 1998, there is a large positive between effect and a strong negative contribution of exiting and entering firms. Hence, we once more find the aggregate numbers to be strongly affected by changes in the firm sample.

Table 19. Decomposition of changes in the share of parent exports destined to foreign affiliates (percentage points)

	<i>DEA</i>	<i>Within</i>	<i>Between</i>	<i>Entering/exiting</i>
1970-1974	1.4	2.0	-0.0	-0.5
1974-1978	4.7	1.8	2.4	0.5
1978-1986	8.8	4.0	6.7	-1.9
1986-1990	0.7	3.9	2.4	-5.6
1990-1994	10.2	4.7	5.5	0.0
1994-1998	0.7	-2.3	16.7	-13.7

Source: IUI database

Figure 6. The share of total exports and exports to Sweden in relation to the total sales of foreign affiliates, 1970-1998



Source: IUI database

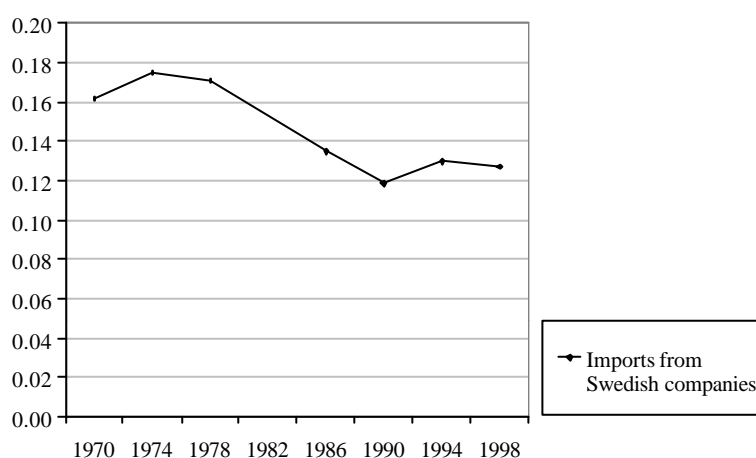
The affiliates' exports as a share of their total sales have increased since 1970 (see Figure 6). The largest increase took place in 1970-1974 and 1986-1990. Part of this increase in exports has been directed towards Sweden. The share of exports to Sweden was 8.8 percent in 1998. It is, however, unclear to what extent the increased export propensity reflects increased intra-firm trade. The firms are asked about the part of their total exports to Sweden that consists of exports to Swedish companies in the group. For 1998, more than 95 percent



of total exports to Sweden consisted of such intra-firm exports. However, with respect to exports to other countries than Sweden, we have no information about the extent to which this consists of exports to other foreign affiliates in the group.<sup>10</sup>

Turning to the extent of the foreign affiliates' intra-firm imports from Sweden, Figure 7 shows the ratio between imports from Swedish companies in the group and affiliate sales. According to this figure, there was a clear decline in this ratio during the 1980's. In 1998, the ratio was 12.7 percent, a decline by about four percentage points since the mid 1970's. This suggests that the foreign affiliates' linkages to the Swedish parent firms in terms of imports of intermediates and final goods for resale have become weaker compared to the 1970's. One possible explanation is the increased importance of takeovers as opposed to greenfield investments. Since acquired companies are likely to, at least partly, maintain the business relations they had before the acquisition, they are likely to be less dependent on imports of intermediates from the parent company than companies established by the parent company.

Figure 7. The ratio between imports from Swedish companies of the group and total sales of foreign affiliates, 1970-1998



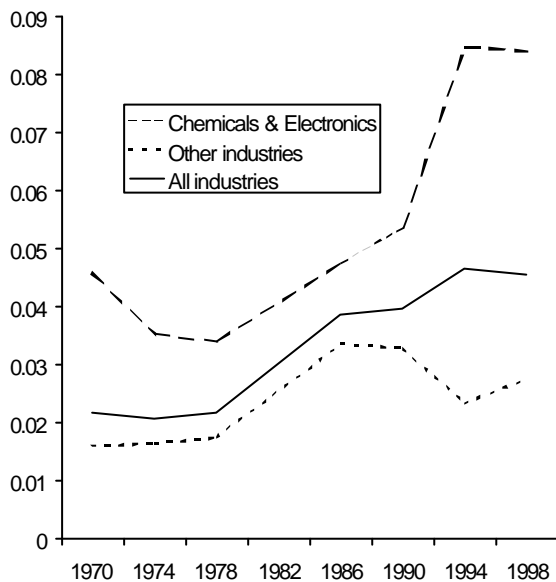
Source: IUI database

<sup>10</sup> Based on a survey in 1994 of the 20 largest manufacturing firms, NUTEK found that total intra-firm trade constituted 21 percent of the total sum invoiced (Statistics Sweden, 1998). Out of this, about a third was imports to Sweden. These figures are not directly comparable with IUI data, since they are based on a larger sample of firms but only producing affiliates. However, with respect to the affiliates' exports to Swedish companies in the group, the figures presented by NUTEK seem to be of the same magnitude as the ones presented here.

## 8 R&D in Swedish MNEs

A stylized fact about MNEs is that they are relatively R&D-intensive; a fact fitting in well with the notion of the possession of firm-specific assets being conducive to the emergence of multinational firms (see, e.g., Markusen, 1995). Swedish MNEs have become increasingly R&D-intensive over the years. Figure 8 shows the development of R&D expenditures in relation to net sales. The solid curve relates to the manufacturing industry as a whole, while the two other curves relate to the chemical/electronic industry and the rest of the manufacturing sector, respectively.

Figure 8. R&D-expenditure as a share of net sales, 1970-1998

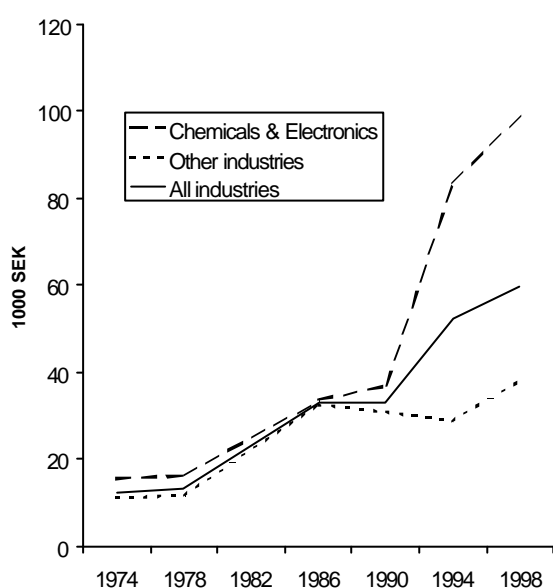


Source: IUI database

The average R&D-intensity of MNEs in the manufacturing sector seems to have remained fairly constant during the 1970's, but there has been a clear increase during the 1980's and 1990's. For the manufacturing industry as a whole, R&D expenditures constituted about 4.5 percent of the net sales in 1998. It is evident from Figure 8 that the increase in R&D-intensity in the late 1980's and the 1990's was mainly driven by a very large increase in the R&D-intensity of MNEs in the chemical and electronic industries. For the MNEs in the rest of the manufacturing sector, there was actually a decline in the ratio between R&D expenditures and turnover between 1990 and 1994.

Figure 9 shows the development of an alternative measure of R&D-intensity; R&D expenditures per employee. R&D expenditures are expressed in fixed 1990 prices (in current prices, the MNEs spent on average about 75,000 SEK per employee on R&D in 1998).<sup>11</sup> This figure shows a similar picture as Figure 8; a fairly constant R&D intensity at the beginning of the period and a substantial increase in the 1990's. Again, we see that the increase in the 1990's is mainly driven by large increases in the R&D intensity of MNEs in the chemical and electronic industries.

Figure 9. R&D expenditures per employee, 1974-1998 (fixed 1990 prices)



Source: IUI database

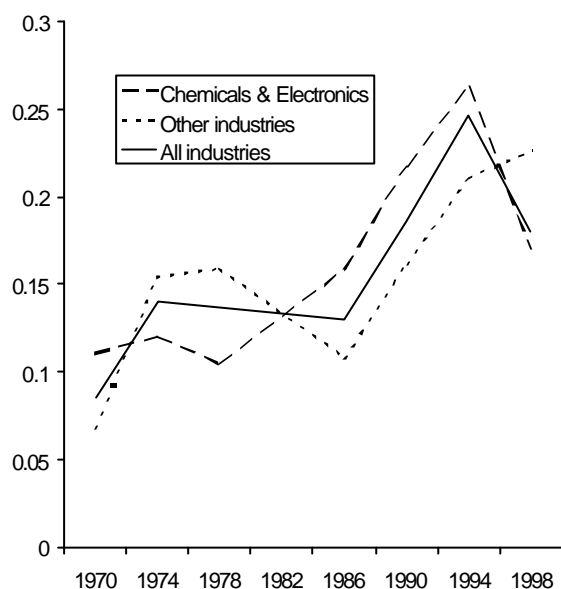
One issue that has been discussed in relation to the increased importance of multinational firms is the extent to which they locate R&D activities abroad. It is sometimes argued that R&D activities may generate positive externalities that are geographically limited in scope and, therefore, that a development with an increased relocation of R&D activities abroad is potentially welfare decreasing.

Figure 10 shows the foreign share of the Swedish MNEs' R&D expenditures (i.e. the share of overall R&D expenditures that can be attributed to foreign affiliates). In 1970, this share was about 8 percent whereas, in 1998, it was about 18 percent. We see a decline in the

<sup>11</sup> The R&D expenditures are deflated with the deflator for GDP at market prices from *Economic Outlook* (OECD, 1998)

foreign share of R&D expenditures between 1994 and 1998. As is evident from the figure, this decrease stems mainly from chemical and electronic industries.

Figure 10. R&D-expenditure abroad as a share of total R&D-expenditure, 1970-1998



Source: IUI database

Table 20 shows the foreign share of R&D expenditures disaggregated at a finer level of industries. In 1970, basically all R&D in the basic industries (paper and pulp, iron and steel), fabricated paper and wood products, and transport equipment, took place in Sweden. However, this pattern has changed dramatically. The large increase in the foreign share of R&D expenditures for the basic industries between 1986 and 1990 is most likely explained by the large acquisitions abroad that were made during this period. In 1998, about half of all R&D expenditures in fabricated metal products and the industry category other manufacturing originates in foreign affiliates.

The average share of foreign R&D for the whole sample shows a successive increase up until 1994. As noted above, however, there is a decrease between 1994 and 1998 by about seven percentage points. Again, this is likely to be a consequence of the change in the firm sample rather than of changes within firms. Some of the firms with a substantial part of R&D abroad in 1994 were no longer part of the sample in 1998 (some because they had been acquired by foreign firms, others because they had not answered the questionnaire when this report was written). Nevertheless, it is interesting to note that these data do not support a

considerable recent relocation of R&D activities by MNEs headquartered in Sweden. Such relocation may, however, still be prevalent within firms that have been taken over by foreign firms.

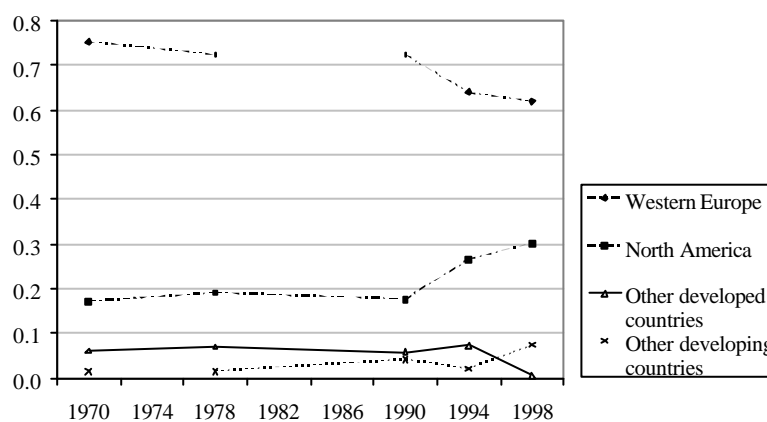
Table 20. R&D-expenditure abroad as a percentage share of total R&D expenditure by industry, 1970-1998

	1970	1974	1978	1986	1990	1994	1998
Paper & pulp, iron & steel	0.0	10.6	3.8	4.4	26.0	15.9	38.8
Fabricated paper & wood products	0.0	0.8	5.8	11.6	30.5	38.3	N/A
Chemicals, plastic & rubber	9.7	13.3	12.7	13.2	17.0	28.6	34.9
Fabricated metal products & machinery	12.8	31.8	29.2	36.0	45.0	52.0	50.5
Electronics & electrical machinery	11.6	11.6	9.2	17.1	25.5	25.2	16.9
Transport	0.3	8.9	3.8	3.6	5.6	8.0	7.3
Other manufacturing	10.9	13.1	20.6	24.6	15.9	25.3	53.7
All industries	8.6	14.0	13.6	13.0	18.6	24.7	18.0

Note: The 1998 figure for fabricated paper & wood products is suppressed due to confidentiality.

Source: IUI database

Figure 11. Regional shares of R&D expenditure abroad, 1970-1998



Note: Data are only available for 1970, 1978, 1990, 1994 and 1998.

Source: IUI database

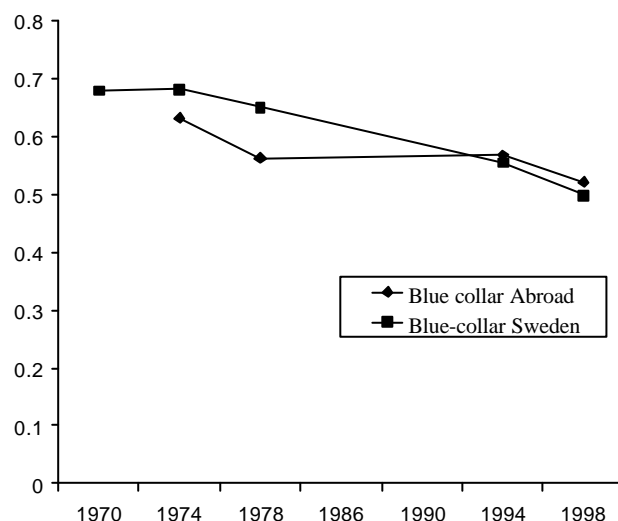
Figure 11 shows the regional distribution of the foreign R&D expenditures of Swedish MNEs. According to this figure, most of the R&D abroad is carried out in Western European countries. However, Western Europe's share of foreign R&D exhibits a clear decline in the 1990s. Whereas 75 percent of the MNEs' foreign R&D took place in Western Europe in 1970, the corresponding share was 62 percent in 1998. As for production activities, the decreased relative importance of Western Europe as a location is reflected in an increased

relative importance of North America (and, to a lesser extent, the category other developing countries).<sup>12</sup> In 1998, 30 percent of the foreign R&D expenditures were spent in North America, which adds to the evidence of a shift of activities from Western Europe to North America.

## 9 Skill structure within Swedish MNEs

The evidence with respect to regional distribution of Swedish MNEs' activities makes it clear that these firms tend to locate activities in high-wage rather than low-wage countries. However, there may still be an element of international specialization within the firms in the sense of their locating activities with different factor intensities at home and abroad. One way of looking at this issue is to study the relative use of skilled and unskilled workers in the firms' different locations. With our data, we are able to distinguish between blue- and white-collar workers for some of the survey years. Furthermore, for 1998, we can distinguish between high-skilled and low-skilled white-collar workers.

Figure 12. The share of blue-collar workers in the total work force, 1970-1998



*Note:* Data on the distribution between blue- and white-collar workers are only available for some of the survey years.

*Source:* IUI database

Figure 12 shows the average share of blue-collar workers in Sweden and abroad. In the mid 1970's, the average share of blue-collar workers was somewhat higher for the

<sup>12</sup> Within the diverse category "Other developing countries", the great majority of the R&D took place in Latin America up to 1994.

Swedish parts of the firms compared to foreign affiliates. However, since then, there has been a successive decline in the share of blue-collar workers for the Swedish parts of the firms. There has also been a decline in the share of blue-collar workers in the foreign affiliates, but it has not been as pronounced as for the Swedish parents. In 1998, the average share of blue-collar workers was about two percentage points lower for Swedish parents compared to foreign affiliates.

Figure 13a. The average share of low- and high- skilled white-collar workers in Sweden and abroad in 1998 (percent)

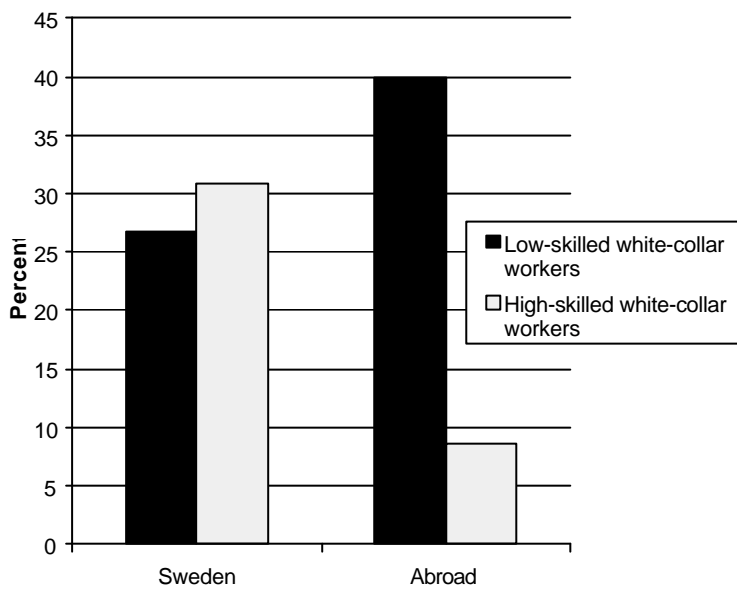
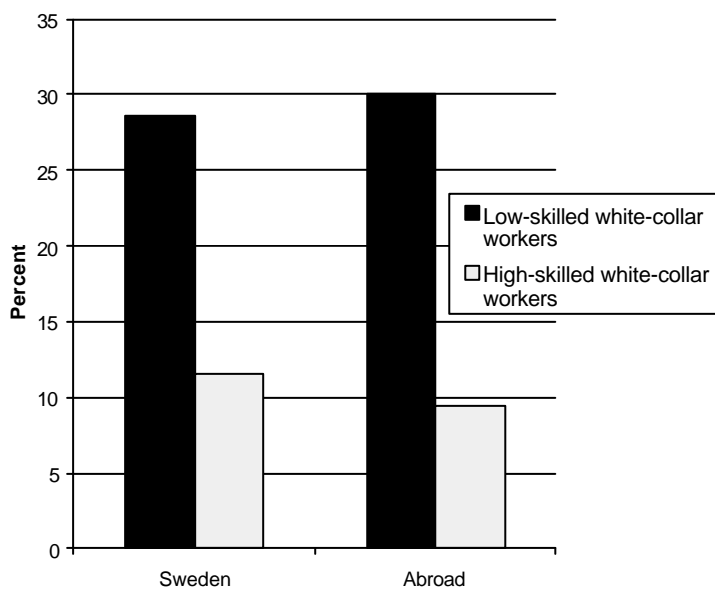


Figure 13b. The mean of firm-level shares of low- and high- skilled white-collar workers in Sweden and abroad in 1998 (percent)



In Figures 13a and 13b, the percentage shares of low- and high-skilled white-collar workers, respectively, are shown for the Swedish and the foreign parts of the firms. In Figure 13a, we have calculated the average share by simply taking the ratio between the total number of low- and high-skilled white-collar workers, respectively, and the total number of employees. In 13b, we have calculated the shares of low- and high-skilled workers for all firms in the sample, and display the average number of these shares. The reason why we calculate the averages in two different ways is because the two different methods yield somewhat different results. With both methods, we find a higher share of high-skilled white-collar workers in the Swedish parts of the firms. However, the difference is much larger when using the method in Figure 13a, which puts more weight on large firms than the method in Figure 13b.

Altogether, however, we conclude that we find evidence of a higher intensity of skilled workers in Swedish parents compared to foreign affiliates. This conclusion is important, since it has been suggested, on basis of previous evidence, that Swedish MNEs have tended to located skill-intensive activities abroad (e.g. Blomström et al., 1997, Braconier and Ekholm, 1999). What Figure 13a and 13b reveal is that a high share of white-collar workers in the MNEs' foreign affiliates may be due to a high-share of low-skilled white-collar workers rather than high-skilled ones.

## **10 Other questions included in the survey**

This section briefly reports the results from a number of additional questions included in the 1998 survey. The firms were asked to give information about the use of different currencies. The most common currencies for quoting export prices were the Swedish Krona (SEK) and the importing country's currency (the firms were allowed to report more than one currency). The predominance of SEK seemed to be even stronger with regard to the main currency used by the group. More than half of the companies reported that they mainly used SEK. A quarter reported that the USD was their main currency, while the remaining quarter reported some other currency, when specified, most often Deutsche mark or Euro.

We also asked about the occurrence of joint projects with other firms concerning R&D, design, marketing, distribution, purchasing, and production. Table 21 shows that these joint projects have become more common since 1990. While about 63 percent of the firms did not have any joint projects in 1990, this figure was only 50 percent in 1998. Moreover,



while about 10 percent of the firms reported more than 8 joint projects in 1990, the corresponding figure for 1998 was 21 percent.

Table 21. Occurrence of joint projects, 1990 and 1998

	0	1-3	4-8	>8
1990	62.7	14.9	11.9	10.5
1998	50.0	20.0	8.6	21.4

Source: IUI database

The firms were also asked to rank the importance of different areas for these joint projects. According to their replies, availability to markets and distribution was considered to be most important, closely followed by development of products. The other categories listed were strengthening of market position, sales and complementary products, and development of processes.

## 11 Comparison between MNEs and the control group

As mentioned previously, one change in the 1998 survey compared to previous years was the inclusion of a control group. This group consisted of manufacturing firms with more than 50 employees with no producing affiliates abroad, but with an export share of total sales of at least ten percent. Table 22 presents some descriptive statistics for the MNEs and the exporting firms in the control group.

To begin with, the firms in the control group are, on average, much smaller than the MNEs. Not only are they smaller than the entire MNE; they are considerably smaller than the Swedish parent of the MNEs as well. The average number of employees for the firms in the control group was 356, to be compared with the average number of employees in Sweden for the MNEs, which was 1 907.

The average value added per employee in Sweden is about the same for the two groups of firms, although it is somewhat higher for the firms in the control group (564 000 SEK compared with 559 000 SEK for MNEs). These figures do not necessarily capture differences in labor productivity between the two groups, since there may be several other explanations for a difference in value added per employee. First, the MNEs tend to locate activities that do not give any direct revenues, e.g. headquarters and R&D, in Sweden while carrying out a large part of their production abroad. Second, our measure of value added is

sensitive to reported profits, and the MNEs may have incentives to shift profits from Sweden to their foreign locations in order to reduce overall tax payments. However, as can be seen in Table 22, the average value added per employee for the entire MNE is, in fact, lower than for the Swedish parents (488 000 SEK). This means that measured labor productivity is, on average, lower in the foreign affiliates than in the Swedish parents. Thus, any effects stemming from a specialization on headquarter activities and/or shifting of profits for tax reasons seem to be more than counteracted by a lower labor productivity in the foreign affiliates. Lower labor productivity in the foreign affiliates can be explained by their production being less intensive in physical and human capital than production carried out by the Swedish parents.

The same difference with respect to value added per employee in foreign affiliates and parents is found for the firms in the control group, i.e., value added per employee is higher for the Swedish part of the firms than for the whole corporation. Since these firms only have sales affiliates outside Sweden, however, we would, in this case, unambiguously expect value added per employee to be lower in the foreign affiliates.

Table 22. Comparison between the sample of MNEs and the control group

	<i>MNEs</i>	<i>Control group</i>
Average number of employees in Sweden	1 907	356
Value added per employee in Sweden (SEK)	559 000	564 000
Value added per employee, entire corporation (SEK)	488 000	542 000
Share of blue-collar workers in Sweden (percent)*	49.8 (40.0)	65.6 (66.5)
Share of low-skilled white-collar workers (percent)	26.1	23.7
Share of high-skilled white-collar workers (percent)	34.0	9.8
R&D expenditures per employee in Sweden (SEK)	177 200	20 600

\*The figure for the share of blue-collar workers is based on a larger sample than the figures for the share of low- and high-skilled white-collar workers (on account of a larger number of reporting firms). The figure within parenthesis is, however, based on the same sample as the figures for the share of low- and high-skilled white-collar workers.

Source: IUI database

Still, the fact that the share of high-skilled white-collar workers is substantially higher for Swedish parents than for firms in the control group is an indication that MNEs do tend to specialize in various types of headquarter activities in Sweden. Correspondingly, the firms in the control group have a higher average share of blue-collar workers and low-skilled white-collar workers. Furthermore, as shown by the last row of Table 22, there is a substantial difference in average R&D-intensity between the Swedish parts of the MNEs and national

exporting firms. While average R&D expenditure in Sweden per Swedish employee is 177,200 SEK for MNEs, the corresponding figure for the control group is 20,600 SEK.

On basis of these results, we thus conclude that MNEs differ from national exporting firms in that they are, on average, larger, more skill-intensive and more R&D-intensive. This evidence is consistent with the main idea underlying much of the recent theorizing about MNEs; namely that the MNE arises as a consequence of the nature of the knowledge assets held by the firm. Because knowledge assets tend to be joint inputs that give rise to multiplant economies of scale, and whose services are easily transferred across countries, they are believed to be at the heart of an explanation why some firms choose to locate production abroad while others choose to serve foreign markets from home (see Markusen 1995).

## **12 Concluding remarks**

In this paper, we have given an account of the results from the 1998 survey of Swedish MNEs in the manufacturing sector. The emphasis has been on description rather than analysis, which means that many issues touched upon here need further analysis in future work on the database.

Nevertheless, our analysis reveals a number of interesting results. For instance, the fact that the share of production taking place abroad has increased successively since the early 1970's (although remaining more or less constant between 1994 and 1998) is mainly reflected in an increased importance of foreign markets for the firms included in the surveys. To a smaller extent, it is reflected in a decreased importance for Sweden as a location for production. Our analysis of trends also shows that there has been a continuous shift in the relative importance of Western Europe and North America as hosts of producing affiliates of Swedish MNEs; Western Europe has become relatively less important and North America, or, more specifically, the United States, relatively more. This shift is evident for production, employment as well as R&D activities. From 1986 to 1990, there was a temporary increase in Western Europe's share of the Swedish MNEs' foreign activities, but the trend towards an increased relative importance of the United States as a foreign location for Swedish manufacturing firms has continued since 1990.

A decomposition of white-collar workers into high-skilled and low-skilled ones reveals that the Swedish parents are, on average, more intensive in high-skilled workers than the foreign affiliates. This is important, since the claim that the Swedish MNEs tend to relocate skill-intensive activities abroad to a large extent is a cause for concern. The evidence

of the location of R&D activities reveals that there has been a substantial increase in the foreign share of such activities since the early 1970's, although our data do not support the idea that this development has been particularly strong in the late 1990's. We also find evidence of a substantially increased R&D intensity of Swedish MNEs during the 1990's, especially for firms operating in chemical and electronic industries.

There is some evidence of increased intra-firm trade for Swedish MNEs. We find an increase in the share of parent exports that is directed towards foreign (producing and sales) affiliates and a small increase in the share of foreign affiliate sales that consists of exports to the Swedish parent. On the other hand, since the 1970's, we also find a decrease in the foreign producing affiliates' propensity to import from the Swedish parent, which constitutes evidence of less intra-firm trade in intermediate inputs. What is relatively clear from our data, however, is that there has been a more or less successive increase in the export propensity of the foreign producing affiliates since the early 1970's. Whether this development reflects increased intra-firm trade between foreign affiliates located in different countries or increased exports to unaffiliated parties, perhaps as a consequence of the general tendency to increased market integration, cannot be determined on basis of our data.

Finally, our comparison between multinational firms, i.e. firms with foreign producing affiliates, and national exporting firms, i.e. firms without foreign producing affiliates but with a substantial part of their output being sold in foreign markets, reveals the following: On average, multinational firms tend to be substantially larger and more R&D intensive than national exporting firms. They also tend to have a higher share of white-collar workers, in particular high-skilled ones. The MNEs report, on average, a somewhat lower value added per employee than the national exporting firms. Hence, in spite of their higher R&D- and skill-intensity, measured labor productivity does not seem higher than in the national exporting firms.

## References

- Blomström, M., G. Fors and R. E. Lipsey (1997), "Foreign Direct Investment and Employment: Home Country Experience in the United States and Sweden", *Economic Journal*, 107, 1787-1797.
- Braconier, H. and Ekholm, K. (1999), "Swedish Multinationals and Competition from High- and Low-Wage Locations", CEPR Discussion Paper No. 2323.
- Braunerhjelm, P. and K. Ekholm (1999), "Recent Trends in the Foreign Activities of Swedish Multinational Corporations: The Role Played by Large European Host Countries", in R. Barrell and N. Pain (eds.), *Innovation, investment and the diffusion of technology in Europe. German direct investment and economic growth in postwar Europe*. Cambridge: Cambridge University Press.
- Markusen, J. R (1995) "The Boundaries of Multinational Enterprises and the Theory of *Journal of Economic Perspectives* 9, 169-189.
- OECD (1998), *Economic Outlook No. 65*, Paris: OECD.
- Statistics Sweden (1998), *Svenskägda företag med verksamhet i utlandet 1993-1996*, SM9801. Örebro: SCB.
- UNCTAD (1998), *World Investment Report: Trends and Determinants*. New York: United Nations.
- UNCTAD (1999), *World Investment Report: Foreign Direct Investment and the Challenge of Development*. New York: United Nations.
- UNCTAD (2000), *World Investment Report: Cross-border Mergers and Acquisitions and Development*. New York: United Nations.

## APPENDIX

### ACTIVITIES OF SWEDISH MULTINATIONAL ENTERPRISES ABROAD 1998

#### INSTRUCTIONS TO THE QUESTIONNAIRE

THE RESEARCH INSTITUTE OF INDUSTRIAL ECONOMICS  
BOX 5501, SE-114 85 STOCKHOLM  
TEL: +46 8-783 84 01 (switchboard)  
FAX: +46 8-661 79 69  
CONTACT PERSON:  
Marie Hesselman, Tel: +46 8-783 84 06, E-mail: MarieH@iui.se

The questionnaires should be returned before April 30, 1999 to the Research Institute of Industrial Economics.

#### I. Which enterprises are to answer the questionnaire?

The Institute's investigation comprises all **Swedish industrial enterprises** with a minimum of 50 employees having foreign **production affiliates** in 1998 or exports in 1998 that amount to at least 10 per cent of total sales. If your enterprise does not meet any of these criteria, please let us know by contacting Marie Hesselman at any of the numbers or addresses listed above.

#### II. The purpose of the study

This questionnaire is a follow up of earlier surveys conducted by the Institute in 1965, 1970, 1974, 1978, 1986, 1990 and 1994 regarding the Swedish industrial enterprises' activities abroad. The purpose of the study is to investigate the extent and direction of the Swedish companies' foreign operations. The questionnaire is designed in the same way as earlier questionnaires in order to facilitate comparisons over time. A novelty this year is the inclusion of enterprises that only supply foreign markets through exports from Sweden. This is done to enable comparisons between such enterprises and those which supply foreign markets through affiliate sales as well.

#### III. Definitions

A **Swedish company** is defined as a company registered in Sweden and not being an affiliate to a foreign company. In addition its main activity shall be within manufacturing.

**Companies belonging to the group and affiliates** are defined as companies in which the parent company holds directly, or jointly with other subsidiaries, more than 50 per cent of the voting rights for all of the shares in the subsidiary. These companies are subject to the consolidated financial statements according to the Swedish Companies Act.

**Producing companies** are defined as companies involved in some form of production of goods such as extraction, manufacturing or assembly. Production of goods may only be a minor part of the overall activity of producing companies.

**Sales companies** are those that deal predominantly with sales, possibly combined with installation and service activities. Sales activities should predominantly involve goods produced by companies belonging to the same group.

- and B-forms.

## **VIII. Explanations to specific questions**

References to explanations VIII:1-VIII:8 below are to be found at the relevant questions in the questionnaire.

**VIII:1** Industry classification for the company's/Swedish company group's main activity

<b>Code</b>	<b>Industry</b>
1	<b>Mining and quarrying</b>
	<b>Manufacture of food, beverages, and tobacco</b>
2.1	Food manufacturers
2.2	Beverage manufacturers
2.3	Tobacco manufacturers
	<b>Textile, wearing apparel, and leather industries</b>
3.1	Textiles and wearing apparel

3.2	Shoe and leather industries
4	<b>Furniture</b>
5	<b>Wood and wood products</b> (excluding furniture)
	<b>Manufacture of paper and paper products, printing, and publishing</b>
6.1	Pulp, paper and paperboard
6.2	Paper products
6.3	Printing, publishing and allied industries
	<b>Manufacture of chemicals, plastic products, and petroleum</b>
7.1	Petroleum refineries and manufacture of products of petroleum and coal
7.2	Basic chemicals
7.3	Pesticides and other agricultural chemical products
7.4	Drugs and medicines, pharmaceutical chemicals and botanical products
7.5	Other chemical production and synthetic fiber
7.6	Rubber products
7.7	Plastic products
8	<b>Non-metallic mineral products</b> (except products of petroleum and coal)
	<b>Basic metal industries</b>
9.1	Iron and steel basic industries
9.2	Non-ferrous metal basic industries
	<b>Manufacture of fabricated metal products</b> (except machinery and equipment)
10.1	Tools
10.2	Metal constructions
10.3	Other fabricated metal products (except machinery and equipment)
	<b>Manufacture of non-electrical machinery and equipment</b>
11.1	Machinery for agriculture and forestry, machine tools and other special machinery
11.2	Other non-electrical machinery, weapons and ammunition
12	<b>Office machines and computers</b>
	<b>Electrical machinery, apparatus, appliances and supplies</b>
13.1	Motors, generators and transformers
13.2	Electrical household appliances and supplies
13.3	Telecommunication equipment, radio and TV
13.4	Other electrical machinery and equipment
14	<b>Professional, scientific, measuring and controlling equipment, photographic and optical goods</b>
	<b>Manufacture of transport equipment</b>
15.1	Motor vehicles
15.2	Ship building and repairing
15.3	Other transport equipment
16	<b>Other manufacturing industry</b>

**VIII:2.** Average number of employees during the year (full-time equivalent) refers to the total number of working hours during the year divided by the normal yearly working time in hours for a full-time employee. If any other method was used to calculate the figure, please state so under “Additional informatio



**VIII:3.** Codes (1-11) regarding type of activity of other operational companies abroad.

1: Commerce	5: Research and development	9: Service
2: Agriculture and forestry	6: Corporate management	10: Finance
3: Construction	7: Transport	11: Other services
4: Powerstation	8: Distribution	

**VIII:4.** Statistics Sweden's (SCB) definition of research and development (R&D) within industries includes basic and applied research as well as development within the natural sciences, technology, medicine, agricultural science etc. The Statistics Sweden's definition does not include social science research such as market and business research. There should be an element of novelty of the R&D. Normal engineering and construction work that follows established routines should not be regarded as R&D. R&D costs include running costs and accrual accounting capital costs for R&D carried out by the company itself and outlays for R&D carried out by others on behalf of the company. License payments should not be included.

**VIII:5.** If information on outlays for fringe benefits in the foreign affiliates is lacking, please raise the expenditures on salaries and wages by the estimated percentage increase due to such outlays.

**VIII:6.** Instructions concerning the classification of the workforce:

**Production workers:** Personnel engaged in manual work, craftsmen, production line operators, transport workers, personnel engaged in work that does not require particular vocational training.

**Low-skilled non-production workers:** Administrative personnel, clerical and service workers, sales representatives, laboratory assistants, security personnel etc. To this category belong all personnel doing non-manual work that normally requires only secondary education (or equivalent) or possibly a shorter additional education at the post-secondary level.

**High-skilled non-production workers:** Personnel engaged in management, personnel in executive positions, researchers, technicians, engineers, computer specialists, lawyers, designers etc. Personnel involved in highly qualified work that normally requires university education (or equivalent).

**VIII:7.** The parent company's (in the group) **direct** and **indirect** ownership of the foreign company's equity stock is calculated as follows: Suppose that 80% of a foreign company's equity stock is owned by another foreign company. Suppose also that 60% of this other foreign company's equity stock is owned by the Swedish company. The parent company's direct and indirect ownership then amounts to  $80\% \times 60\% = 48\%$ . The Swedish company group's direct ownership in this *affiliate of an affiliate* is in this case zero. The reason that this affiliate of an affiliate should be classified as a company of the group is that more than 50% of its equity stock -- in this case 80% -- is owned by another company in the group.

**VIII:8.** The term "joint projects with other independent firms" refers to an alliance of independent companies that aim at jointly investing resources on R&D, design, marketing, distribution or production. Joint projects with other independent firms can be of many forms – ranging from simple agreements with no equity terms to more formal arrangements involving equity ownership and shared managerial control of joint activities.

The following countries are EU-members: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.

**FORM A**  
**CONFIDENTIAL**

**ACTIVITIES OF SWEDISH MULTINATIONAL ENTERPRISES  
ABROAD 1998**

THE RESEARCH INSTITUTE OF INDUSTRIAL ECONOMICS (IUI)

BOX 5501, SE-114 85 STOCKHOLM, SWEDEN

TEL.: +46 8-783 84 01 (switchboard)

FAX: +46 8-661 79 69

CONTACT PERSON: Marie Hesselman, Tel: +46 8-783 84 06, E-mail: MarieH@iui.se

This form should be returned before April 30, 1999 to the Research Institute of Industrial Economics.

NB: Please include a copy of the Annual Report 1998 for the company/group of companies.

**Form A:** Details of the company/group of companies in Sweden and its interests abroad.

Please read the instructions before completing the questionnaire.

1. Name and address of the company/parent company:	IUI code (to be filled in by IUI)
..... .....	
Organization number: .....	
Has the company changed its name since 1994? If so, state the old name here: .....	
2. Contact person: ..... Tel: ..... Fax: ..... E-mail: .....	

A:2

	Code
3. Industry classification for the company's/Swedish company group's main activity Give the sector code as defined in instructions VIII:1. NB: One code only.	

	Number 1998
4. (a) The number of affiliates abroad	
(b) of which production affiliates See instructions, III. For each such affiliate, form B should be sent in.	

**If your answer on question 4a is 0 (null), please skip all questions with notes stating that they are not to be answered by companies without foreign activities.**

	Number 1998
5. (a) Total number of group employees Average number of employees during the year in full-time equivalent. See instruction, VIII:2.	
(b) <b>Of the above</b> , the number of employees in Sweden <b>NB: Not to be answered by companies without foreign activities.</b>	

	MSEK 1998
6. <b>Total</b> external revenues of the group Invoiced sales plus other operating revenues. All sales within the group should be eliminated.	
7. External revenues of the <b>Swedish</b> segment of the group External revenues in Sweden plus total invoiced exports. Total invoiced exports is defined as external export plus sales to foreign affiliates. <b>NB: Not to be answered by companies without foreign activities.</b>	
8. (a) Total invoiced <b>exports</b> from the <b>Swedish</b> segment of the group See definition in question 7.	
(b) <b>Of the above</b> , amount from sales to foreign affiliates <b>NB: Not to be answered by companies without foreign activities.</b>	
9. Group's total external revenues from abroad NB: Item 9 = items 6 - 7 + 8a <b>NB: Not to be answered by companies without foreign activities.</b>	

10. (a) List below the group’s producing companies located in **Sweden** together with the industry classification for their main activity. Also give each company’s number of employees, external revenues, and invoiced exports for 1998.  
See instructions, III.

Company name	Sector (from code in VIII:1)	Number of employees in 1998 (full-time equivalent)	External revenues MSEK 1998	Invoiced exports MSEK 1998

*Continue on a separate sheet if necessary.*

(b) List the number of employees, total external revenues, and invoiced exports for any **sales companies** and **other operational companies** (not producing companies) belonging to the **Swedish** segment of the company group.

See instruction, III.

	Number of employees in 1998 (full-time equivalent)	External revenues MSEK 1998	Invoiced exports MSEK 1998
Total (question 10a and 10b combined should yield the same values as the answers to questions 5b, 7 and 8a).	(=5b)	(=7)	(=8a)

11. List below the **producing** companies with at least 50 employees located in **Sweden** that joined or left the group in the period 1994–1998 and give other requested details of these companies.  
See instruction, III and VIII:1.

Company name	Sector (from code in VIII:1)	Year joined	Year left	Number of employees at the time of acquisition/divestment

*Continue on a separate sheet if necessary.*

12. Details of sales affiliates abroad

For each country in which there are sales affiliates, give the totals of those affiliate’s employees, external revenues, and invoiced sales of goods produced by the Swedish segment of the group only for the sales affiliates and specify by country. See instruction, III.  
**NB: Not to be answered by companies without foreign activities.**

Country	Number of employees 1998	External revenues MSEK 1998	Invoiced sales of goods produced by the Swedish segment of the group MSEK 1998

*Continue on a separate sheet if necessary.*

13. Details of <b>other operating affiliates</b> abroad See instruction, III and VIII:3. <b>NB: Not to be answered by companies without foreign activities.</b>		
Country	Sector (from code in VIII:3)	Number of employees 1998

*Continue on a separate sheet if necessary.*

14. List the company's business areas or divisions, the home country for the head office of each, and the share of revenue generated by each. <b>NB: Not to be answered by companies without foreign activities.</b>		
Name of the business area or division	Head office located in country	Share of revenues (in percentages)

*Continue on a separate sheet if necessary.*

15. (a) Total revenues of the <b>entire</b> group from licenses, patents, royalties and "know-how" Excluding payments between companies belonging to the group. Make a reasonable estimate. State in MSEK.	
(b) If possible, estimate the corresponding turnover in the licensee companies. Make a reasonable estimate and state as a percentage.	%

A:6

	MSEK 1998
16. (a) Total revenues of the <b>Swedish</b> segment of the group from licenses, patents, royalties, "know-how" and "management fees" Including contributions to cover the costs of R&D and central administration. Excluding payments between <b>Swedish</b> companies of the group. Make a reasonable estimate.	
(b) <b>Of the above</b> , the amount generated by foreign affiliates <b>NB: Not to be answered by companies without foreign activities.</b>	
(c) revenues of the <b>Swedish</b> segment of the group from other foreign companies <b>NB: For companies without foreign activities, this figure will simply reflect all revenues from abroad.</b>	
17. (a) Total group expenditure on licenses, patents, royalties and "know-how" Excluding payments between companies in the group. Make reasonable estimates.	
(b) Of the above, the amount paid to companies in countries other than Sweden.	

18. For the information given in questions 9 (the group's external revenues from abroad), 8a (total exports of the Swedish segment of the group), and 16c (revenues from licenses etc of the **Swedish** segment of the company from non-group companies abroad), give the amount for each country. If a country is not on the list, please add it on one of the blank rows at the end. Continue on a separate sheet if necessary.

The revenue figures reflect the group's total external sales in each country and should include imports to the country and exclude exports from the country. Sales between companies in the group should be excluded.

The export figures reflect total exports from Sweden, i.e. sales to group companies in the country as well as other exports to the country in question.

Countries	External revenues (as in 9) MSEK 1998 <b>NB: Not to be answered by companies without foreign activities.</b>	Exports from Sweden (as in 8a) MSEK 1998	The Swedish segment of the group's revenues from licenses etc. obtained from a non-group company abroad MSEK 1998
<b>Western Europe</b> Austria			
Belgium			
Denmark			
Finland			
France			
Germany			
Great Britain			
Greece			
Ireland			
Italy			
Netherlands			
Norway			
Portugal			
Switzerland			
Spain			
<b>North America</b> Canada			
USA			
<b>Other countries</b> Argentina			
Brazil			
China			
Czech Republic			
Estonia			
Hungary			
Japan			
Mexico			
Poland			
Russia			
Total Should equal the replies to questions 9 and 8a.	(=9)	(=8a)	

Continue on a separate sheet if necessary.



A:8

Answer questions 19 and 21 both for the <b>entire</b> group and for the Swedish segment of the group. Question 20 is only to be answered for the entire group.	MSEK 1998	
	The entire group	Swedish segment of the group <b>NB: Not to be answered by companies without foreign activities.</b>
19. (a) Capital expenditure Relates to gross investments in machinery, equipment and buildings and should include the initial values of machinery, equipment and buildings for companies acquired in 1998. Acquired companies are companies in which the group has acquired at least 50 percent of the equity stock.		
(b) <b>Of the above</b> , the amount reflecting initial values of <b>machinery, equipment, and buildings</b> for companies acquired in 1998		
20. (a) Marketing expenditure Includes both internal costs for the marketing department and to external costs, such as the purchase of marketing services or advertising costs. Make a reasonable estimate.		
(b) <b>Of the above</b> , amount reflecting advertising costs		
21. Expenditure on research and development (R&D) Excluding payments between companies in the group. R&D expenditure refers to both current expenses and depreciation on capital equipment for R&D. Include both in-house R&D and R&D commissioned to third parties. In the second column, give the amount of R&D expenditures for R&D carried out in Sweden. (As defined by Statistics Sweden; see instruction, VIII:4.)		
22. (a) Did the group cooperate in any R&D matters with companies not belonging to the group? Relates both to formal cooperation, such as joint ventures, and informal cooperation, but not cooperation with universities.  Check the appropriate box.	Yes	No
(b) If <b>Yes</b> , give a reasonable estimate of the percentage of the group's total R&D expenditure (question 21) that is associated with such cooperation	%	

23. Give a reasonable estimate of the share of the group's total R&D expenditure (question 21) that is associated with:	
Product related R&D. Development of new, and improvements of existing, products.	%
Process related R&D. Development of new, and improvements of existing, production processes.	%
Total 100 %	

Answer questions 24, 28 and 30 for both the <b>entire</b> group and for the <b>Swedish</b> segment of the group. The other questions should only be answered for the <b>entire</b> group.	MSEK 1998	
	The entire group	Swedish segment of the group <b>NB: Not to be answered by companies without foreign activities.</b>
24. Book value of fixed assets (planned residual value or net carrying value). Includes machinery, equipment, and buildings.		
25. Total liabilities		
26. Total equity		
27. Total assets (book value)		

28. Operating income before depreciation deductions		
29. Income after deduction of interest and expenses		

30. Total expenditures on wages and salaries (including fringe benefits) See instruction, VIII:5.		
---	--	--

A:10

<p>31. Distribution of the entire group's <b>total number of employees</b> and the number of employees in Sweden (question 5) among the following three categories:                  Make reasonable estimates. State in percentages.                  See instruction, VIII:6.</p>		
	Total number of employees	Number of employees in Sweden <b>NB: Not to be answered by companies without foreign activities.</b>
<p><b>Production workers</b>                  Personnel engaged in manual work, processing and machinery operators, transport workers, personnel engaged in other work that does not require particular vocational training.</p>	%	%
<p><b>Low-skilled non-production workers</b>                  Administrative personnel, clerical workers, service workers and sales representatives.</p>	%	%
<p><b>High-skilled non-production workers</b>                  Personnel involved in management, personnel in executive positions, researchers, technicians, engineers, and personnel in other specialized functions that require a high level of skills.</p>	%	%
	Total 100 %	Total 100 %

<p>32. Distribution of the entire group's total <b>expenditures on wages and salaries</b> and expenditures on wages and salaries for employees in Sweden (question 30) among the following three categories:                  Make reasonable estimates. State in percentages.                  See instruction, VIII:6.</p>		
	Total group expenditure on wages and salaries	Expenditures on wages and salaries for employees in Sweden <b>NB: Not to be answered by companies without foreign activities.</b>
<p><b>Production workers</b>                  Personnel engaged in manual work, processing and machinery operators, transport workers, personnel engaged in other work that does not require particular vocational training.</p>	%	%
<p><b>Low-skilled non-production workers</b>                  Administrative personnel, clerical workers, service workers and sales representatives.</p>	%	%
<p><b>High-skilled non-production workers</b>                  Personnel involved in management, personnel in executive positions, researchers, technicians, engineers, and personnel in other specialized functions that require a high level of skills.</p>	%	%
	Total 100 %	Total 100 %

<p>33. Currency in which the group's export prices are set?                  Check the appropriate box.</p>	The exporting country's currency	The importing country's currency	USD	SEK	Other currency (specify which)
					.....

34. What is the main currency for the group's total invoiced sales? Check the appropriate box.	USD	SEK	Other currency (specify which)
			.....

35. How many joint projects, for R&D, design, marketing, distribution, purchasing, or production, did your company take part in with other independent firms in 1990 and 1998. For a definition of joint projects with other independent firms, see VIII:8 in the instructions. Check the appropriate box.  NB: For joint project that included companies in both Sweden and EU, only mark in the EU-column. If 0 companies from countries outside EU were included, mark only the column for non-EU countries.						
	1990			1998		
	Consisted only of Swedish companies	Included companies from other EU-countries	Included companies from non-EU-countries	Consisted only of Swedish companies	Included companies from other EU-countries	Included companies from non-EU-countries
Number						
0						
1-3						
4-8						
>8						

36. For which areas do you consider joint projects with other independent companies to be most important? (Rank: 1=most important, 2=second most important, etc)	
Development of products	
Development of processes	
Sales of complementary products	
Market and distribution availability	
Strengthening of market positions in existent markets	
Other: .....	

**FORM B**  
**CONFIDENTIAL**

**ACTIVITIES OF SWEDISH MULTINATIONAL ENTERPRISES  
ABROAD 1998**

THE RESEARCH INSTITUTE OF INDUSTRIAL ECONOMICS (IUI)  
BOX 5501, SE-114 85 STOCKHOLM, SWEDEN  
TEL: +46 8-783 84 01 (switchboard)  
FAX: +46 8-661 79 69  
CONTACT PERSON: Marie Hesselman, Tel: +46 8-783 84 06, E-mail: MarieH@iui.se

This form should be returned before April 30, 1999 to the Research Institute of Industrial Economics.

**Form B:** Details of the production affiliate abroad.

Please read the instructions before filling in the questionnaire.

	IUI code (to be filled in by IUI)
1. Name of the affiliate: .....	
Country: .....	
Parent company of the group: .....	
(a) From what year has the affiliate been a production company of the group? .....	
(b) Was the affiliate a sales company of the group before the year mentioned above?	yes <input type="checkbox"/> no <input type="checkbox"/>
(c) Did the affiliate operate as a production company of another group before the year mentioned above?	yes <input type="checkbox"/> no <input type="checkbox"/>
(d) Was the affiliate a state-owned company before the year mentioned above?	yes <input type="checkbox"/> no <input type="checkbox"/>

B:2

	MSEK 1998
2. (a) Total invoiced sales Sales should be stated net, i.e. after deductions for revenue tax, discounts and returns.	
<b>of which</b> (b) goods made or assembled by the affiliate Make a reasonable estimate. The difference between 3a and 3b is made up of goods which are resold only, without being processed by the affiliate.	

	MSEK 1998
3. (a) Total invoiced exports Including exports to other companies in the group. Exports should be valued FOB.	
<b>of which</b> (b) exports to Sweden	
<b>of which</b> (c) exports to Swedish companies of the group	

	MSEK 1998
4. (a) Imports of goods from Swedish companies of the group Make reasonable estimates.	
<b>of which</b> (b) goods for resale with no processing by the affiliate	
(c) goods for processing by the affiliate	

5. Distribution of the affiliate's production as in 3b above. State the principal products/product lines made by the affiliate, together with the proportion of production held by each. Give ISIC codes if you use such codes instead of names of products/product lines.	
Products/product lines (or ISIC codes)	Share of total production (as in 3b) %
	Total 100 %

6. Capital expenditure Relates to gross investments in machinery, equipment and buildings.	MSEK 1998
7. Expenditure on research and development (R&D) Excluding payments between group companies. R&D expenditure refers to both current expenses and depreciation of capital equipment for R&D. Both R&D carried out in-house and R&D commissioned by the affiliate from a third party should be included (as defined by Statistics Sweden, see instructions VIII:4).	

8. Book value of fixed assets (planned residual value or net carrying value) Relates to machinery, equipment and buildings.	MSEK 1998
9. Total liabilities	
10. Total equity	
11. Total assets (book value)	

12. Proportion of the equity stock owned directly and indirectly by the parent company of the group See instruction VIII:7.	Share 1998
	%

13. Operating income before depreciation	MSEK 1998
14. Income after interest and expenses	
15. Net income	

16. Total expenditure on wages and salaries (including fringe benefits) See instructions VIII:5.	MSEK 1998

17. (a) Number of employees Average number of employees during the year (full-time equivalent). See instructions VIII:2.	Number 1998
<b>of which</b> (b) recruited from the Swedish companies of the group Make a reasonable estimate.	

B:4

<p>18. Distribution of the number of employees (question 17a), the number of recruited personnel from Swedish companies of the group (question 17b) and the total expenditure on wages and salaries (question 16) on the following three categories: Make reasonable estimates. State in percentages. See instructions VIII:6.</p>	<p>Share of the total number of employees 1998</p>	<p>Share of employees recruited from the Swedish companies in the group</p>	<p>Share of the total expenditure on wages and salaries 1998</p>
<p><b>Production workers</b> Personnel engaged in manual work, processing and machinery operators, transport workers, personnel engaged in work that does not require particular vocational training.</p>	<p style="text-align: center;">%</p>	<p style="text-align: center;">%</p>	<p style="text-align: center;">%</p>
<p><b>Low-skilled non-production workers</b> Administrative personnel, clerical workers, service workers and sales representatives.</p>	<p style="text-align: center;">%</p>	<p style="text-align: center;">%</p>	<p style="text-align: center;">%</p>
<p><b>High-skilled non-production workers</b> Personnel involved in management, personnel in executive positions, researchers, technicians, engineers, personnel in other specialized functions that require a high level of skills.</p>	<p style="text-align: center;">%</p>	<p style="text-align: center;">%</p>	<p style="text-align: center;">%</p>
	<p style="text-align: center;">Total 100 %</p>	<p style="text-align: center;">Total 100 %</p>	<p style="text-align: center;">Total 100 %</p>

	<p>Local currency (host country's)</p>	<p>USD</p>	<p>SEK</p>	<p>Other currency (specify)</p>
<p>19. In which currency is the company's sales prices set? Mark in the appropriate box.</p>				<p>.....</p>

<p>21. Additional information</p>
-----------------------------------