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**INDUSTRIAL DYNAMICS AND THE ROLE
OF SMALL PLANTS IN SWEDISH
MANUFACTURING INDUSTRY, 1968–1988**

by

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Industrial Dynamics and the Role of Small Plants in Swedish
Manufacturing Industry, 1968-1988

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ABSTRACT

This paper examines the development of the size distribution of establishments in Swedish manufacturing industry over the period 1968-1988. Contrary to the development in other industrial countries, the average plant size in Swedish industry has continued to increase, at least until the end of the 1980s.

Swedish data are presented here for the first time according to the NACE classification adopted by the European Community. This has required a re-classification from the Swedish industrial classification (SNI) to NACE code. The analysis is carried out primarily at the 2-digit NACE level at 5-year intervals.

Industrial employment rose steadily until it reached a peak of just over 900,000 in the early 1970s and then fell to 766,000 in 1988. Meanwhile, the number of industrial plants fell continuously from nearly 14,000 in 1968 to just over 9,000 in 1988. As a result, output per establishment more than doubled, and the average employment per establishment increased by 34 %. The most severe decline in the number of establishments occurred in the smallest size category (less than 10 employees), where the number was reduced from 5,831 to 1,234. The number of plants in this size category was reduced in every 2-digit industry, without exception.

The analysis confirms the common observation that there is a lack of entrepreneurship in Swedish industry. It is suggested that a possible explanation for the continued shift in the size distribution of Swedish manufacturing plants toward larger units may have to do with continued adjustment to European integration.

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Introduction

The changing role of small business in the economy has attracted much attention in recent years. See e.g. Carlsson (1989); Storey & Johnson (1990); Thurik (1990), and Loveman & Sengenberger (1991). These studies have pointed out a remarkably similar pattern across most industrial countries, namely that the trend toward increasing shares of business activity taking place in large firms and plants which prevailed for many decades has been reversed in recent years. Thus, for example, Loveman & Sengenberger (1991) found such a pattern in the United States, Japan, Italy, France, the United Kingdom, and Germany, with a turning point in each case around 1970 (except 1980 in Germany). Similar results, based on different data, are shown in Carlsson (1992): average plant size as measured by employment declined between 1969 and 1984 in Denmark, Japan, the United Kingdom, and the United States, while it declined since 1975 in Belgium, Finland, and Italy, and since 1980 in Germany. See Appendix I.

Sweden appears to be an exception from this observed pattern. Contrary to the development in other countries, the average plant size in Swedish industry has continued to increase, at least until the end of the 1980s. While it would be interesting to investigate the reasons why the pattern is different in Sweden, such an analysis would require international comparative data which are not currently available.¹

Instead, this paper will focus on an analysis of the Swedish development at a disaggregated level. In order to facilitate international comparisons, data are presented here for Sweden for the first time using the NACE classification adopted by the European Community. This has required a re-classification of the Swedish industrial statistical data from the Swedish industrial classification (SNI) to NACE code.² The analysis in this paper is carried out primarily at the 2-digit NACE level, covering the period 1968-1988, at 5-year intervals. The re-classification has also been carried out at the 3-digit NACE level, but for reasons of time and space the data and analysis presented in this paper will be restricted to the 2-digit level.

¹ A cursory examination of Appendix I suggests a combination of two possible explanations, namely slower output growth and a sharper drop in the number of plants than elsewhere. A full examination of these international differences would require a separate study.

² The re-classification was done by the author in conjunction with the project "Industry Dynamics and Small Firms" carried out by the SPES Study Group (with representation of 14 countries) with funding from the European Commission.

Swedish Industrial Development 1968-1988

The Aggregate Level

During the period 1968-1988, Swedish industry experienced slow growth in output. Industrial production rose an unimpressive 47 % over the period as a whole (i.e. about 2.0 % per year), showing no increase at all between 1973 and 1983. See Table 1. Industrial employment rose steadily until it reached a peak of just over 900,000 in the early 1970s and then fell to 766,000 in 1988. Meanwhile, the number of industrial plants fell continuously from nearly 14,000 in 1968 to just over 9,000 in 1988 (a 35 % decline, or 2.1 percent annually, on average, over the entire time period 1968-1988). As a result, output per establishment (or plant) more than doubled (it increased by 127 %), and the average employment per establishment increased by 34 %. See Figure 1 which presents these data in index form.

2-Digit NACE Level

Table 2 presents some summary data at the 2-digit NACE level. The industries are ranked according to the average rate of change of value added (in current prices). Thus, Motor vehicles and parts, Man-made fibers, Instrument engineering, Mineral oil refining, and Chemicals were the most rapidly growing industries over the period as a whole. The industries with the least growth were Textiles, Leather & leather goods, and Footwear & clothing.

The next column shows the growth rate of the number of establishments in each industry. The Man-made fibers industry had

the fastest increase (1.8 percent per year) and Footwear & clothing the sharpest decline (-6.4 percent per year). The next two columns show the share of employment in plants with less than 100 employees in 1968 and 1988, respectively. The last column shows the change in this employment share between 1968 and 1988.

The share of employment in small plants (with less than 100 employees) declined by 10 percent in the manufacturing sector as a whole; it increased in only seven industries, namely Man-made fibers; Footwear and clothing; Textiles; Office machines and data processing machines; Rubber and plastics; Other means of transport; and Production and preliminary processing of metals. As is evident in the Table, only one of these industries (Man-made fibers) is near the top of the list in terms of growth of value added. Instead, three of them are at the bottom of the ranking, namely Footwear & clothing, Textiles, and Leather & leather goods. This suggests that there may be very different forces generating the same changes in the share of employment in small plants in different industries. More on this later. The correlation coefficient between the change in employment share and the average growth rate of value added is negative (-0.22) and that between the change in employment share and the growth rate of the number of establishments is positive (0.21), but neither is statistically significant. There is very strong positive correlation (0.80) between the growth rate of value added and the growth rate of the number of establishments. On the other hand, there are also strongly negative correlations between the growth rate of the

number of establishments and the share of employment in small plants in either 1968 or 1988 (-0.74 and -0.77, respectively).³

Thus, the industries which grew rapidly in terms of value added or the number of establishments were generally those characterized by a small share of employment in small plants. One suspects that this may be one of the keys to the different pattern of plant size development in Sweden from that in other countries. Casual observation of other countries indicates that the more common pattern is that growth occurs primarily in industries characterized by low entry barriers and small size plants and firms.

The development of the number of plants in each industry is shown in Figures 2a - 2d. Panel 2a shows the five industries in which the number of establishments increased; for reference, the development in manufacturing industry as a whole is also shown, in

³ The correlation matrix looks as follows:

	ESTGROW	EMPSHR68	EMPSHR88	CHEMPSH	VALUADD
ESTGROW	1.0000				
EMPSHR68	-.7728**	1.0000			
EMPSHR88	-.7381**	.8848**	1.0000		
CHEMPSH	.2092	-.4085	.0638	1.0000	
VALUADD	.8012**	-.4816	-.6391*	-.2207	1.0000

N = 20 1-tailed significance: * - .01 ** - .001

ESTGROW	Growth rate of the number of establishments, 1968-1988
EMPSHR68	Employment share in establishments with less than 100 employees in 1968
EMPSHR88	Employment share in establishments with less than 100 employees in 1988
CHEMPSH	Change in employment share in establishments with less than 100 employees between 1968 and 1988
VALUADD	Growth rate of value added, 1968-1988

this as well as in the other panels. Panel 2b shows the industries where the number of plants declined slightly, while Panels 2c and 2d show the industries with the greatest decline. The industries where the number of plants increased are Man-made fibers, Processing of metals, Office machines, Instruments, and Electrical engineering. At the opposite end of the spectrum are Footwear & clothing, Leather products, Nonmetallic mineral products, Food & beverages, and Textiles.

Table 3 gives a more detailed breakdown of the changes in the size distribution of establishments. The pattern that emerges is quite clear: the number of plants in the smallest size category (those with less than 10 employees) declined by nearly 80 percent between 1968 and 1988 (from 5,831 to 1,234 plants) in the manufacturing sector as a whole. The number of plants in the next smallest size class (10-49 employees) increased slightly between 1968 and 1978 and then declined, resulting in about a 10 percent decline over the period as a whole. The number of plants in the middle size class (50-99 employees) held fairly steady over the whole period, while the numbers increased in the largest size classes (100-199 employees and over 200 employees).

Looking at the number of employees in various size classes instead (the right side of Table 3), the same pattern emerges. Employment in the smallest plants declined from 36,332 to 9,828, and that in the next size category from 133,851 to 82,774.⁴ These

⁴ It should be noted that the number of employees reported for 1968 and 1973 in Table 3 refers to wage earners only, whereas the data for 1978, 1983, and 1988 include both wage earners and

declines would have been even greater if salaried personnel had been included in the figures for 1968 and 1973. The apparent slight increase in the 50-99 and larger size classes between 1968 and 1978 is probably also due primarily to the exclusion of salaried personnel for the earlier years. Nevertheless, the shift of employment toward larger plants is quite clear. The share of employment in plants with more than 100 employees rose from 61 percent (excluding salaried personnel) in 1968 to 73 percent in 1978 and 76 percent in 1988. In plants with more than 200 employees the share increased from 47 percent in 1968 to 59 percent in 1978 and 62 percent in 1988.

A more detailed examination of Table 3 shows that the number of plants in the smallest category was reduced in every industry, without exception (at least at this level of aggregation). In the next size category (10-49 employees), the number of plants rose by more than 10 percent in nine of the twenty industries, namely NACE 22, 26, 31, 32, 33, 34, 37, 47, and 48 -- i.e., primarily metal

salaried personnel. This is due to the fact that the distribution of employment by establishment size is available only for wage earners for the earlier years. The composition of industrial employment with respect to salaried personnel and wage earners is that presented below:

	Salaried personnel	Wage earners	Total
1968	230,794	636,321	867,115
1973	242,129	650,033	892,162
1978	252,430	608,468	860,898
1983	233,501	528,977	762,478
1988	229,050	529,058	758,108

These slight discrepancies between these figures and those presented in Table 3 are due to differences between the Swedish industrial classification and the NACE code.

products and various engineering industries, as well as paper products and plastic goods. In the middle size categories (50-99 and 100-199 employees) the observed development ranges from sharp reduction (e.g. in Leather products and Footwear & clothing) to rapid growth (e.g. Man-made fibers and Instruments). There is similar variability also in the largest size class (over 200 employees).

Analysis of Individual Industries

In order to get a better idea of whether there is or is not a common pattern across industries, it is of interest to study what has happened in a few individual industries at either end of the growth spectrum.

In the industry with the fastest growth of value added, Motor vehicles & parts (NACE 35), there was a greater decline in the number of plants in the smallest size class than in the industry as a whole. This suggests that there was little or no entry of new plants and that existing plants, in the event they survived at all, tended to shift into larger size classes. The middle size classes (50-99 and 100-199) grew rapidly in terms of both number of plants and number of employees between 1968 and 1978 and have since held steady. Virtually all the net employment growth (51,000 out of 54,000) in this industry has occurred in the largest plants.

In the Instruments engineering industry (NACE 37), the number of establishments grew between 1968 and 1978 but not since. In spite of the growth during the first decade of the period, the

number of plants in the smallest size category was reduced sharply. The number of plants in each size class then remained constant, except that some plants in the 100-199 size class apparently shifted to the largest category after 1983.

In the Chemical industry (NACE 25), the number of plants declined by about 60 between 1968 and 1978 and has since remained steady. The number of plants in the smallest size class was reduced by about 80 plants, while the number of plants in the largest size class increased by about 20.

If we look at the opposite end of the growth spectrum, the Footwear & clothing industry (NACE 45) saw a decline of the number of plants across all size classes, with the sharpest declines occurring in the smallest and largest size classes and the middle size classes faring somewhat better. But the remaining plants in the largest size class increased from an average of 352 workers in 1968 to 383 employees in 1978 and 679 employees in 1988. The Textile industry (NACE 43) exhibits exactly the same pattern, and the Leather & leather goods industry (NACE 44) a similar one.

An examination of the industries with the largest number of employees in 1968 in comparison with 1988 shows that there was little change in the size rankings. The Paper & paper products industry (NACE 47) and the Mechanical engineering industry (NACE 32) were the largest in both years. The Motor vehicles industry (NACE 35) became the third largest, pushing down the Metal products industry (NACE 31) to fourth place.

Some Concluding Comments

Perhaps the strongest impression one gets from this analysis is that it confirms the common observation that there seems to be a lack of entrepreneurship in Swedish industry. At the level of aggregation used here, only one industry, Motor vehicles, has grown into a position of importance both in Swedish industry and internationally. The growth in this industry has clearly been through existing units which have grown bigger (probably due partly to consolidation and partly to internal growth) rather than through the emergence of new units. Even in the miscellaneous category (Other manufacturing industries, NACE 49) where new enterprises in yet-to-be-defined industries would typically appear there is little apparent dynamism: not particularly impressive growth in value added and an actual decline in the number of plants. This seems to be the experience throughout Swedish industry. However, a definitive conclusion on this issue clearly requires data on gross entry and exit rather than the net changes examined here. Also, international comparisons would shed further light; indeed, one of the primary motivations of this study is to facilitate such international comparisons by presenting Swedish data according to NACE.⁵

A possible explanation of the observed continued shift in the size distribution of Swedish manufacturing plants toward larger

⁵ It may also be noted that previous studies (e.g. Du Rietz 1980) have found that there is a considerable time lag (up to a decade or more) between the entry of a new entity and its inclusion in the national industrial statistics.

units may have to do with the adjustment to further European integration. There are several studies showing that Swedish industry in the form of multinational firms has shown much more dynamism abroad (particularly in Europe) than at home in recent decades (see e.g. Swedenborg 1988, Ohlsson 1989, and Braunerhjelm 1990). Similarly to the experience of the United States, Swedish multinationals have maintained their world market shares much better than have Swedish exports (Blomström & Lipsey, 1989). The apparent consolidation of Swedish manufacturing units may thus be a result of the continued efforts on the part of Swedish multinationals to become major players in Europe (even though Sweden as a country has only recently applied for membership in the EC). Their supplying units in Sweden simply have to be competitive on a European scale. Several studies by Braunerhjelm (e.g. 1990 and 1991) indicate that Swedish subcontractors as well as small independent firms are having a difficult time surviving.

Bibliography

- Blomström, M. and R.E. Lipsey, 1989, "The Export Performance of U.S. and Swedish Multinationals," Review of Income and Wealth, Series 35, No. 3, September.
- Braunerhjelm, P., 1990, Svenska industriföretag inför EG 1992: förväntningar och planer (Stockholm, IUI and Överstyrelsen för civil beredskap).
- Braunerhjelm, P., 1991, Svenska underleverantörer och småföretag i det nya Europa, Research Report No. 38 (Stockholm: IUI).
- Carlsson, B., 1989, "The Evolution of Manufacturing Technology and Its Impact on Industrial Structure: An International Study", Small Business Economics 1, 21-37.
- Carlsson, B., 1992, "The Rise of Small Business: Causes and Consequences" in W.J. Adams (ed.), Singular Europe: Economy and Polity of the European Community after 1992 (Ann Arbor, MI: University of Michigan Press).
- Du Rietz, G., 1980, Företagsetableringarna i Sverige under efterkrigstiden (The Establishment of New Firms in Sweden during the Postwar Period) (Stockholm, IUI).
- Loveman, G., and W. Sengenberger, 1991, "The Re-emergence of Small-Scale Production," Small Business Economics, 3 (1), pp. 1-37.
- Ohlsson, L., 1989, Industrin inför EGs 90-tal: en strategisk effektanalys (Stockholm, Industriförbundets förlag).
- Storey, D.J., and S.G. Johnson, 1990, "A Review of Small Business Employment Data Bases in the United Kingdom," Small Business Economics, 2 (2), pp. 279-299.
- Swedenborg, B., 1988, Den svenska industrins utlandsinvesteringar 1960-1986 (Stockholm, IUI).
- Thurik, R., 1990, "Recent Developments in Firm Size Distribution and Economies of Scale in Dutch Manufacturing," research paper no. 9004, Research Institute for Small and Medium-Sized Business in the Netherlands.

TABLE 1 Summary of Manufacturing Data for Sweden, 1963-1988

	Number of Establ.	Number of Employees (thousands)	Value Added (bill. SEK, curr. prices)	Index of Industrial Production (1985=100)	Employees per Establ.	Production per Establ., Index	Production per Employee, Index
1968	13933	878.5	39.4	72	63.1	0.517	8.20
1973	12477	904.2	65.7	91	72.5	0.729	10.06
1978	10841	873.7	106.0	85	80.6	0.784	9.73
1983	9252	773.2	179.5	91	83.6	0.984	11.77
1988	9037	765.7	273.1	106	84.7	1.173	13.84
Index, 1968 = 100							
1968	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1973	89.5	102.9	166.7	126.4	114.9	141.1	122.8
1978	77.8	99.5	269.1	118.1	127.8	151.7	118.7
1983	66.4	88.0	455.5	126.4	132.6	190.3	143.6
1988	64.9	87.2	693.2	147.2	134.4	227.0	168.9

TABLE 2 NACE 2-Digit Industry Summary Data, 1968-1988

	Avg. growth rate 1968-1988				Emp share in establ		Emp share in establ		Change in emp share		
	NACE	Value Added	Rank	No. of Establ.	Rank	<100 1968	rank	<100 1988	rank	1968-88	Rank
Motor vehicles and parts	35	0.151	1	-0.004	8	0.219	15	0.086	19	-0.133	17
Man-made fibers ind	26	0.139	2	0.018	1	0.151	17	0.264	13	0.113	1
Instrument engineering	37	0.133	3	0.009	4	0.404	9	0.313	9	-0.091	14
Mineral oil refining	14	0.130	4	-0.008	10	0.346	12	0.287	12	-0.059	12
Chemical industry	25	0.124	5	-0.009	12	0.363	10	0.192	15	-0.171	18
Paper & paper prods; printing & publ	47	0.113	6	-0.008	9	0.287	14	0.217	14	-0.070	13
Office mach & data proc mach	33	0.112	7	0.013	3	0.106	19	0.145	17	0.039	4
Rubber & plastics	48	0.110	8	-0.002	6	0.355	11	0.383	8	0.028	5
Electrical engineering	34	0.107	9	0.002	5	0.198	16	0.141	18	-0.057	11
Metal prods exc f mech, el, instr & veh	31	0.104	10	-0.009	11	0.542	5	0.523	5	-0.019	9
Food, drink & tobacco industry	41/42	0.097	11	-0.040	17	0.534	6	0.307	11	-0.227	20
Mechanical engineering	32	0.092	12	-0.003	7	0.341	13	0.309	10	-0.032	10
Timber & wooden furniture industries	46	0.092	13	-0.033	14	0.676	2	0.579	2	-0.097	15
Prod & prelim process. of metals	22	0.090	14	0.015	2	0.019	20	0.036	20	0.017	7
Manuf of nonmetal mineral prods	24	0.074	15	-0.048	19	0.505	7	0.388	7	-0.117	16
Other means of transport	36	0.074	16	-0.021	13	0.145	18	0.168	16	0.023	6
Other mfg industries	49	0.071	17	-0.041	18	0.749	1	0.548	3	-0.201	19
Extract & prep of metallic ores	21	0.056	18	-0.038	15						
Textile industry	43	0.052	19	-0.038	16	0.420	8	0.487	6	0.067	3
Leather & leather goods industry	44	0.041	20	-0.056	20	0.544	4	0.529	4	-0.015	8
Footwear & clothing industry	45	0.027	21	-0.064	21	0.630	3	0.706	1	0.076	2
Manufacturing Industry Total		0.102		-0.021		0.390		0.289		-0.101	

TABLE 3 Changes in the Size Distribution of Establishments in Swedish Manufacturing Industry, 1968-1988

	Number of establishments with					Total No. of employees	Number of employees in establishments with					
	Total	1-9 empl.	10-49 empl.	50-99 empl.	100-199 empl.		>200 empl.	1-9 empl.	10-49 empl.	50-99 empl.	100-199 empl.	>200 empl.
14 Mineral oil refining												
1968	42	15	18	3	3	3	1857	72	356	215	389	825
1973	40	16	18	2	3	1	1406	85	383	161	443	334
1978	35	3	20	4	3	5	3230	21	470	305	533	1901
1983	35	3	20	4	3	5	3249	18	535	345	593	1758
1988	36	4	19	4	4	5	3348	23	462	373	708	1782
22 Prod & prelim process. of metals												
1968	64	3	13	5	8	35	41921	24	322	454	1051	40070
1973	58	3	8	6	6	35	43290	30	299	440	873	41648
1978	68	0	12	7	7	42	56357	7	392	781	1300	53877
1983	67	3	9	9	7	39	45771	25	486	702	1437	43121
1988	86	4	18	12	14	38	38282	30	385	885	2227	34755
24 Manuf of nonmetal mineral products												
1968	992	457	406	65	33	31	32495	2509	9232	4675	4415	11664
1973	765	361	304	50	25	25	25732	1944	6998	3814	3478	9498
1978	558	153	294	48	34	29	29417	936	6563	3661	5022	13235
1983	401	91	222	38	26	24	22163	672	5163	3017	3641	9670
1988	370	69	209	33	34	25	21597	509	3414	2463	4699	10512
25 Chemical industry												
1968	353	121	147	40	25	20	19699	696	3557	2894	3675	8877
1973	349	122	137	35	33	22	20941	689	3253	2433	4790	9776
1978	293	46	139	42	26	40	35181	363	5977	401	3940	24500
1983	282	30	140	44	29	39	39730	224	3542	3511	4665	27788
1988	296	24	156	47	31	38	40073	180	2762	3611	5227	28293
26 Man-made fibers ind												
1968	16	2	8	1	2	3	2101	18	206	94	251	1532
1973	19	3	8	1	4	3	2259	14	188	59	529	1469
1978	26	3	9	4	5	5	4238	22	353	297	573	2993
1983	22	0	7	9	2	4	3269	0	269	625	303	2072
1988	23	0	10	7	2	4	3212	10	250	555	308	2089
31 Metal prods exc f mech, el, instr & vehicles												
1968	2045	897	857	158	81	52	67590	5886	19440	11333	11076	19855
1973	2048	834	901	168	91	54	73228	5501	20112	11970	12953	22692
1978	1855	395	1082	213	100	65	84014	2907	23382	14785	14478	28462
1983	1640	316	989	180	103	52	75615	2407	22684	13129	14706	22689
1988	1694	238	1098	207	103	48	80306	1864	17275	15444	14709	31014
32 Mechanical engineering												
1968	1241	421	579	119	48	74	72832	2741	13788	8331	6821	41151
1973	1254	409	581	133	48	83	77762	2750	13418	9434	6736	45424
1978	1252	191	725	143	92	101	114618	1448	16666	10089	13477	72938
1983	1120	133	659	144	83	101	95969	1013	15156	10388	11824	57588
1988	1166	107	714	164	87	94	92922	835	11286	11446	12229	57126

TABLE 3 (Continued)

	Number of establishments with					Total No. of employees	Number of employees in establishments with					
	Total	1-9 empl.	10-49 empl.	50-99 empl.	100-199 empl.		>200 empl.	1-9 empl.	10-49 empl.	50-99 empl.	100-199 empl.	>200 empl.
33 Office mach & data proc mach												
1968	46	8	18	5	5	10	7699	44	437	336	605	6277
1973	54	14	17	7	6	10	7583	82	434	565	751	5751
1978	51	8	20	7	6	10	8436	59	393	461	883	6640
1983	47	6	21	10	3	7	6341	46	431	771	581	4512
1988	59	7	26	9	8	9	9296	52	514	617	1298	6815
34 Electrical engineering												
1968	423	175	140	41	26	41	39151	980	3295	2782	3951	28143
1973	567	232	193	51	31	60	50483	1514	4552	3641	4252	36524
1978	469	78	229	55	40	67	78756	604	4934	4047	6755	62416
1983	419	67	210	42	36	64	74761	490	4779	3042	5309	61141
1988	443	52	235	52	31	73	67813	395	3718	3729	4927	55044
35 Motor vehicles and parts												
1968	309	104	142	29	17	17	26874	650	3243	1999	2443	18539
1973	315	96	137	41	19	22	39987	650	3208	2707	2616	30806
1978	331	36	169	50	45	31	63464	268	3757	3462	6879	49098
1983	305	41	142	49	38	35	65651	330	3474	3683	5527	52637
1988	285	27	122	51	35	50	81288	227	2298	3696	5385	69682
36 Other means of transport												
1968	258	82	90	39	18	29	37304	488	2055	2849	2576	29336
1973	230	64	76	42	19	29	39559	397	2107	2957	2734	31364
1978	213	23	91	42	18	39	53776	184	2222	3165	2309	45896
1983	191	20	77	46	17	31	40506	155	1976	3218	2245	32912
1988	170	19	62	47	16	26	31292	163	1416	3422	2278	24013
37 Instrument engineering												
1968	128	60	48	6	9	5	4477	352	1038	420	1311	1356
1973	146	65	60	9	8	4	5010	386	1464	723	1272	1165
1978	156	24	82	26	16	8	9222	173	1760	1911	2242	3136
1983	154	23	79	26	18	8	10107	194	1906	1846	2494	3667
1988	154	18	82	26	14	14	13382	145	1481	2024	1920	7812
41/42 Food, drink & tobacco												
1968	1831	942	637	134	75	43	55081	5308	14690	9424	10250	15409
1973	1382	619	520	123	77	43	53106	3577	12198	8963	11004	17364
1978	1039	197	549	131	91	71	72834	1448	12277	9793	13967	35349
1983	856	124	453	127	85	67	68263	1046	10494	9886	13738	33099
1988	809	96	434	121	89	69	69737	768	6770	10209	14007	37983
43 Textile industry												
1968	561	180	260	56	36	29	27195	1142	6229	4044	5089	10691
1973	436	152	180	40	42	22	21508	939	4249	2887	5826	7607
1978	345	66	191	40	30	18	19220	498	4579	3033	4603	6507
1983	278	43	161	37	26	11	14593	345	3841	2832	3707	3868
1988	246	32	146	37	20	11	13189	320	2441	2704	2839	4885

TABLE 3 (Continued)

	Total	Number of establishments with					Total No. of employees	Number of employees in establishments with				
		1-9 empl.	10-49 empl.	50-99 empl.	100-199 empl.	>200 empl.		1-9 empl.	10-49 empl.	50-99 empl.	100-199 empl.	>200 empl.
44 Leather & leather goods industry												
1968	92	37	33	13	6	3	3595	241	812	904	900	738
1973	67	27	28	6	6	0	2112	164	713	391	844	0
1978	42	9	22	6	4	1	1950	75	526	419	684	246
1983	32	4	19	5	3	1	1593	35	448	386	496	228
1988	29	7	17	2	2	1	1400	63	409	142	381	405
45 Footwear & clothing industry												
1968	1124	354	583	109	62	16	38182	2322	13951	7779	8498	5632
1973	811	257	422	83	37	12	27572	1675	9983	5914	5190	4810
1978	544	116	326	59	33	10	22214	929	7962	4335	5158	3830
1983	379	73	229	47	23	7	15595	572	5879	3526	3235	2383
1988	292	45	190	38	15	4	11467	376	3298	2909	2168	2716
46 Timber & wooden furniture industries												
1968	2609	1197	1146	157	81	28	65118	7828	25250	10939	11802	9299
1973	2235	863	1067	184	82	39	66682	5843	24233	12883	11344	12379
1978	1889	404	1128	212	86	59	73583	2996	24509	14776	12094	19208
1983	1503	306	907	176	72	42	58790	2311	20628	12259	9737	13855
1988	1320	234	803	177	73	33	57075	1855	12883	12420	10676	19241
47 Paper & paper prods; printing & publishing												
1968	1252	484	490	104	71	103	75051	3172	10935	7441	10055	43448
1973	1173	472	430	103	69	99	73137	3037	9488	7148	10199	43265
1978	1134	248	567	105	90	124	103235	1828	11446	7998	14910	67053
1983	1061	220	539	105	86	111	97837	1654	10915	7818	14366	63084
1988	1074	182	589	99	93	111	96374	1425	7510	7384	15805	64250
48 Rubber & plastics												
1968	391	211	137	18	12	13	15895	1349	3038	1255	1622	8631
1973	430	198	173	27	14	18	20203	1184	3535	2005	2105	11374
1978	382	91	214	36	23	18	23125	669	4516	2807	3531	11602
1983	341	63	201	36	22	19	19625	482	4441	2827	3438	8437
1988	375	54	230	42	26	23	23193	466	3473	3281	4158	11815
49 Other mfg industries												
1968	181	81	85	10	3	2	4309	510	1977	741	421	660
1973	148	64	67	9	6	2	4163	380	1638	560	815	770
1978	115	22	68	14	6	5	5217	174	1487	1052	902	1602
1983	87	19	51	10	6	1	3488	148	1230	849	881	380
1988	78	15	49	2	11	1	3098	122	729	154	1379	714
Total												
1968	13958	5831	5837	1112	621	557	638426	36332	133851	78909	87201	302133
1973	12527	4871	5327	1120	626	583	655723	30841	122453	79655	88754	334020
1978	10797	2113	5937	1244	755	748	862087	15609	134171	87578	114240	510489
1983	9220	1585	5135	1144	688	668	762916	12167	118277	84660	102923	444889
1988	9005	1234	5209	1177	708	677	758344	9828	82774	87468	107328	470946

NOTE: Employment data for 1968 and 1973 in this table include only wage earners.
For 1978, 1983, and 1988 the employment data include both wage earners and salaried personnel.

FIGURE 1

Swedish Manufacturing, 1968-1988

Index, 1968 = 100

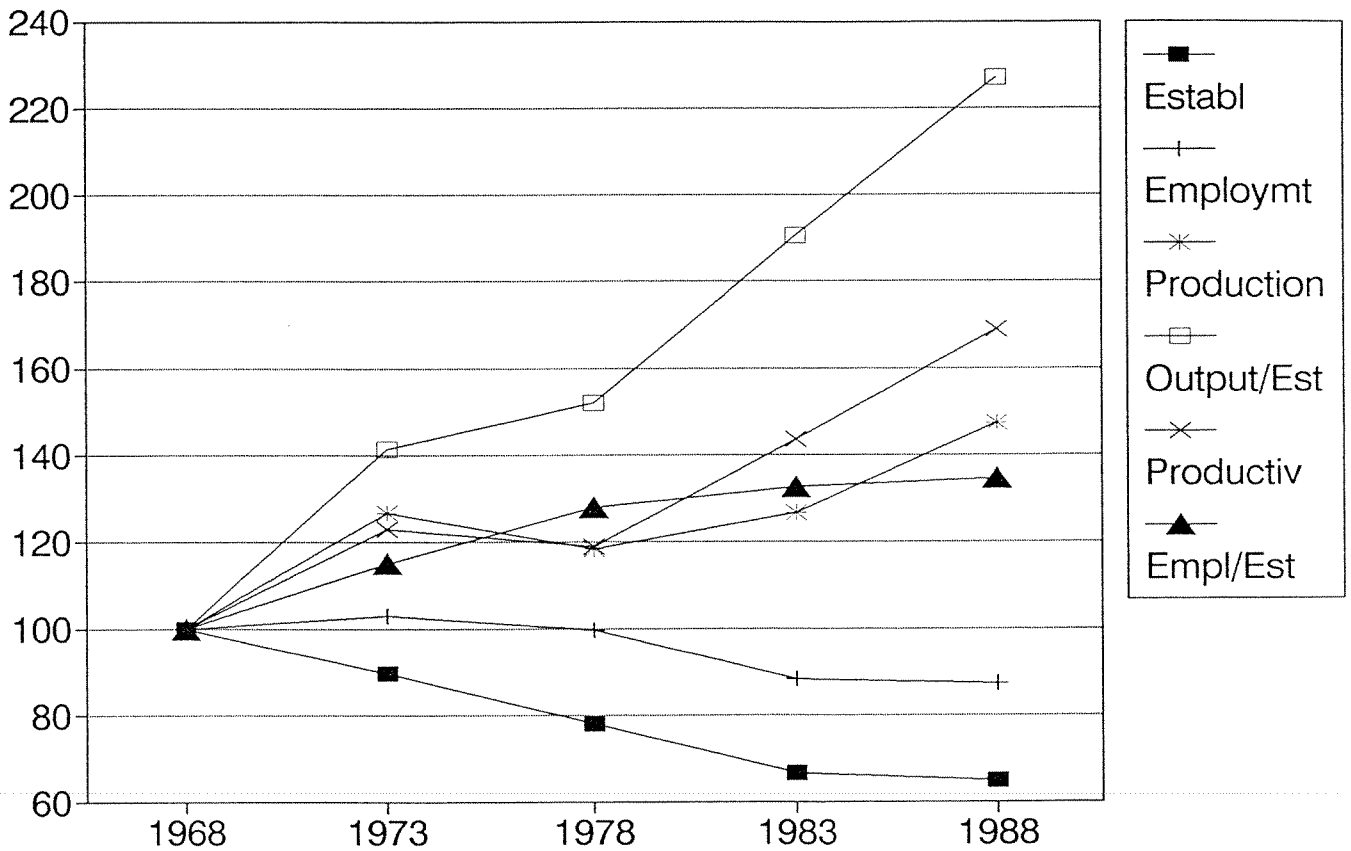


FIGURE 2a

Number of Establishments NACE 2-digit industries 1968-88

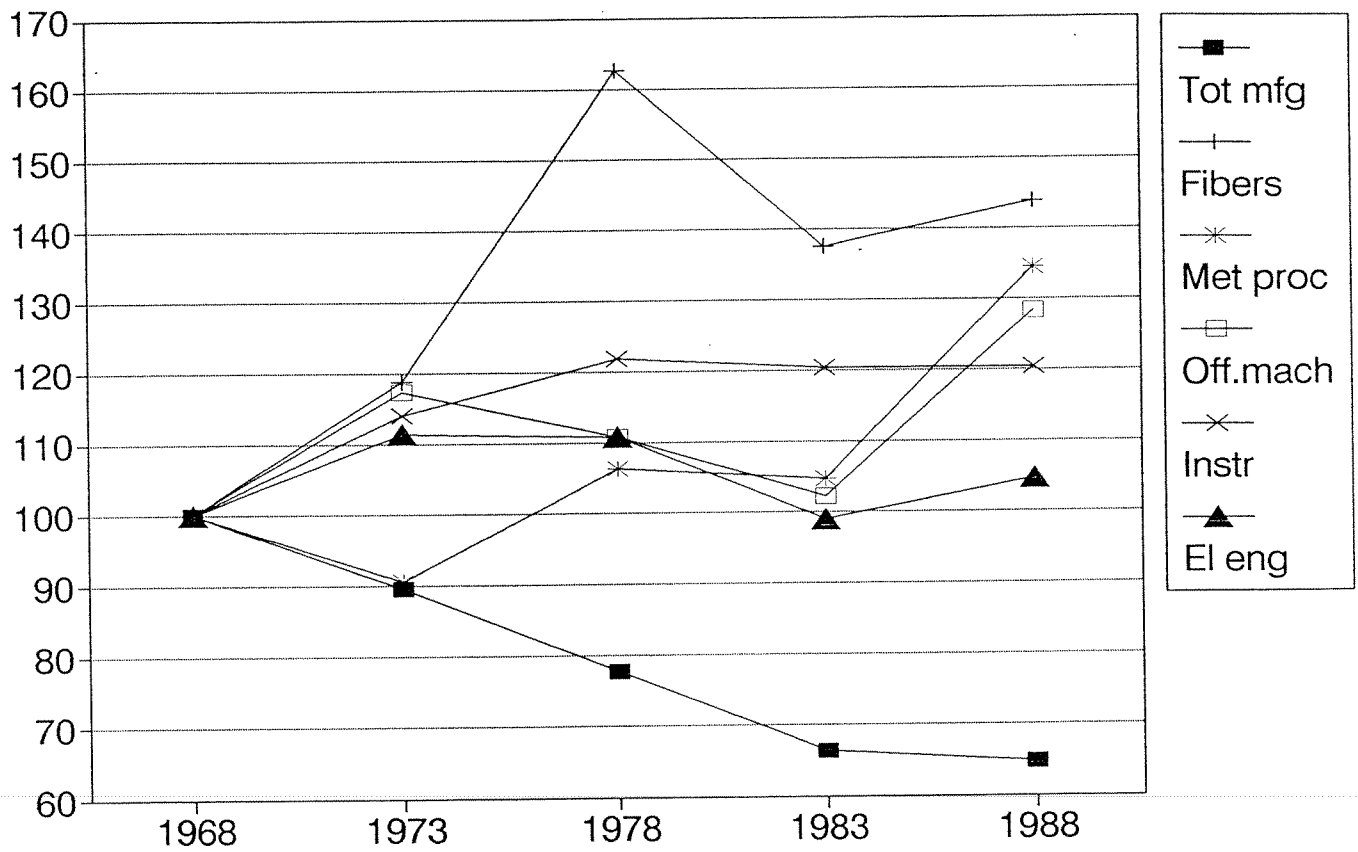


FIGURE 2b

Number of Establishments NACE 2-digit industries 1968-88

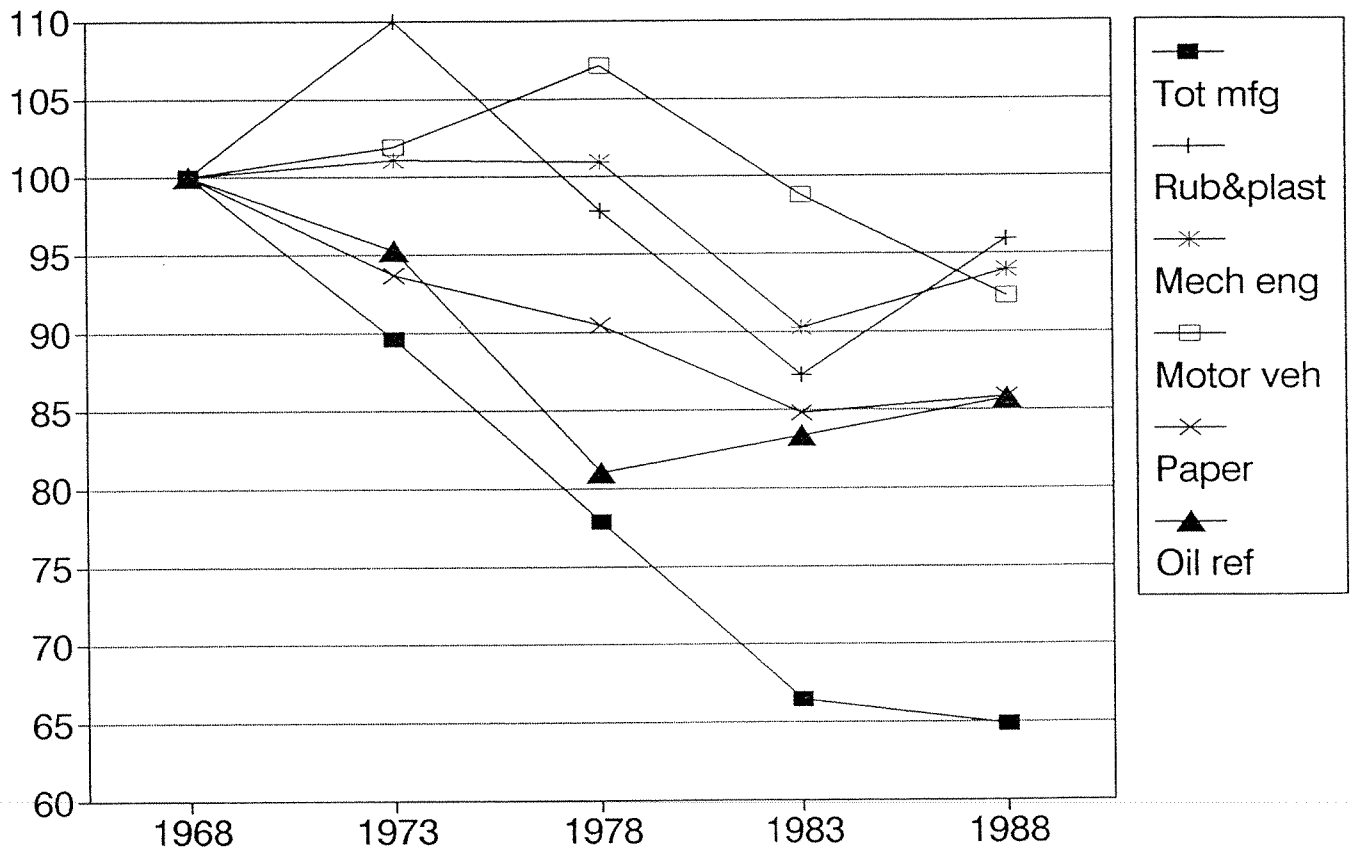


FIGURE 2c

Number of Establishments NACE 2-digit industries 1968-88

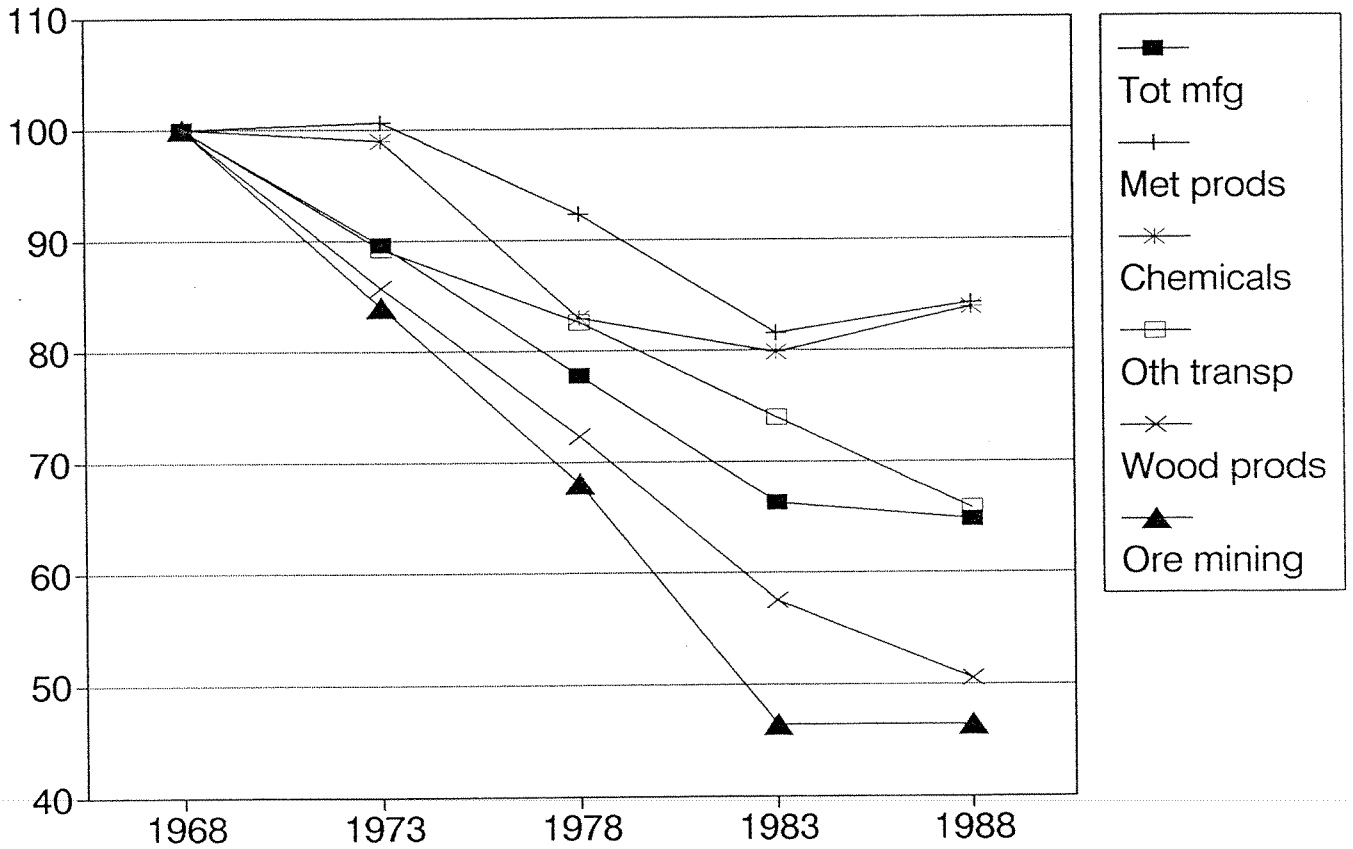
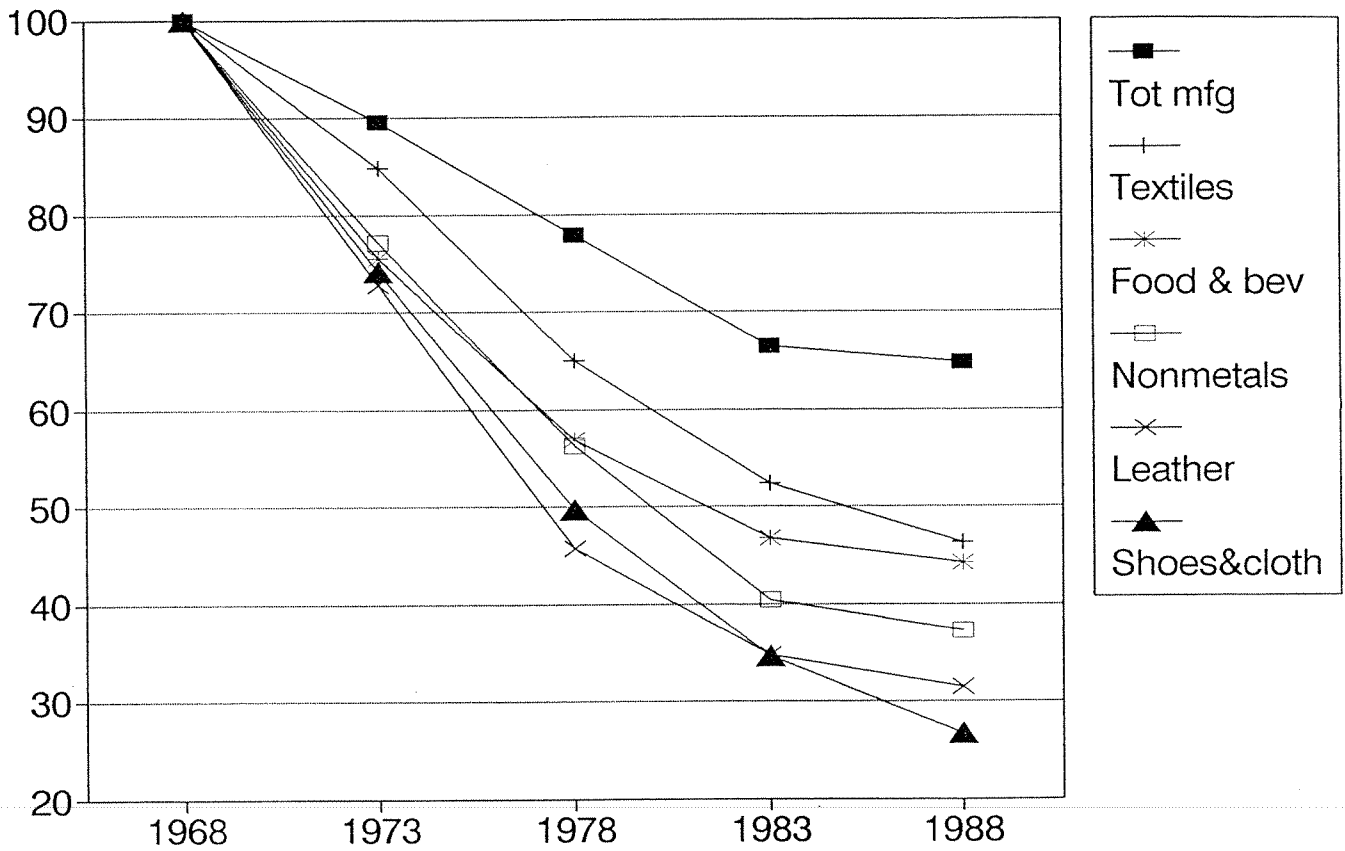


FIGURE 2d

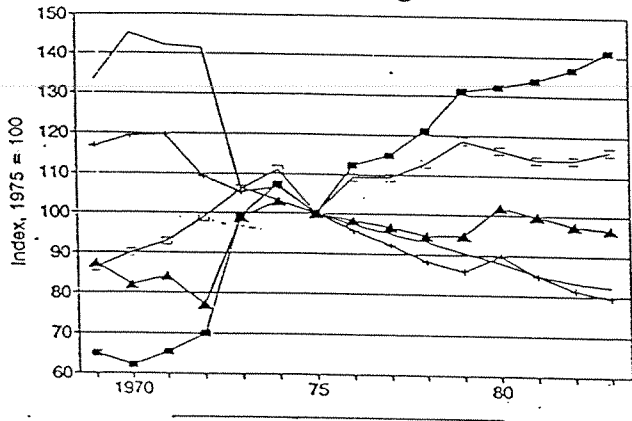
Number of Establishments

NACE 2-digit industries 1968-88

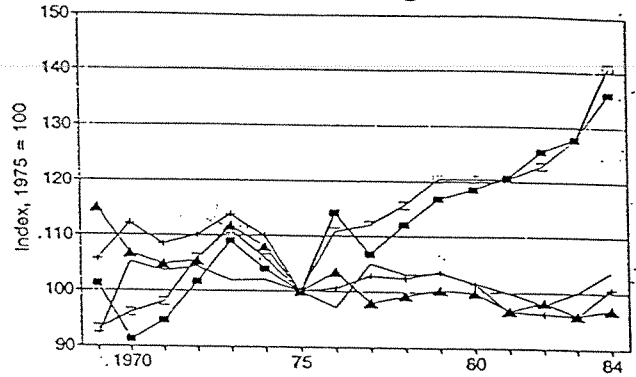


APPENDIX I Output, Employment, Number of Plants, and Average Plant Size in Manufacturing in Various Countries, 1969-1987

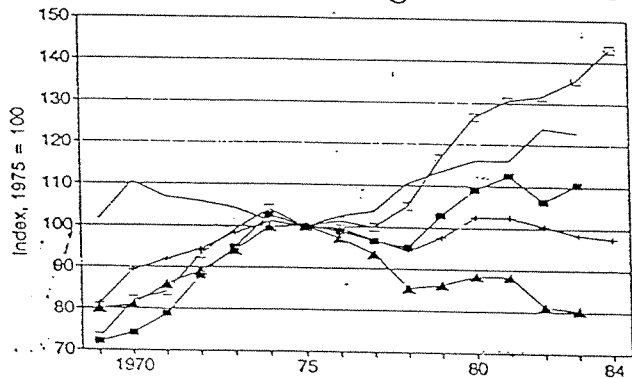
Belgium: Manufacturing Data 1969-83



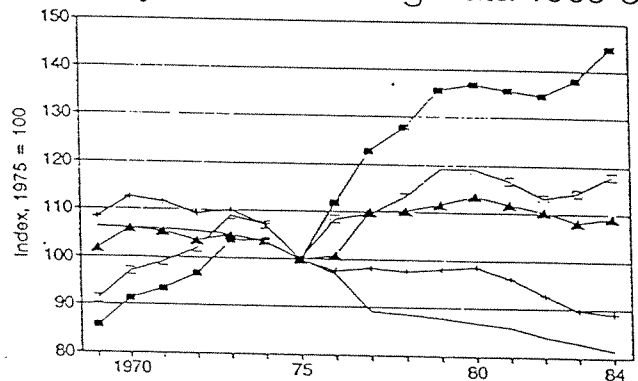
Denmark: Manufacturing Data 1969-84



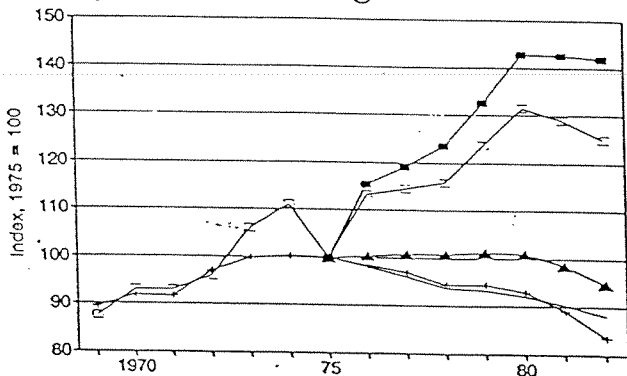
Finland: Manufacturing Data 1969-84



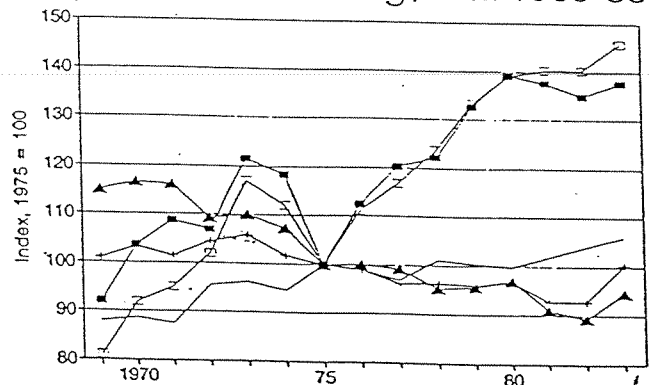
Germany: Manufacturing Data 1969-84



Italy: Manufacturing Data 1969-82

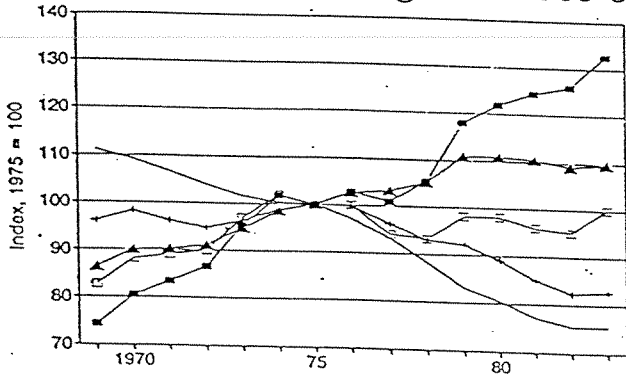


Japan: Manufacturing Data 1969-83

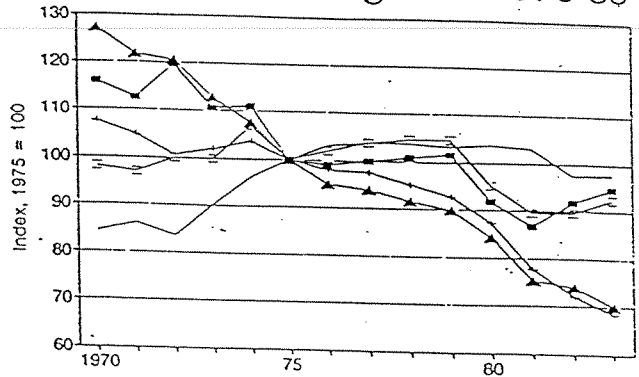


APPENDIX I (continued)

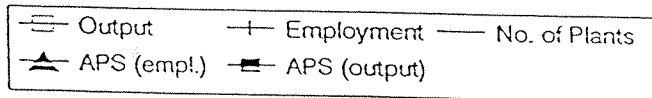
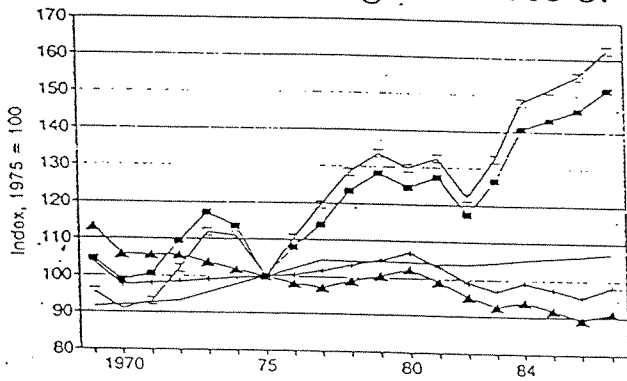
Sweden: Manufacturing Data 1969-83



U. K.: Manufacturing Data 1970-83



U. S.: Manufacturing Data 1969-87



Source: United Nations, Industrial Statistics Yearbook, Vol. I, General Industrial Statistics, various issues.