Chapter 6

The Changes in the Export Contribution of Taiwan's SMEs

For over a decade, Taiwan's SMEs have attracted attention throughout the world. The main reason for this intense interest in Taiwan's SMEs is that Taiwan's economic development has been built on exports, and particularly those of SMEs. The flexibility of Taiwanese SMEs and their ability to respond rapidly to changing circumstances have been one of the major factors behind the rapid growth of international trade and of the Taiwanese economy as a whole.

However, the export behavior of Taiwan's SMEs is still something of a mystery. Different government agencies use different definitions of "exports" in their surveys, and the variables that these surveys consider also vary somewhat. To gain a clear, accurate picture of Taiwanese SMEs' exports is thus a considerable challenge. This chapter will begin by considering the various categories of survey data that are available, before going on to look at the changes in the SMEs' export contribution ratios, analyze the possible causes of these changes, summarize the overall nature of the export contribution of these SMEs, and offer concrete recommendations for SME guidance policy.

I SMEs' Export Contribution

1. The Export Contribution of Taiwanese SMEs as a Whole

To determine the export contribution of Taiwan's SMEs (SME export contribution = SME exports ÷ total exports), one first needs to consider the types of data available. Different sets of statistical data give different export contributions for Taiwanese SMEs; each set of data has its own limitations. Currently, there are five sets of data

available in Taiwan that can be used to calculate the SMEs' export contribution: the import and export data for "excellent exporters/importers"; the VAT collection statistics; the Survey of the Financial Status of Industry in the Taiwan Region, the Industry, Commerce and Service Census, and the Factory Adjustment and Operation Survey. The results of estimating the export contribution using these different sets of data are shown in Table 6-1-1. On the basis of these data (which use the same capitalization-based definition of "SMEs"), the following two conclusions can be reached:

(1) Both the import and export data for "excellent exporters/importers" and the Survey of the Financial Status of Industry in the Taiwan Region indicate that the export contribution of Taiwan's SMEs peaked in 1982, and that it has been declining steadily since 1986.

(2) Calculation of the export contribution using the VAT tax data suggests that the SME export contribution remained relatively stable during the period 1997–2000, fluctuating within the 22.15% to 23.39% band, and that from 2001 on it began to gradually pick up again.

2. Analysis of SME Export Contribution by Industry

As was noted in the first section of this chapter, in recent years the export growth performance of Taiwan's SMEs has been inferior to that of large enterprises. This section provides an analysis of SME performance by industry, seeking to determine which types of SME are causing the export contribution of SMEs as a whole to fall; it examines the changes in the export structure to determine the main reasons behind the decline in the SMEs' export contribution. Owing to the limitations of the data that are available, the analysis of the export contribution structure by industry is limited to the manufacturing sector; as used in this section, and, therefore, the term "export contribution rate" refers to the share of total manufacturing sector exports.

(1) Analysis of Industry, Commerce and Service Census Data for the Period 1996–2001

According to the data from the Industry, Commerce and Service Census, for the manufacturing sector as a whole, SME exports grew by an annual average of 6.01%

Table 6-1-1 The Export Contribution and Export Orientation of Taiwanese SMEs in the Manufacturing Sector as Calculated Using Different Sets of Survey Data

Unit: %

Year	Import and export data for "excellent exporters/ importers"		VAT tax data		Survey of the financial status of industry in the Taiwan region		Industry, commerce and service census				Factory adjustment and operation survey	
							"SMEs" defined by paid-in capital		"SMEs" defined by number of employees			
	Export contri-bution	Export orienta-tion	Export contri-bution	Export orienta-tion	Export contri-bution	Export orienta-tion	Export contri-bution	Export orienta-tion	Export contri-bution	Export orienta-tion	Export contri-bution	Export orien-tation
1972	–	–	–	–	9.55	55.09	–	–	–	–	–	–
1973	–	–	–	–	7.36	53.06	–	–	–	–	–	–
1974	–	–	–	–	5.43	41.89	–	–	–	–	–	–
1975	–	–	–	–	4.07	51.13	–	–	–	–	–	–
1976	–	–	–	–	7.07	57.09	–	–	–	–	–	–
1977	–	–	–	–	9.75	53.55	–	–	–	–	–	–
1978	–	–	–	–	10.36	56.74	–	–	–	–	–	–
1979	–	–	–	–	11.12	58.92	–	–	–	–	–	–
1980	–	–	–	–	13.27	68.46	–	–	–	–	–	–
1981	–	–	–	–	22.48	75.25	–	–	–	–	–	–
1982	73.53	–	–	–	30.49	75.94	–	–	–	–	–	–
1983	66.90	–	–	–	30.61	73.55	–	–	–	–	–	–
1984	62.53	–	–	–	28.21	71.76	–	–	–	–	–	–
1985	64.59	–	–	–	29.10	70.01	–	–	–	–	–	–
1986	70.05	–	–	–	30.42	66.49	45.56	44.29	41.72	36.23	–	–
1987	70.77	–	–	–	26.08	62.62	–	–	–	–	43.99	44.59
1988	63.33	–	–	–	19.06	47.03	–	–	–	–	–	–
1989	64.83	–	–	–	17.54	36.30	–	–	–	–	–	–
1990	60.49	–	–	–	15.25	39.97	–	–	–	–	33.16	3.49
1991	60.04	–	–	–	14.83	38.87	–	–	41.45	26.13	–	–
1992	59.02	–	–	–	13.04	35.31	–	–	–	–	46.44	24.67
1993	57.81	–	–	–	11.94	33.96	–	–	–	–	–	–
1994	55.47	–	–	–	10.45	37.53	–	–	–	–	–	–
1995	53.45	–	–	–	7.49	32.52	–	–	–	–	–	–
1996	52.51	–	–	–	–	–	19.06	20.04	31.38	22.09	–	–
1997	51.47	–	23.36	23.39	–	–	–	–	–	–	–	–
1998	49.11	–	20.46	23.23	–	–	–		–	–	–	–
1999	–	–	17.39	22.15	–	–	–	–	–	–	–	–
2000	–	–	15.84	23.31	–	–	–	–	–	–	–	–
2001	–	–	16.61	24.33	–	–	–	–	25.34	26.92	–	–
2002	–	–	15.36	24.57	–	–	–	–	–	–	28.75	26.41
2003	–	–	19.82	26.75	–	–	–	–	–	–	–	–
2004			18.57	26.60								

Notes: 1. The Factory Adjustment and Operation Survey defines SMEs as enterprises with less than 200 employees; the other data sources use paid-in capital as the basis for defining SMEs.
2. The Factory Adjustment and Operation Survey data and the Survey of the Financial Status of Industry in the Taiwan Region data both use the individual workplace, rather than the enterprise, as the unit of calculation.
3. SME export contribution = (SME exports / Total exports) × 100. SME export orientation = (SME exports / SME total sales) × 100

Sources: 1. *Import and Export Data for Excellent Exporters/Importers*; VAT collection statistics.
2. Survey of the Financial Status of Industry in the Taiwan Region.
3. Industry, Commerce and Service Census.
4. Factory Adjustment and Operation Survey (consecutive years).

over the period 1996–2001. However, during this same period large enterprises' exports were growing by an average of 12.5% per year. As a result, the SMEs' export contribution rate fell by 6.04 percentage points over the period 1996–2001, declining from 31.38% to 25.34%.

As can be seen from Table 6-1-2, of the 21 industries examined (the tobacco industry was excluded because there are no SMEs in this industry) over the period 1996–2001, there were 9 industries – including printing and related industries, chemical materials, chemical products manufacturing, petroleum and coal products manufacturing, non-metallic mineral products manufacturing, basic metals, metal products manufacturing, and electric power equipment and electrical machinery manufacturing, repair and distribution – in which SMEs had a lower average annual export growth rate than large enterprises. There were another three industries – the rubber products industry, plastic products industry and "other manufacturing industries" – in which the SMEs' export growth rate had fallen while the large enterprises' export growth rate had risen, and two industries – wood and bamboo products manufacturing and paper and paper products manufacturing – in which both SMEs and large enterprises experienced a decline in export growth, but where the decline in export growth among SMEs was greater. There were thus 14 industries in which SME export growth was inferior to that of large enterprises over the period 1996–2001, and only 7 industries in which it was superior.

Further analysis of the changes in the export contribution rate of SMEs and large enterprises within the same industry shows that, with the exception of large enterprises in the electric power equipment and electrical machinery manufacturing industry, where the export contribution rate rose from 40.64% in 1996 to 53.58% in 2001, for all other industries (and for both SMEs and large enterprises) there was little change in the export contribution rate. Among the 14 industries where the SME export growth rate was lower than that of large enterprises, the largest decrease in the SME export contribution rate (in the plastics industry) was just 1.21 percentage points. The main reason for the decline in the SMEs' export contribution rate is thus the increase in exports among large enterprises in the electric power and electronics industry. Large enterprises in the electric power and electronics industry account for around 40–50% of Taiwan's total manufacturing sector exports; as a result, changes in the export performance of this sector can have a dramatic impact on the overall export contribution. The period

1996–2001 saw rapid growth in the exports of large enterprises in the electric power and electronics industry, with an average annual growth rate of 16.9%, leading to a significant increase in the export contribution rate of large enterprises.

Table 6-1-2 Analysis of Export Contribution Ratios for Individual Industries within the Manufacturing Sector

Unit: %; percentage points

Item / Industry	Export growth rate 1996–2001			Export contribution ratio in 2001			Changes in the export contribution ratio over the period 1996–2001		
	All enterprises	Large enterprises	SMEs	All enterprises	Large enterprises	SMEs	All enterprises	Large enterprises	SMEs
Total	10.64	12.52	6.01	100.00	74.66	25.34	0.00	6.04	-6.04
Food and beverage manufacturing	-19.15	-24.28	-9.92	0.72	0.37	0.35	-2.74	-2.12	-0.62
Tobacco industry	6.39	6.39	–	0.03	0.03	–	-0.01	-0.01	–
Textile industry	-0.41	-2.48	3.81	2.95	1.85	1.09	-2.04	-1.63	-0.41
Garment and apparel manufacturing	4.66	3.15	5.42	1.91	0.61	1.30	-0.61	-0.26	-0.36
Leather, fur and leather and fur products	1.68	-19.09	15.32	0.81	0.14	0.66	-0.42	-0.55	0.12
Wood and bamboo products	-12.03	-8.34	-12.42	0.14	0.02	0.13	-0.31	-0.02	-0.28
Furniture and furnishings manufacturing	0.79	-5.50	4.96	0.85	0.28	0.57	-0.50	-0.33	-0.17
Paper pulp, paper and paper products	-3.21	-1.09	-8.28	0.41	0.31	0.10	-0.39	-0.23	-0.16
Printing and related industries	14.05	39.30	12.48	0.10	0.01	0.09	0.01	0.01	0.01
Chemical materials manufacturing	9.79	10.01	8.80	5.83	4.80	1.03	-0.23	-0.14	-0.09
Chemical products manufacturing	10.76	12.17	10.09	1.07	0.36	0.71	0.01	0.02	-0.02
Petroleum and coal products manufacturing	10.97	11.28	6.01	1.35	1.28	0.07	0.02	0.04	-0.02
Rubber products manufacturing	4.41	7.03	-1.97	0.99	0.76	0.24	-0.33	-0.14	-0.20
Plastic products manufacturing	-0.88	1.33	-3.26	2.82	1.56	1.26	-2.07	-0.86	-1.21
Non-metallic mineral products manufacturing	4.09	4.97	3.01	0.60	0.34	0.26	-0.21	-0.10	-0.11
Basic metals	7.93	11.21	1.15	2.91	2.14	0.77	-0.38	0.05	-0.44
Metal products manufacturing	5.22	7.79	4.04	3.24	1.09	2.15	-0.93	-0.15	-0.77
Machinery manufacturing, repair and distribution	9.30	5.56	11.06	4.53	1.30	3.23	-0.29	-0.35	0.06
Electric power equipment and electrical machinery manufacturing, repair and distribution	15.98	16.91	10.58	61.42	53.58	7.84	12.89	12.91	-0.02
Transportation equipment manufacturing, repair and distribution	5.74	4.67	7.08	3.38	1.83	1.55	-0.86	-0.58	-0.28
Precision machinery manufacturing	17.32	24.27	9.88	1.96	1.19	0.77	0.50	0.53	-0.03
Other industrial product manufacturing industries	1.29	9.36	-2.73	1.99	0.82	1.16	-1.10	-0.05	-1.05

Notes: 1. This table is based on Industry, Commerce and Service Census data.
2. The export growth rate for the period 1996–2001 = [(exports in 2001 / exports in 1996)1/5 – 1] × 100
3. The ROC Industry Classification System was revised in 2001. In order to ensure consistency with the data for 1996, the data for the "electrical power equipment and electrical machinery manufacturing industry" for 2001 were obtained by adding together the data for the "computer, communications and audiovisual products manufacturing industry," the "electronic components manufacturing industry" and the "electric power equipment and materials manufacturing, repair and distribution industry."

Source: Compiled from the Industry, Commerce and Service Census for the years 1996 and 2001.

As regards export orientation (exports as a percentage of total sales), as can be seen from Table 6-1-3, for large enterprises, export orientation rose from 38.29% in 1996 to 49.43% in 2001, an increase of 11.14 percentage points. By contrast, the SMEs' export orientation rose by only 4.84 percentage points, from 22.09% to 26.92%. It would appear that, over the last five years, the impact of globalization has helped to stimulate exportation by large enterprises.

Table 6-1-3 Analysis of Export Orientation Ratios for Individual Industries within the Manufacturing Sector

Unit: %; percentage points

Item / Industry	1996			2001			Changes over the period 1996–2001		
	All enterprises	Large enterprises	SMEs	All enterprises	Large enterprises	SMEs	All enterprises	Large enterprises	SMEs
Total	31.12	38.29	22.09	40.79	49.43	26.92	9.67	11.14	4.84
Food and beverage manufacturing	18.10	21.71	12.68	7.09	6.58	7.74	-11.0	-15.1	-4.95
Tobacco industry	0.85	0.85	–	1.26	1.26	–	0.40	0.40	–
Textile industry	32.95	45.64	20.05	33.19	46.53	22.34	0.24	0.90	2.29
Garment and apparel manufacturing	42.03	53.10	37.90	53.15	57.85	51.20	11.12	4.75	13.30
Leather, fur and leather and fur products	42.56	56.86	32.15	41.69	31.94	44.67	-0.87	-24.9	12.51
Wood and bamboo products	19.16	24.91	18.74	14.95	27.16	14.17	-4.21	2.25	-4.56
Furniture and furnishings manufacturing	36.53	63.48	27.14	42.71	75.20	35.35	6.18	11.72	8.21
Paper pulp, paper and paper products	10.72	14.55	6.95	9.21	12.57	5.11	-1.51	-1.99	-1.84
Printing and related industries	2.74	0.65	3.13	4.89	4.56	4.93	2.15	3.91	1.80
Chemical materials manufacturing	28.06	29.62	22.75	30.36	31.03	27.56	2.29	1.41	4.80
Chemical products manufacturing	13.62	12.16	14.41	19.33	17.24	20.58	5.71	5.08	6.17
Petroleum and coal products manufacturing	8.50	8.28	13.63	11.37	11.38	11.31	2.87	3.09	-2.33
Rubber products manufacturing	39.66	62.61	22.61	49.12	66.96	26.55	9.46	4.36	3.94
Plastic products manufacturing	27.31	36.46	21.91	28.03	39.83	20.50	0.72	3.37	-1.41
Non-metallic mineral products manufacturing	7.19	8.51	6.07	10.07	13.39	7.61	2.88	4.87	1.54
Basic metals	12.17	15.86	8.70	19.11	25.60	11.24	6.93	9.75	2.54
Metal products manufacturing	22.12	43.33	18.32	28.81	57.39	23.00	6.69	14.07	4.69
Machinery manufacturing, repair and distribution	27.82	41.37	23.77	31.32	48.35	27.42	3.50	6.98	3.65
Electric power equipment and electrical machinery manufacturing, repair and distribution	55.78	63.27	34.59	65.38	71.66	40.87	9.60	8.39	6.28
Transportation equipment manufacturing, repair and distribution	19.87	16.61	26.86	26.49	22.74	32.87	6.61	6.14	6.02
Precision machinery manufacturing	55.15	89.31	41.77	64.73	83.11	48.20	9.58	-6.20	6.43
Other industrial product manufacturing industries	49.95	74.88	44.17	51.66	67.72	44.25	1.71	-7.16	0.08

Note: This table is based on Industry, Commerce and Service Census data.
Source: Compiled from the Industry, Commerce and Service Census for the years 1996 and 2001.

Examination of the situation in individual industries shows that, of the 21 industries examined, large enterprises displayed a greater increase in export orientation than SMEs in 12 industries: wood and bamboo products; furniture and furnishings; printing and related industries; petroleum and coal products manufacturing; rubber products manufacturing; plastic products manufacturing; non-metallic mineral products manufacturing; basic metals; metal products manufacturing; machinery manufacturing, repair and distribution; electric power and electrical machinery manufacturing, repair and distribution; and transportation vehicle manufacturing, repair and distribution. There were only 7 industries in which the increase in the SMEs' export orientation was greater than that of the large enterprises: the textile industry; the garment and apparel industry; the leather, fur and leather and fur products industry; the chemical materials industry; the chemical products industry; the precision machinery industry; and the "other industrial product manufacturing industries." In 2 other industries – food and beverage manufacturing and the paper pulp, paper and paper products industry – the export orientation of SMEs fell, but there was an even greater fall in the export orientation of large enterprises.

Further comparison of the changes in exportation contribution and export orientation displayed by individual industries over the period 1996–2001 shows that, for both large enterprises and SMEs, there appeared to be no correlation between the extent of change in export orientation and the extent of change in the export contribution rate. That is to say, for all industries, there was no relationship between changes in export orientation and changes in the export contribution rate.

To summarize, with the impact of globalization, the export orientation of large enterprises has tended to rise over the last five years; in most industries, the export growth performance of large enterprises has been superior to that of SMEs. However, the main factor behind the decline in the export contribution rate of Taiwan's SMEs has been the growing concentration of Taiwan's exports in the electronics sector. By 2001, the electronics industry accounted for 61.42% of Taiwan's manufacturing sector exports (Table 6-1-2), with large enterprises accounting for 53.58% and SMEs for 7.84%. The dramatic growth in the exports of large enterprises in the electronics industry during this period was the key factor contributing to the decline in the export contribution of SMEs over the same period.

If we push the beginning of the period studied back to 1991, Table 6-1-4 shows how large enterprises in the electronics industry have gradually come to account for a large share of Taiwan's total manufacturing sector exports; the share of total exports accounted for by these enterprises rose from 25.69% in 1991 to 40.64% in 1996, to 53.58% in 2001. For both the five-year period from 1991 to 1996 and the five-year period from 1996 to 2001, the increase in the share of exports accounted for by large enterprises in the electronics industry was almost exactly the same as the decrease in the export contribution of other industries. Over the 10 years from 1991 to 2001, the share of total manufacturing sector exports accounted for by large enterprises in the electronics industry rose by 27.89 percentage points, while the share accounted for by other industries (including both large enterprises and SMEs) fell by 27.14 percentage points. The change in the export contribution of SMEs in the electronics industry over the 10-year period was relatively limited, with a decline of just 0.75 percentage points. It can thus be seen that the main factor behind the decline in SMEs' export contribution over the period 1996–2001 (and also over the period 1991–2001) was not a falling off in exports (in reality, the SMEs' exports continued to increase over this period), but rather the advances in technology that have taken place in the last 10 years or so, and the rapid growth of the "3C" market which has boosted the exports of the Taiwanese electronics industry, creating a situation where exports are heavily concentrated in this one industry. Large enterprises in the Taiwanese electronics industry have benefited particularly from the development of the international division of labor in the IT sector and the growing popularity of contract manufacturing. The impressive performance of these large electronics manufacturers has led to a commensurate decline in the export contribution of Taiwan's SMEs.

Table 6-1-4 Structural Change in Manufacturing Sector Exports, 1991–2001

Units: %; percentage points

Item	1991	1996	2001	Percentage point increase / decrease		
				1991–1996	1996–2001	1991–2001
Electronics industry	34.28	48.53	61.42	14.25	12.89	27.14
Large enterprises	25.69	40.67	53.58	14.98	12.91	27.89
SMEs	8.59	7.86	7.84	-0.73	-0.02	-0.75
Other industries	65.72	51.47	38.58	-14.25	-12.89	-27.14
Large enterprises	32.86	27.95	21.08	-4.91	-6.87	-11.78
SMEs	32.86	23.52	17.50	-9.34	-6.02	-15.36
Manufacturing sector as a whole	100.00	100.00	100.00			

Source: Compiled from the Industry, Commerce and Service Census for the years 1996 and 2001.

(2) Analysis of VAT Collection Data for the Period 2001–2004

VAT collection statistics compiled by the Ministry of Finance Tax Data Center indicate that, over the period 1997–2001, the share of total manufacturing sector exports accounted for by manufacturing sector SMEs declined. As shown in Table 6-1-5, it fell by 6.75 percentage points, from 23.36% to 16.61%. As the VAT data use a different definition of "exports," the export contribution ratios calculated using this data differ from those calculated using the Industry, Commerce and Service Census data. However, both sets of data show a decline, and a decline of roughly the same extent. As VAT collection data are not available for individual industries prior to 2001, the discussion of changes in SME export contribution in the following section is limited to the period 2001–2004.

Table 6-1-5 Changes in Manufacturing Sector Export Contribution Ratios, 1997–2004

Unit: %

Item / Year	SMEs' export contribution	Large enterprises' export contribution
1997	23.36	76.64
1998	20.46	79.54
1999	17.39	82.61
2000	15.84	84.16
2001	16.61	83.39
2002	15.36	84.64
2003	19.82	80.18
2004	18.57	81.43

Note: This table is based on VAT collection data.
Source: Small and Medium Enterprise Administration, *White Paper on Small and Medium Enterprises in Taiwan*, 2004.

By 2002, the SMEs' export contribution rate had fallen to 15.36%. 2003 saw a significant increase in SME exports, pushing the SME export contribution rate up to 19.82%. However, in 2003 the rate fell back to 18.57%. There was thus considerable fluctuation in the SME export contribution rate over the period 2001–2004. Between 2001 and 2004, the rate increased by 1.96 percentage points, while the large enterprises' export contribution rate fell by 1.96 percentage points.

As can be seen from Table 6-1-6, of the 21 individual industries (with the tobacco industry being left out), there was an increase in the SME export contribution rate in six industries during the period 2001–2004: the non-metallic mineral products

manufacturing industry; the leather, fur and leather and fur products industry; the paper pulp, paper and paper products industry; the chemical materials industry; the petroleum and coal products industry; and the electric power equipment and electrical machinery manufacturing industry. The overall increase in the SME export contribution rate for these industries was 4.93 percentage points, being mainly derived from a 2.27 percentage point increase in the export contribution rate of the electric power and electrical machinery manufacturing industry and a 1.82 percentage point increase in that of the chemical materials industry. There were 15 industries in which the SME export contribution rate fell: food and beverage manufacturing; the textile industry; garment, apparel and other textile product manufacturing; wood and bamboo product manufacturing; furniture and furnishings manufacturing; printing and related industries; chemical product manufacturing; rubber product manufacturing; plastic product manufacturing; basic metals; metal product manufacturing; machinery manufacturing, repair and distribution; transportation equipment manufacturing, repair and distribution; precision optical and medical equipment and timepiece manufacturing; and other industrial product manufacturing industries. The overall decrease for these industries was 2.97 percentage points, and was mainly derived from a 0.60 percentage point decrease in the export contribution rate of the metal products industry and a 0.56 percentage point decrease in the export contribution rate of the garment, apparel and other textile products industry.

As for large enterprises, of the 22 industries (including the tobacco industry), there were 8 industries where the export contribution rate for large enterprises rose over the period 2001–2004: the tobacco industry; the non-metallic mineral products manufacturing industry; the leather, fur and leather and fur products industry; the printing industry and related industries; the petroleum and coal products industry; the basic metals industry; the machinery manufacturing, repair and distribution industry; and the transportation equipment manufacturing, repair and distribution industry. Between them, these industries saw an increase in the export contribution rate of 5.55 percentage points, mainly deriving from a 2.91 percentage point increase in the export contribution rate of the petroleum and coal products industry and a 1.05 percentage point increase in the export contribution rate of the machinery manufacturing industry. There were 14 industries where the export contribution rate for large enterprises fell. The overall decrease for these industries was 7.51 percentage points; this drop was

derived mainly from declines of 4.05 percentage points, 0.69 percentage points and 0.56 percentage points in the export contribution rates of the electric power and electrical machinery manufacturing industry, the rubber products industry and the textile industry, respectively.

Table 6-1-6 Analysis of Export Contribution Ratios for Individual Industries within the Manufacturing Sector

Units: %; percentage points

Item / Industry	Export growth rate, 2002–2004			Export contribution ratio in 2004			Changes in the export contribution ratio over the period 2001–2004	
	All enterprises	Large enterprises	SMEs	All enterprises	Large enterprises	SMEs	Large enterprises	SMEs
Total	16.37	15.51	22.29	100.00	81.43	18.57	-1.96	1.96
Food and beverage manufacturing	-6.59	-3.48	-11.20	0.38	0.25	0.13	-0.20	-0.17
Tobacco industry	7.14	7.14	–	0.01	0.01	–	0.01	–
Textile industry	12.70	14.81	0.24	3.99	3.65	0.34	-0.56	-0.20
Garment and apparel manufacturing	-4.17	0.28	-6.88	1.03	0.43	0.59	-0.25	-0.56
Leather, fur and leather and fur products	77.98	109.35	56.09	1.07	0.56	0.51	0.36	0.21
Wood and bamboo products	-1.85	10.22	-9.17	0.19	0.09	0.09	-0.02	-0.11
Furniture and furnishings manufacturing	0.76	-3.21	3.25	0.42	0.14	0.28	-0.11	-0.12
Paper pulp, paper and paper products	2.26	-4.47	49.35	0.47	0.29	0.18	-0.31	0.07
Printing and related industries	18.26	22.78	13.98	0.44	0.33	0.11	0.02	-0.02
Chemical materials manufacturing	27.52	18.18	309.22	5.70	3.60	2.09	-0.48	1.82
Chemical products manufacturing	12.28	13.66	10.22	0.61	0.38	0.23	-0.04	-0.04
Petroleum and coal products manufacturing	87.97	87.98	153.06	3.94	3.93	0.01	2.91	0.00
Rubber products manufacturing	-10.67	-8.48	-13.37	0.56	0.40	0.16	-0.69	-0.25
Plastic products manufacturing	12.35	16.07	13.47	2.64	1.06	1.57	-0.25	-0.13
Non-metallic mineral products manufacturing	51.26	43.70	163.82	1.38	0.66	0.72	0.10	0.57
Basic metals	24.40	26.12	16.35	5.15	4.54	0.61	0.96	-0.03
Metal products manufacturing	8.97	12.29	4.67	3.76	2.26	1.50	-0.28	-0.60
Machinery manufacturing, repair and distribution	25.26	33.59	15.51	5.29	3.25	2.05	1.05	-0.05
Electric power equipment and electrical machinery manufacturing, repair and distribution	15.23	13.46	43.39	56.80	51.23	5.57	-4.05	2.27
Transportation equipment manufacturing, repair and distribution	15.07	18.42	7.92	3.42	2.47	0.96	0.13	-0.24
Precision machinery manufacturing	9.08	10.59	3.10	1.58	1.30	0.27	-0.24	-0.12
Other industrial product manufacturing industries	7.02	17.03	0.41	1.19	0.59	0.60	-0.05	-0.33

Notes: 1. This table is based on VAT collection data.
2. The export growth rate for the period 2002–2004 = (export growth rate in 2002 + export growth rate in 2003 + export growth rate in 2004) / 3.
3. The ROC Industry Classification System was revised in 2001. The data for the "electric power equipment and electrical machinery manufacturing industry" for 2003 and 2004 were obtained by adding together the data for the "computer, communications and audiovisual products manufacturing industry," the "electronic components manufacturing industry" and the "electric power equipment and materials manufacturing, repair and distribution industry."

Source: Compiled from Ministry of Finance Tax Data Center VAT statistics (original data).

It can be seen from the above analysis for the period 2001–2004 that the fluctuations in the export performance of the electronics sector (including both large enterprises and SMEs) has been the main factor affecting the export contribution rate of Taiwan's SMEs. In this respect, the results are consistent with those obtained using the Industry, Commerce and Service Census data. However, the VAT collection data indicate that, while the increase in the exports of large enterprises within the electronics sector was the main factor behind the decline in the SMEs' export contribution during the period 1996–2001, in 2001–2004 flat export growth among large enterprises in the electronics sector coupled with more pronounced export growth among SMEs in the electronics sector led to a significant increase in the export contribution rate of SMEs as a whole. Fluctuations in the export performance of the petrochemical industry (including both large enterprises and SMEs in the petroleum industry and in the chemical materials industry) were another factor that affected the export contribution rate of Taiwan's SMEs during the period 2001–2004.

It is readily apparent from the above analysis that changes in the SME export contribution ratio embody both changes in the industrial structure and changes in the export growth rate. What these changes represent are, respectively, the fluctuations in the competitiveness of individual industries relative to each another and the changes in overall export competitiveness. Examining the SME export contribution ratio alone can show only the broad picture; only an in-depth exploration of the industrial structure (combined with an analysis of export competitiveness) can explain the underlying reasons behind the changes in SME export competitiveness. Judging from the data available to us at present, it appears that Taiwan's exports are highly concentrated in the electronics sector, reflecting the high competitiveness of Taiwan's electronics industry. As a result, fluctuations in the exports of both large electronics firms and electronics sector SMEs have a pronounced impact on the export contribution of Taiwan's SMEs. One point worth noting is that, during the period 2001–2004, the rapid growth in the exports of the large enterprises in the electronics industry was starting to slow, while the export performance of small and medium-sized electronics manufacturers began to improve. Further investigation will be needed to determine whether this trend is due to globalization (with larger enterprises investing in China) or to some other cause. It remains to be seen whether the decline in the export performance of large enterprises in the electronics sector will affect the exports of SMEs in the same sector.

II Types of Exportation among Manufacturing Sector SMEs

This section focuses on an analysis of exporting behavior, examining enterprises as suppliers of production factors and as consumers of production factors to explore the changes in the types of exportation that manufacturing sector SMEs engage in.

1. The Enterprise as Supplier of Production Factors

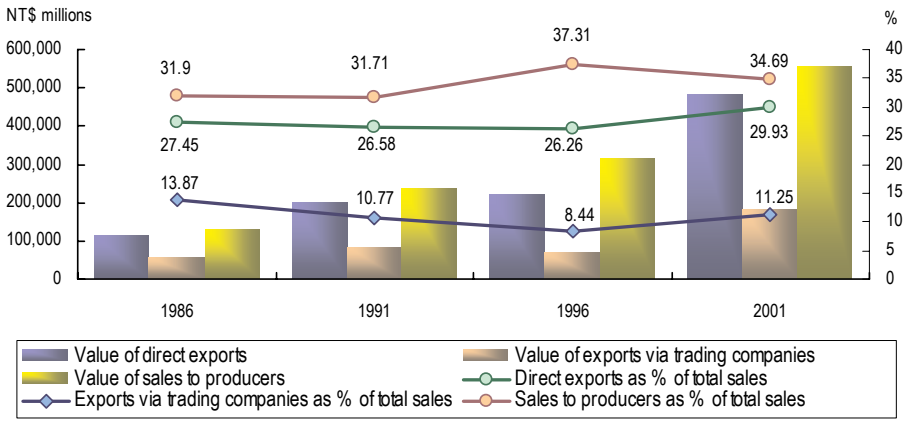
(1) Overall Product Flow

The results of using Industry, Commerce and Service Census data to calculate SME product flows are shown in Figure 6-2-1. If one compares the product flow structure for manufacturing SMEs over time, it can be seen that, prior to 1996, the shares of total sales accounted for by direct exports and exports via trading companies had been falling, but that in 2001 they began to pick up again. The direct exports' share of total sales fell from 27.45% in 1986 to 26.58% in 1991, and to 26.26% in 1996, but then rose again to 29.93% in 2001; the share accounted for by exports via trading companies fell from 13.87% in 1986 to 10.77% in 1991, and to 8.44% in 1996, before rising to 11.25% in 2001. In 1991, sales to other domestic producers accounted for roughly the same percentage of total sales as had been the case in 1986 (31.71% compared to 31.90%); this figure then rose to 37.31% in 1996, but fell back to 34.69% in 2001. Overall, two pronounced structural transformations can be seen in the product flows over the 15-year period from 1996 to 2001: these changes took place during the periods 1991–1996 and 1996–2001.

First, let us consider the structural transformation that took place during the 1991–1996 period. During this period, total sales revenue increased, but the shares of total sales revenue accounted for by direct exports and by exportation via trading companies decreased, while the share accounted for by sales to producers rose. Exportation via trading companies fell not only in percentage terms but in absolute terms, too. At the same time, sales to other producers increased both in absolute terms and as a percentage of total sales. The period 1991–1996 thus saw SMEs becoming less oriented towards export markets, while their role as suppliers of parts and

materials to other producers became more pronounced, reflecting an increased division of labor within Taiwanese industry as a whole.

Figure 6-2-1 Shares of Total SME Sales Accounted for by Direct Exports, Exports via Trading Companies, and Sales to Producers, 1996–2001



Source: Wu, Hui-lin, K'ai-fang Cheng and Ying-yi Tu, *Changes in SMEs' Export Contribution*, 2004, a project commissioned by the Small and Medium Enterprise Administration, Ministry of Economic Affairs.

In the following period, from 1996 to 2001, the shares of SME sales accounted for by direct exports and exports via trading companies both rose to higher levels in 2001 than they had stood at in 1996. The share accounted for by direct exports rose from 26.26% in 1996 to 29.93% in 2001, while the share accounted for by exports via trading companies increased from 8.44% in 1996 to 11.25% in 2001; these figures represented increases of 3.67 percentage points and 2.81 percentage points, respectively. Over the same period, the share of total sales accounted for by sales to other domestic producers fell by 2.62 percentage points, from 37.31% in 1996 to 34.69% in 2001.

(2) Product Flows by Industry

Having examined the structural changes in manufacturing sector SME product flows over the period 1996–2001, we will now go on to consider the variations between individual industries. The changes in the shares of total sales accounted for by direct exports, exports via trading companies and sales to other domestic producers (the three sales types of most significance for SMEs) for individual industries during the period 1996–2001 are summarized in Table 6-2-1 below.

Table 6-2-1 Changes in the Shares of Manufacturing Sector SMEs' Total Sales Accounted for by Direct Exports, Exports via Trading Companies and Sales to Other Producers by Industry, 1996–2001

Type of Change	Industries
The direct exports' share of total sales rose.	Garment and apparel industry; leather, fur and leather and fur products industry; furniture and furnishings industry; paper pulp, paper and paper products industry; printing and related industries; chemical products industry; rubber products industry; non-metallic mineral products manufacturing; basic metals; machinery and equipment manufacturing; precision machinery manufacturing.
The direct exports' share of total sales rose; the share accounted for by exports via trading companies rose; the share accounted for by sales to other domestic producers fell.	Furniture and furnishings industry; paper pulp, paper and paper products industry; printing and related industries; non-metallic mineral products manufacturing; machinery and equipment manufacturing.
The share of total exports rose for all three sales types.	Chemical products industry.
The direct exports' share of total sales rose; the shares accounted for by exports via trading companies and by sales to other domestic producers both fell.	Leather, fur and leather and fur products industry; rubber products industry; precision machinery manufacturing.
The direct exports' share of total sales rose; the share accounted for by exports via trading companies fell, but the share accounted for by sales to other domestic producers rose.	Garment and apparel industry; basic metals industry.
The direct exports' share of total sales fell.	Food and beverage manufacturing industry; textile industry; wood and bamboo products industry; chemical materials industry; petroleum and coal products industry; plastic products industry; metal products manufacturing industry; electric power equipment and electrical machinery industry; transportation equipment manufacturing industry; other industrial product manufacturing industries.
The direct exports' share of total sales fell; the shares accounted for by exports via trading companies and by sales to other domestic producers both rose.	Metal products manufacturing industry.
The direct exports' share of total sales fell; the share accounted for by exports via trading companies rose, but the share accounted for by sales to other domestic producers fell.	Textile industry; wood and bamboo products industry; petroleum and coal products; electric power equipment and electrical machinery industry; transportation equipment manufacturing industry.
The direct exports' share of total sales fell; the share accounted for by exports via trading companies fell, but the share accounted for by sales to other domestic producers rose.	Plastics products industry; other industrial product manufacturing industries.
The share of total exports fell for all three sales types.	Food and beverage manufacturing industry; chemical materials industry.

Note: The ROC Industry Classification System was revised in 2001. The "electric power equipment and electrical machinery manufacturing industry" of 1996 was broken down into the "computer, communications and audiovisual products manufacturing industry," "electronic components manufacturing industry" and "electric power equipment and materials manufacturing, repair and distribution industry."

Source: Wu, Hui-lin, K'ai-fang Cheng and Ying-yi Tu, *Changes in SMEs' Export Contribution*, 2004, a project commissioned by the Small and Medium Enterprise Administration, Ministry of Economic Affairs.

Industries where the changes in product flows over the period 1996–2001 reflected those for manufacturing sector SMEs as a whole (i.e. an increase in the shares of total sales accounted for by direct exports and exports via trading companies, combined with a decrease in the share accounted for by sales to other domestic

producers) included: furniture and furnishings manufacturing; paper pulp, paper and paper products manufacturing; printing and related industries; non-metallic mineral products; and machinery and equipment manufacturing. These are mostly "traditional" industries. The number of industries in which the share of total sales accounted for by direct exports rose was even larger, including: garment and apparel manufacturing; leather, fur, and leather and fur products; furniture and furnishings manufacturing; paper pulp, paper and paper products manufacturing; printing and related industries; chemical products manufacturing; rubber products manufacturing; non-metallic mineral products; basic metals; machinery and equipment manufacturing; and precision machinery manufacturing. Again, these are mostly traditional industries, which goes against the conventional wisdom that hi-tech products have dominated Taiwan's exports in recent years. Given the intense competition from low-priced Chinese goods, the increase in the share of total sales accounted for by direct exports among SMEs in Taiwan's traditional industries is quite impressive, and can be taken to reflect an upgrading of product quality.

2. The Enterprise as Consumer of Production Factors

The data from the Industry, Commerce and Service Census cannot tell us anything about situations where manufacturing sector SMEs supply production factors to larger manufacturing enterprises, owing to the lack of information on customer size. While the *Census* data do provide information regarding sales to other domestic producers, it is not possible to gain a clear picture of the subsequent product flow; the "other domestic producers" may be exporting their products directly, exporting them via trading companies or selling them to yet other domestic producers. There is no way of knowing how many stages an SME's products go through before being exported.

When considering SMEs as suppliers, the official data currently available are not particularly helpful when trying to determine the percentage of export product production factor inputs that are derived from SMEs. To obtain this information, one needs surveys that focus on business enterprises as consumers of production factors, so that one can examine the share of the materials used in the production of export products that were purchased from SMEs.

To study SMEs' indirect exports and to try to clarify the reasons for the decline

in the SMEs' export contribution, a questionnaire survey was conducted to treat the business enterprise as a consumer of production factors. As SME exports may take the form of either direct exports or indirect exports via trading companies or large manufacturers, this study also incorporated a survey of trading company export sales and a survey of manufacturing enterprise export sales. The main conclusions reached were as follows:

(1) In 2003, 66.17% of the products exported by trading companies in Taiwan had been purchased from manufacturing sector SMEs. The percentage was 74.09% in the case of small and medium-sized trading companies, and 44.25 in the case of large trading companies.

(2) In 2003, 13.49% of the production factor inputs used by large manufacturing enterprises in Taiwan to manufacture products in Taiwan for export had been purchased from SMEs.

As the survey limited itself to asking respondents about the share of export products or export product production factors derived from SMEs in 2003, it was not possible to examine the changes in the SMEs' export contribution over time. This will only be possible if similar surveys are carried out on a regular basis in the future. Nevertheless the study did attempt to prepare forecasts based on three possible scenarios for the period 2001–2003:

Scenario 1: In each of the years 2001, 2002 and 2003, the share of the raw materials used in the manufacture of products for export by large manufacturing enterprises in Taiwan derived from SMEs was 13.49%; 44.2% of the products exported by large trading companies were purchased from SMEs.

Scenario 2: The share of the raw materials used in the manufacture of products for export by large manufacturing enterprises in Taiwan derived from SMEs during the period 2001–2003 rose by one percentage point each year, giving a share of 11.49% in 2001, 12.49% in 2002 and 13.49% in 2003. The share of the products exported by large trading companies that were purchased from SMEs also rose by one percentage point per year, resulting in a share of 42.2% in 2001, 43.2% in 2002 and 44.2% in

2003.

Scenario 3: The share of the raw materials used in the manufacture of products for export by large manufacturing enterprises in Taiwan derived from SMEs during the period 2001–2003 fell by one percentage point each year, leading to a share of 15.49% in 2001, 14.49% in 2002 and 13.49% in 2003. The share of the products exported by large trading companies that were purchased from SMEs also fell by one percentage point per year, resulting in a share of 46.2% in 2001, 45.2% in 2002 and 44.2% in 2003.

The forecasts obtained for each of these three scenarios are shown in Tables 6-2-2, 6-2-3 and 6-2-4 below. What these forecasts have in common is that the SME export contribution rate falls steadily, regardless of whether the SME indirect ratio falls or rises.

Table 6-2-2 Indirect Export Estimates for 2001–2003 (Scenario 1)

Unit: NT$ million

Item / Year and Size	Total exports (based on VAT collection data)	Manufacturing sector exports	The value of the raw materials used by large manufacturing enterprises that are derived from SMEs	Large trading companies' exports	The value of large trading company exports purchased from SMEs	SME export contribution rate (including indirect exports)	SME export contribution rate (excluding indirect exports)
2001						31.56%	20.65%
All enterprises	6,296,729	3,202,516					
Large enterprises	4,996,344	2,670,668	360,273	738,373	326,361		
SMEs	1,300,385	531,848					
2002						30.29%	19.28%
All enterprises	7,008,076	3,648,396					
Large enterprises	5,657,193	3,088,094	416,584	804,384	355,538		
SMEs	1,350,884	560,302					
2003						29.70%	18.11%
All enterprises	7,332,742	4,246,510					
Large enterprises	6,004,906	3,404,800	459,308	883,777	390,629		
SMEs	1,327,836	841,710					

Notes: 1. When the ROC Industry Classification system was revised in 2001, the "international trade" category was eliminated; goods that had formerly been included in this category were now included in either the "wholesale" or "retail" category. It is therefore not possible to calculate total exports for large trading companies in 2002 or 2003. The estimates used are based on large trading companies' total exports in 2001; these were multiplied by the annual rate of increase in exports (8.94% in 2002 and 9.87% in 2003).

2. Taking 2001 as an example, the numerator (1,987,019) = SME exports (1,300,385) + the value of those materials used by large manufacturing enterprises in the manufacturing of products for export derived from SMEs (360,273) + the value of those products exported by large trading companies that had been purchased from SMEs (326,361).

3. Calculation of the SME export contribution rate (including indirect exports):
(1) SME export contribution rate in 2001 = 1,987,019 / 6,296,729 = 31.56%.
(2) SME export contribution rate in 2002 = 2,123,006 / 7,008,076 = 30.29%.
(3) SME export contribution rate in 2003 = 2,177,773 / 7,332,742 = 29.70%.

Source: VAT collection data.

Table 6-2-3 Indirect Export Estimates for 2001–2003 (Scenario 2)

Unit: NT$ million

Item / Year and Size	Total exports (based on VAT collection data)	Manufacturing sector exports	The value of the raw materials used by large manufacturing enterprises that are derived from SMEs	Large trading companies' exports	The value of large trading company exports purchased from SMEs	SME export contribution rate (including indirect exports)	SME export contribution rate (excluding indirect exports)
2001						30.47	20.65
All enterprises	6,296,729	3,202,516					
Large enterprises	4,996,344	2,670,668	306,860	738,373	311,593		
SMEs	1,300,385	531,848					
2002						29.74	19.28
All enterprises	7,008,076	3,648,396					
Large enterprises	5,657,193	3,088,094	385,703	804,384	347,494		
SMEs	1,350,884	560,302					
2003						29.70	18.11
All enterprises	7,332,742	4,246,510					
Large enterprises	6,004,906	3,404,800	459,308	883,777	390,629		
SMEs	1,327,836	841,710					

Note: Calculation of the SME export contribution rate (including indirect exports):
(1) SME export contribution rate in 2001 = 1,918,838 / 6,296,729 = 30.47%.
(2) SME export contribution rate in 2002 = 2,084,081 / 7,008,076 = 29.74%.
(3) SME export contribution rate in 2003 = 2,177,773 / 7,332,742 = 29.70%.
Source: VAT collection data.

Table 6-2-4 Indirect Export Estimates for 2001–2003 (Scenario 3)

Unit: NT$ million

Item / Year and Size	Total exports (based on VAT collection data)	Manufacturing sector exports	The value of the raw materials used by large manufacturing enterprises that are derived from SMEs	Large trading companies' exports	The value of large trading company exports purchased from SMEs	SME export contribution rate (including indirect exports)	SME export contribution rate (excluding indirect exports)
2001						32.64	20.65
All enterprises	6,296,729	3,202,516					
Large enterprises	4,996,344	2,670,668	413,686	738,373	341,128		
SMEs	1,300,385	531,848					
2002						30.85	19.28
All enterprises	7,008,076	3,648,396					
Large enterprises	5,657,193	3,088,094	447,465	804,384	363,582		
SMEs	1,350,884	560,302					
2003						29.70	18.11
All enterprises	7,332,742	4,246,510					
Large enterprises	6,004,906	3,404,800	459,308	883,777	390,629		
SMEs	1,327,836	841,710					

Note: Calculation of the SME export contribution rate (including indirect exports):
(1) SME export contribution rate in 2001 = 2,055,199 / 6,296,729 = 32.64%.
(2) SME export contribution rate in 2002 = 2,161,931 / 7,008,076 = 30.85%.
(3) SME export contribution rate in 2003 = 2,177,773 / 7,332,742 = 29.70%.
Source: VAT collection data.