

The Changing Face of Chinese Taipei's SME Sector

By Wen-Heng Chao

Associate Research Fellow

Taiwan Institute of Economic Research

Introduction

Small and Medium Enterprises (SMEs) have been the driving force to Chinese Taipei's economic development; especially in the 1970s and early 1980s, SMEs enjoyed a strong position in Chinese Taipei's production outputs, numbers of enterprises, numbers of employees and export value. During that period, the growth of the SME sector was mainly driven by the dynamic growth of enterprises in the manufacturing industry. Under the contribution of manufacturing SMEs, Chinese Taipei's economic development demonstrated a special pattern of flexibility¹.

In the later 1980s, however, Chinese Taipei faced a series of challenges that had never happened before; including appreciation of NT dollars, soar of land and labor costs, decline of export competitiveness, and outflow of SMEs to other foreign production bases. From then on, the position of SMEs in Chinese Taipei's economy has experienced gradual changes. Large enterprises have been grasping their important share in Chinese Taipei's economy and the importance of the manufacturing industry has been gradually declining. The changing environment brought up the changes in the SMEs' share of export value, number of people in the SME sector, R&D tendency of SMEs, SMEs' adoption of e-commerce etc. and SMEs have been losing their primacy.

The topic of the change of Chinese Taipei's SMEs is really worth studying. As a driving force of economic growth they have used to be, SMEs' changing characteristics reflects the changing pattern of Chinese Taipei's economic development. In addition, the number of SMEs still accounts for around 98% of all Chinese Taipei's enterprises, and the number of people in the SME sector still occupies around 75% of Chinese Taipei's working force. Therefore, SMEs still have significant meaning in terms of economic and societal development in Chinese Taipei. Among existing studies and research, however, only very few pieces have addressed the changes such as the decrease of the SMEs' share of export value, but there lack comprehensive and systematic studies on the whole picture of the changes. In order to compensate this insufficiency, this study tries to systematically investigate the changes and examine the government policy to cope with the changes.

Changing Definitions of SMEs

Table 1 below shows how the definition of SMEs in Chinese Taipei has changed over the years. One significant change is the increase in the maximum capitalization, total assets and annual sales revenue that an enterprise may have and still be classed as an SME. In the past, a firm in the manufacturing, mining or quarrying sectors had to have capitalization of less than NT\$5 million to be considered an SME; today, the threshold has been changed to NT\$80 million. This relaxation in the qualifications for SME status was partly a deliberate effort on the part of the government to ensure that as many enterprises as possible could enjoy the benefits of SME status, but it also reflects the general trend for business enterprises in Chinese Taipei to get larger. With average capitalization, total assets and annual sales revenue all tending to rise, if the government had kept the size qualification for SME status at the same level, the number of enterprises eligible for SME status would have grown steadily smaller.

At the same time, with the increase of labor and land costs, the average operating costs per enterprise have risen too. It now costs more to set up a new business and keep it operating than it did in the past. Today, an enterprise with capitalization of NT\$80 million can expect to encounter the similar

problems (in terms of securing financing, limited manpower resources, market access, operational constraints etc.) that would have affected an enterprise with capitalization of NT\$5 million in the past. The changing of the capitalization threshold to NT\$80 million was thus very much a necessary measure on the government's part.

As regards the number of employees that an enterprise may have and still be classed as an SME, this has not displayed the same simple upward progression that the capitalization requirement has. For enterprises in the manufacturing industry and in the mining and quarrying industries, SMEs were defined in 1967 as those enterprises with less than 100 employees. This figure was increased to 300 in 1979, but then reduced to 200 in 1995. For enterprises in the agriculture, forestry and fisheries sector, in the public utilities industry and in the service sector, the maximum number of employees that an enterprise can have and still be classed as an SME has generally been kept at 50.

Table 1: Changes in the Definition of SMEs in Chinese Taipei

Manufacturing, Mining and Quarrying			
	Capitalization	Total Assets	No. of Employees
1967	Under NT\$5 million		Under 100 employees
1973	Under NT\$5 million	Under NT\$20 million	Electronics, garment and footwear manufacturing industries: Under 300 employees Food industry: Under 200 employees Other industries: Under 100 employees
1977	Manufacturing: Under NT\$20 million Mining and quarrying: Under NT\$20 million	Under NT\$60 million	Manufacturing: Under 300 employees Mining and quarrying: Under 500 employees
1979	Manufacturing: Under NT\$20 million Mining and quarrying: Under NT\$40 million	Manufacturing: Under NT\$60 million	Manufacturing: Under 300 employees
1982	Manufacturing: Under NT\$40 million Mining and quarrying: Under NT\$40 million	Manufacturing: Under NT\$120 million	

Table 1: Changes in the Definition of SMEs in Chinese Taipei

Manufacturing, Mining and Quarrying		
	Capitalization	Total Assets
1991	Manufacturing and construction: Under NT\$40 million Mining and quarrying: Under NT\$40 million	Manufacturing and construction: Under NT\$120 million
1995	Under NT\$60 million	Under 200 employees
2000	Under NT\$80 million	Under 200 employees
2005	Under NT\$80 million	Under 200 employees
Agriculture, Forestry and Fisheries, Public Utilities, and Service Sector		
	Annual Sales Revenue	No. of Employees
1967	Under NT\$5 million	Under 50 employees
1973	Under NT\$5 million	Under 100 employees
1977	Under NT\$20 million	Under 50 employees
1979	Under NT\$20 million	Under 50 employees
1982	Under NT\$40 million	
1991	Under NT\$40 million	
1995	Under NT\$80 million	Under 50 employees
2000	Under NT\$100 million	Under 50 employees
2005	Under NT\$100 million	Under 50 employees

Source: Small and Medium Enterprise Administration, Ministry of Economic Affairs, *White Paper on Small and Medium Enterprises in Taiwan*.

Key Trends in the Development of Chinese Taipei's SME Sector

Since late 1980s, the development of SMEs in Chinese Taipei has advanced to a different direction with respect to competitive advantage, industrial structure, and the position in the economy. This section will explore relevant indicators and statistics to demonstrate the changes of the SME sector of Chinese Taipei. The data of this study are mainly from White Paper on Small and Medium Enterprises in Taiwan, which contains the most completed information about SMEs. However, because the data in the White Paper still have its limitation on scope and time, this study will also refer to other sources to complement the insufficiency of the White Paper.

1. THE NUMBER OF SMEs IN CHINESE TAIPEI

The number of SMEs in Chinese Taipei has grown steadily over the years. Over the period 1982 - 2005, the total number of SMEs in Chinese Taipei rose by 74.7%, from 701,839 in 1982 to 1,226,095 in 2005, representing an average annual growth rate of 2.47%. During the period 1996 - 2005, the average annual growth rate was 2.15%, down from 3.3% in 1986 - 1995; however, the rate of increase has recently started to pick up again, climbing to 4.17% in 2005.

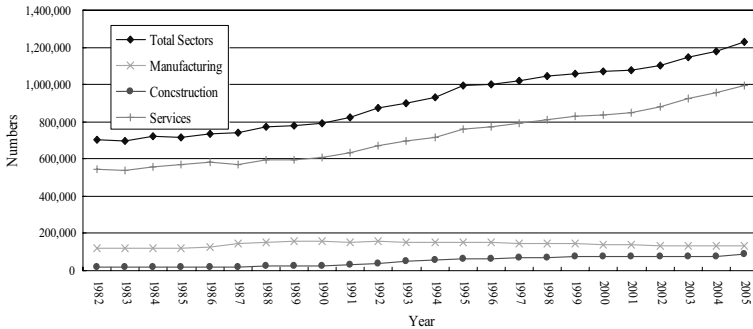
While the trend for the number of SMEs in Chinese Taipei to increase has remained unchanged, the structure of the SME sector has altered considerably over the years. We select some key sectors to demonstrate the change in terms of industries. Figure 1 shows the changes in the number of SMEs in key industries. As can be seen from this figure, the increase in SME numbers in recent years has been heavily concentrated in the service sector. The number of SMEs in the manufacturing sector has actually been falling since 1992, and the number of SMEs in the construction industry has increased only very slightly. The number of SMEs in the service sector began to grow rapidly in 1991; since that year, the SME growth rate for the service sector has been consistently higher than the growth rate for Chinese Taipei's industry as a whole. Broadly speaking, since 1991 - 1992, the service sector has accounted for more or less all of the annual increase in the number of SMEs in Chinese Taipei. In 2004, for example, the number of total SMEs in Chinese Taipei grew by 29,786, while the number of SMEs in the service sector increased by 30,620.

As regards SMEs' share of the total number of enterprises in Chinese Taipei, 1995 was a watershed year in this respect. SMEs' share of all enterprises had fallen steadily from 98.67% in 1982 to 96.26% in 1994. However, in 1995 SMEs' share of the total number of enterprises in Chinese Taipei began to rise again. The main reason for this increase was the government's revision of the definition of SMEs; the adoption of the new definition caused the number of SMEs to increase by 6.3% compared to the previous year. Since then, SMEs' share of all enterprises has remained at around the 98% level.

In the manufacturing sector, SMEs' share of all manufacturing enterprises has been falling steadily, while large enterprises' share has risen. In the service

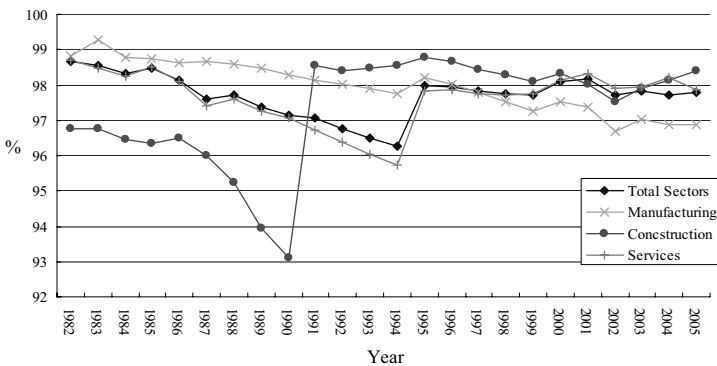
sector, the last few years have not seen any significant increase in SMEs' share of the total number of enterprises in the service sector in spite of its significant increase in the absolute terms, reflecting the fact that the number of large enterprises in the service sector has been growing at a similar rate to the number of SMEs.

Figure 1: The Number of SMEs in Chinese Taipei



Source: Small and Medium Enterprise Administration, Ministry of Economic Affairs, *White Paper on Small and Medium Enterprises in Taiwan*.

Figure 2: SMEs' Share of the Total Number of Enterprises

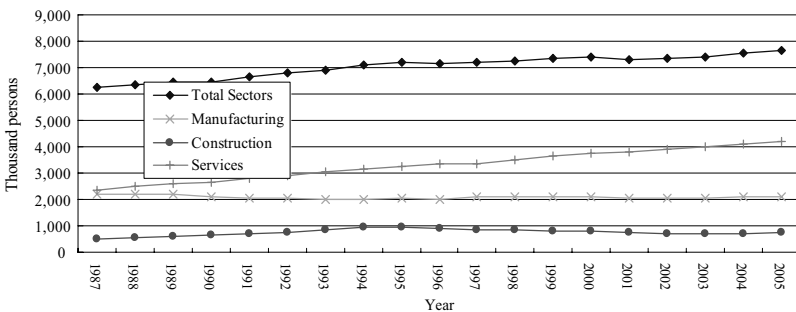


Source: Small and Medium Enterprise Administration, Ministry of Economic Affairs, *White Paper on Small and Medium Enterprises in Taiwan*.

2. THE NUMBER OF PERSONS EMPLOYED BY SMEs

The number of people working in the SME sector has grown slowly but steadily since 1987. In 1987, there were 6,271 thousand people working in SMEs in Chinese Taipei; by 2005, this figure had risen by 21.96% to 7,648 thousand. There was a slight, temporary decline in the number of people working in the SME sector in 1995 - 1996. As regards the situation in individual sectors of the economy, the service sector has seen the largest increase in the number of people working in SMEs. In 1987, there were 1,487 thousand people working in service sector's SMEs in Chinese Taipei; by 2005, this figure had increased by 79.78% to 2,329 thousand. Here again, one can see the shift in the center of gravity of the SME sector towards the service industries. The number of people working in SMEs in the manufacturing sector has for many years remained steady at around 2 million to 2.1 million people, while the number of people working in SMEs in the construction industry rose initially before falling. In 2005, the number of people who worked in the SME sector as a whole increased by 95 thousand; the service sector accounted for 89.47% of this increase, with 85 thousand additional people working in service sector's SMEs. As of 2005, 54.63% of all people working in SMEs were working in the service sector.

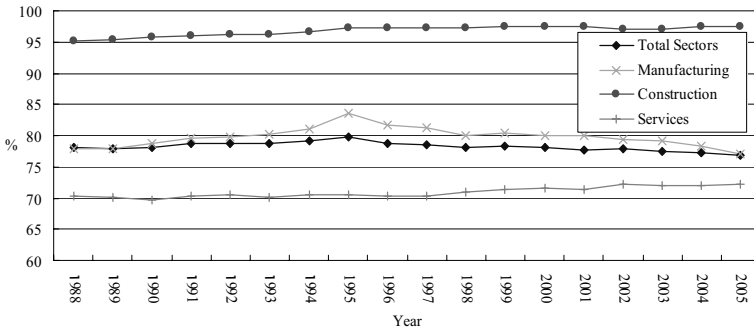
Figure 3: The Number of People Working in SMEs



Source: Small and Medium Enterprise Administration, Ministry of Economic Affairs, *White Paper on Small and Medium Enterprises in Taiwan*.

While the number of people working in SMEs has increased in absolute terms, the SME sector's share of total employment in Chinese Taipei has been falling. SMEs' share of the total number of working force in Chinese Taipei peaked at 79.75% in 1995 following the introduction of the revised definition of SMEs. Since then, it has fallen steadily, declining to 76.93% by 2005. Although the number of people working in SMEs has been rising, the number of people working in large enterprises has been growing even faster, reflecting the growing importance of large enterprises within the economy as a whole. The decline in SMEs' share of working force has been especially pronounced in the manufacturing sector. It decreased from 83.5% in 1995 to 77% in 2005. By contrast, SMEs' share in the service sector has risen, with an increase from 70.52% to 72.28% over the same period. The trend for enterprises to get larger has thus been more evident in the manufacturing sector than it has in the service sector.

Figure 4: SMEs' Share of Total Working Force



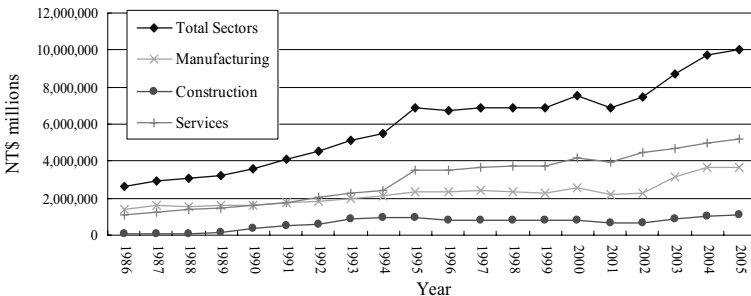
Source: *Small and Medium Enterprise Administration, Ministry of Economic Affairs, White Paper on Small and Medium Enterprises in Taiwan.*

3. SME SALES PERFORMANCE

The growing dominance of the economy by large enterprises is very obvious when one examines sales performance. Figure 5 shows the changes in SME sales performance since 1986. It can be seen that, over the period from 1986 to 2005, total annual sales for the SME sector as a whole grew by 282%.

However, growth was not continuous during the whole of this period; in particular, the sales performance of the SME sector as a whole remained more or less flat over the period from 1995 to 2001. In terms of industries, the service sector had the highest sales growth rate over the period 1986 - 2005. Combined sales for all service sector SMEs rose by 356% during this period, compared to 164% for the manufacturing sector and 136% for the construction industry. One point worth noting is that even though the whole period witnessed a faster growth in the total annual sales in service sector, the growth rate of the manufacturing sector in the last three years has been higher than the corresponding growth rate for the service sector. The average sales per manufacturing sector SME have risen by 18.19% in the last three years, compared to an increase of just 4.87% in the service sector.

Figure 5: SME Sales Performance

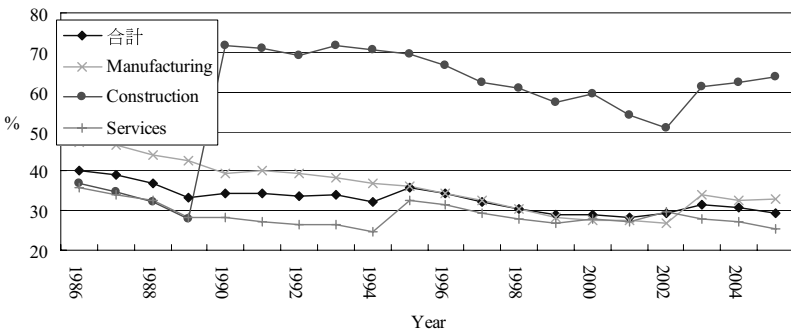


Source: Small and Medium Enterprise Administration, Ministry of Economic Affairs, *White Paper on Small and Medium Enterprises in Taiwan*.

SMEs' share of total annual sales for all enterprises has been falling steadily, from 40.28% in 1986 to 29.46% in 2005, while large enterprises' share has risen, reflecting the growing importance of large enterprises within the Chinese Taipei's economy. In the manufacturing sector, SMEs' share of total annual sales fell by 30.69% from 47.37% of total sales in 1986 to 32.83% in 2005; if the comparison is made between 1986 and 2002, then the decline is even more pronounced, at 43.14%. In the service sector, SMEs' share fell by 27.21% over the period 1986 - 2005. The fact that the decline in SMEs' share was less pronounced in the service sector reflects that fact that the trend towards larger enterprises has been less evident in this sector than it has in the

manufacturing sector. The construction industry is the only sector in which SMEs' share of total annual sales revenue has not fallen. In the construction industry, SMEs' share of total annual sales has risen by 72.1%; however, because the construction industry's annual sales are relatively low compared to the manufacturing sector and the service sector, this increase has had little impact on the economy as a whole.

Figure 6: SMEs' Share of Total Annual Sales Revenue



Source: Small and Medium Enterprise Administration, Ministry of Economic Affairs, *White Paper on Small and Medium Enterprises in Taiwan*.

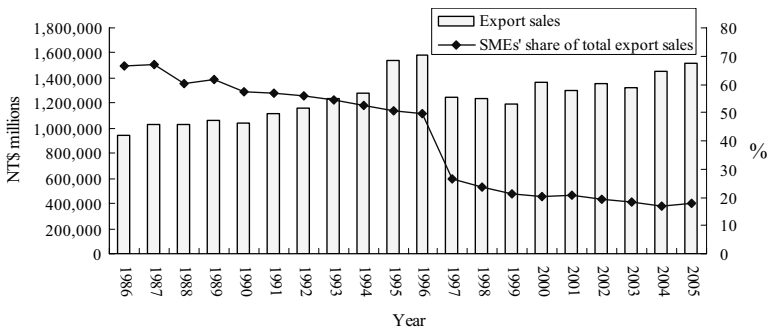
4. SMEs' EXPORT SALES AND EXPORT PATTERNS

In the 1980s and the early 1990s, SMEs accounted for the largest share of Chinese Taipei's exports; Chinese Taipei's large enterprises were mainly oriented towards the domestic market. This difference in market orientation between SMEs and large enterprises has been viewed as one of the most significant characteristics of Chinese Taipei's economic development. Chou Tien-cheng describes the Chinese Taipei's economy as having a "dichotomous structure".² Recently, however, this situation has been changing. Large enterprises are expanding into overseas markets, and SMEs' dominance of the export business is much less marked than it was.

Figure 7 shows the annual export sales of Chinese Taipei's SMEs and their share of total export sales for all enterprises. In 1986, SMEs accounted for

66.37% of Chinese Taipei's exports. Since then, although SME exports have continued to increase in absolute terms, SMEs' share of total exports for all enterprises has fallen steadily. By 2005, SMEs' share had dropped to 17.6%. It should be noted that the adoption of new calculation methods in 1997 caused both SME export value and SMEs' share of total export for all enterprises to fall dramatically. Nevertheless, even without this additional factor, the general trend would still have been downwards. A similar decline can be seen in SMEs' share of the total number of enterprises, their share of employment, and their share of total annual sales revenue. In every case, these figures reflect the trend towards dominance of the economy by large enterprises.

Figure 7: SMEs' Annual Export Sales and Their Share of Total Exports for All Enterprises



Source: Small and Medium Enterprise Administration, Ministry of Economic Affairs, *White Paper on Small and Medium Enterprises in Taiwan*.

While the decline in SMEs' share of Chinese Taipei's annual exports is partly attributable to the growing importance of large enterprises within the economy, examination of changes in production and sales models in Chinese Taipei's industry suggests another important reason. In the past, Chinese Taipei's exports were mostly relatively simple products; processing accounted for a large share of export-oriented production. With products of this kind, SMEs were often able to handle exportation themselves; alternatively, they could work through trading companies. Today, industrial production in

Chinese Taipei generally involves a complex division of labor. A single product often includes components and materials supplied by a number of different SMEs, which are then assembled and exported by a large enterprise. The SMEs and the large enterprise form what is sometimes known as a "central-satellite system".

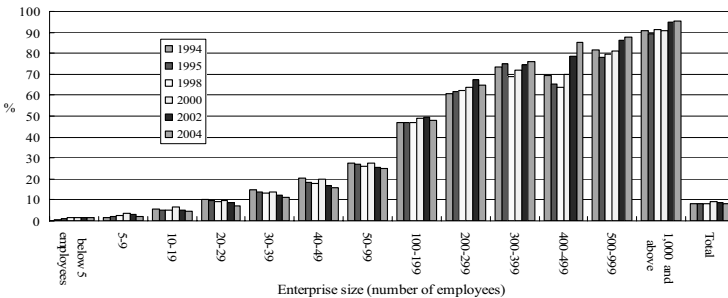
Many of the SMEs that in the past exported their own products no longer exist; others have been drawn into center-satellite systems, where their products merely constitute part of the product of a larger enterprise, so that exportation takes place indirectly via the large enterprise. Under these circumstances, Chinese Taipei's export statistics - which are concerned only with direct exports - cannot show the full contribution made by SMEs to Chinese Taipei's export performance.

Data on indirect exports is very difficult to obtain, but some existing data and research that have been undertaken in this field still makes it possible to develop a rough picture of the shift from direct exports to indirect exports in the SME sector. The 2003 edition of the *White Paper on Small and Medium Enterprises in Taiwan* contained some rough preliminary estimates for two categories of indirect exportation: exportation via large enterprises, and exportation via trading companies.³ Using data for 1999 and 2001 - the only two years for which data was available - the White Paper found that SME exports via trading companies had fallen from NT\$702.7 billion in 1999 to NT\$671.9 billion in 2001. By contrast, SME exports via other large manufacturers had increased from NT\$968.9 billion in 1999 to NT\$1,664.1 billion in 2001. Exports via other manufacturers had thus come to dwarf exports via trading companies, and were still growing. By way of comparison, Chinese Taipei's SMEs' direct exports totaled NT\$1,197.8 billion in 1999 and NT\$1,300.3 billion in 2001. Exports via other manufacturers in 2001 thus exceeded SMEs' direct exports in that year. While direct exports increased by NT\$102.5 billion between 1999 and 2001, indirect exports via other manufacturers increased by NT\$695.2 billion over the same period. Although it is difficult to say for certain on the basis of data for just two years, it does appear that Chinese Taipei's SME sector may be shifting away from direct export towards indirect export via other manufacturers.

5. R&D ACTIVITY IN THE SME SECTOR

In the last few years, not only has the percentage of Chinese Taipei's SMEs that undertake R&D activity fallen, the amount spent on R&D has also been in decline. As can be seen from Figure 8, for SMEs of almost every size within the 10 - 99 employees range, the percentage that engage in R&D activity has been falling in recent years. In 1994, 5.67% of SMEs with 10 - 19 employees undertook R&D activity; by 2004 this figure had fallen to 5.17%. Over the same period, the percentage of SMEs undertaking R&D fell from 10.37% to 8.8% for SMEs with 20 - 29 employees, from 14.72% to 12.31% for SMEs with 30 - 39 employees, from 20.17% to 17.05% for SMEs with 40 - 49 employees, and from 27.37% to 25.59% for SMEs with 50 - 99 employees. In the case of SMEs with less than 10 employees, while the percentage of SMEs in this group that engaged in R&D had been rising prior to 2000, since 2000 it has been falling. By contrast, the percentage of medium-sized enterprises with 100 - 199 employees that undertake R&D has risen slightly, from 46.88% in 1994 to 47.78% in 2004, and there has been a significant increase in the percentage of large enterprises (those with 200 or more employees) undertaking R&D activity.

Figure 8: The Percentage of Enterprises Engaging in R&D Activity- by enterprise size (number of employees)

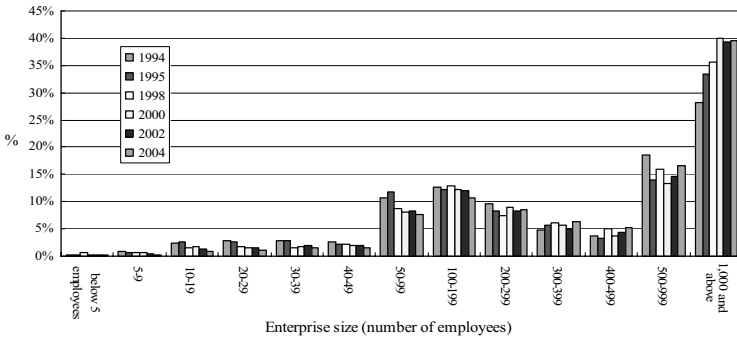


Source: Ministry of Economic Affairs, *Report on Annual Survey of Industries*.

A similar picture emerges when one examines the percentage of total R&D spending by enterprises. In 2004, large enterprises with 200 or more employees accounted for 76.27% of all R&D spending by Chinese Taipei's

industry as a whole; SMEs with less than 200 employees accounted for 23.73%. As can be seen from Figure 9, the share of total R&D expenditure held by SMEs has been in decline, falling from 35.15% in 1994 to 23.73% in 2004. The decline has been most evident in the case of small enterprises with 5 - 9 employees (-72.88%), and least evident in the case of enterprises with 100 - 199 employees (-15.73%). Broadly speaking, the smaller the size of the enterprise, the greater the decline in R&D spending has been.

Figure 9: The Percentage of Total R&D Spending Held by Individual Enterprise Size Classes



Source: Ministry of Economic Affairs, *Report on Annual Survey of Industries*.

6. SME VALUE ADDED LABOR PRODUCTIVITY

As shown by Figure 10, the amount of value added created by SMEs increased over the period 1991 - 2001. Enterprises with fewer than 10 employees posted the fastest increase in value added, at 130%, while those with 10 - 29 employees had the smallest increase, at just 67.76%. The increase in value added for large enterprises with 500 or more employees over this period was 105.25%, a figure that was surpassed only by enterprises with fewer than 10 employees. Large enterprises with 500 or more employees accounted for 42.09% of total value added created by all enterprises in 2001, while enterprises with less than 100 employees accounted for 42.7%. Given that SMEs accounted for only 28.38% of total sales for all enterprises in Chinese Taipei in 2001, their contribution to value added creation is very impressive.

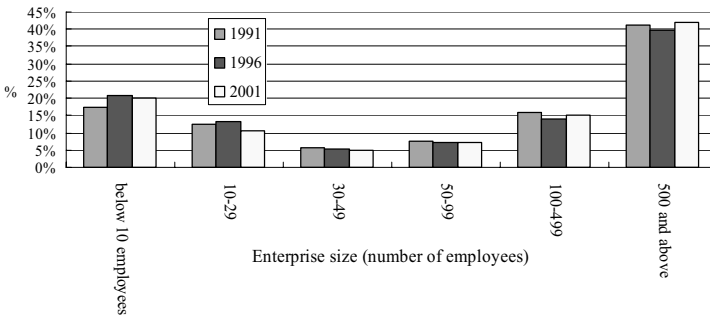
It can be seen from Figure 11 that, within the small enterprise segment, the share of total value added held by enterprises with less than 10 employees increased over the period 1991-2001, whereas for all other small enterprise size classes, the share of value added held fell during this period. Enterprises with less than 10 employees and large enterprises with 500 or more employees were thus the only two size classes to see their share of value added increase between 1999 and 2001.

Figure 10: Value Added Creation by Enterprises of Different Size



Source: Directorate General of Budget, Accounting and Statistics, *Industry Commerce and Service Census*.

Figure 11: The Shares of Total Value Added Held by Enterprises of Different Sizes



Source: Directorate General of Budget, Accounting and Statistics, *Industry Commerce and Service Census*.

Owing to the limitations of the available data, the ratios between value added and the number of employees have been used to estimate labor productivity for enterprises in each size class. According to the results of these estimates, in 2001, each employee in those enterprises with less than 10 employees was creating an average of NT\$681,810 of value added per year; for employees in large enterprises with 500 or more employees, the figure was NT\$1,641,140. Labor productivity in large enterprises with 500 or more employees was thus 2.5 times as high as that in small enterprises with less than 10 employees.

In terms of the growth rate of labor productivity, enterprises in the 50 - 99 employee class have seen the most rapid increase in labor productivity, followed by those in the 100 - 499 employee class and enterprises with less than 10 employees. However, labor productivity growth for enterprises with 500 or more employees has been disappointing. It can thus be seen that, although SMEs' labor productivity is still lower than that of large enterprises, labor productivity in SMEs is improving more rapidly than it is in large enterprises.

Table 2: Labor productivity of enterprises by Size

Units: NT\$ thousands; %

	1991		1996		2001		Average	
	Value added /no. of employees	GDP/no. of employees	Growth rate (1991-1996)	Value added /no. of employees	Growth rate (1996-2001)	Value added /no. of employees (average for all three years)	Growth rate (1991-2001)	
Less than 10 employees	377.09	582.91	54.58%	681.81	16.97%	547.27	80.81%	
10-29 employees	400.58	601.74	50.22%	676.98	12.50%	559.77	69.00%	
30-49 employees	415.87	611.95	47.15%	686.17	12.13%	571.33	65.00%	
50-99 employees	460.97	693.29	50.40%	869.98	25.49%	674.74	88.73%	
100-499 employees	599.11	929.27	55.11%	1096.57	18.00%	874.99	83.03%	

Table 2: Labor productivity of enterprises by Size

Units: NT\$ thousands; %

	1991		1996		2001		Average	
	Value added /no. of employees	GDP/no. of employees	Growth rate (1991–1996)	Value added /no. of employees	Growth rate (1996–2001)	Value added /no. of employees (average for all three years)	Growth rate (1991–2001)	
500 or more employees	1196.89	1720.50	43.75%	2006.03	16.60%	1641.14	67.60%	
All enterprises	595.13	871.42	46.43%	1050.07	20.50%	838.87	76.44%	

Source: Directorate General of Budget, Accounting and Statistics, *Industry Commerce and Service Census*.

7. E-COMMERCE ADOPTION IN THE SME SECTOR

The last few years have seen a significant increase in both computerization and e-commerce adoption in Chinese Taipei's SME sector. However, as can be seen from Table 2, SMEs in the manufacturing sector continue to lag behind large enterprises in terms of both computerization and e-commerce adoption. As of 2005, 96.09% of large enterprises in the manufacturing sector were using computers, whereas 71.20% of SMEs were doing so. As for e-commerce, 53.69% of large enterprises were using e-commerce in 2005, compared to 47.66% of SMEs; the gap between large enterprises and SMEs in this respect was thus only 7 percentage points. Although both computerization and e-commerce adoption are less advanced in the SME sector than they are among large enterprises, SMEs are catching up fast. This is particularly true for small enterprises with less than 100 employees. Whereas in 2001 only 35.59% of small enterprises with less than 100 employees were using e-commerce, by 2005 this figure had jumped to 47.66%; over the same period, the percentage of large enterprises that were using e-commerce increased only from 45.61% to 53.69%. The situation with regard to computerization is similar.

Overall, while Chinese Taipei's SMEs currently still have lower levels of computerization and e-commerce adoption than large enterprises, their growth

rates in this respect are higher. Despite SMEs' smaller resources and manpower, the fact the SME sector has managed to achieve almost the same level of e-commerce adoption as large enterprises suggests that there is strong demand for e-commerce among SMEs.

Table 3: Computerization and E-Commerce Adoption among Chinese Taipei's Enterprises

Unit: %

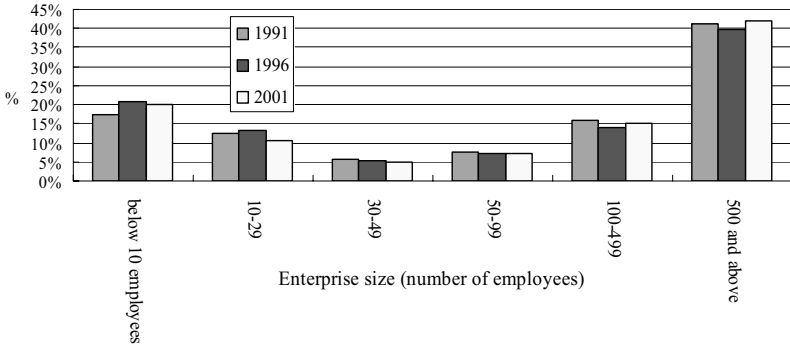
	Computerization			E-Commerce Adoption		
	2001	2003	2005	2001	2003	2005
200 or more employees	93.06	93.98	96.09	45.61	54.67	53.69
100-199 employees	91.67	89.51	87.99	37.88	45.52	50.42
Less than 100 employees	63.64	67.98	71.20	35.59	45.24	47.66

Source: Ministry of Economic Affairs, *Survey Report on the Operation of the Manufacturing Industry*.

8. THE ESTABLISHMENT OF NEW ENTERPRISE

Over the last few years, the number of new SMEs established in Chinese Taipei each year fell in the first place and then increased again. During the period 1998 - 2002, the number of new SMEs established each year declined steadily, but in 2003 it began to pick up again. The establishment of new enterprises is an important indicator of the health of an economy's entrepreneurship; the decline in SME start-ups prior to 2003 was thus a serious warning sign for Chinese Taipei. It remains to be seen whether the improvement since 2003 was only a temporary phenomenon. Judging by industries, we found that service firms still accounted for largest portion of newly established enterprises and the number of them also experienced fast growth. From 1998 to 2005, the number of startups in the service increased from 86,396 to 107,868, while the startups in the manufacturing sector decreased from 6,521 to 5,723.

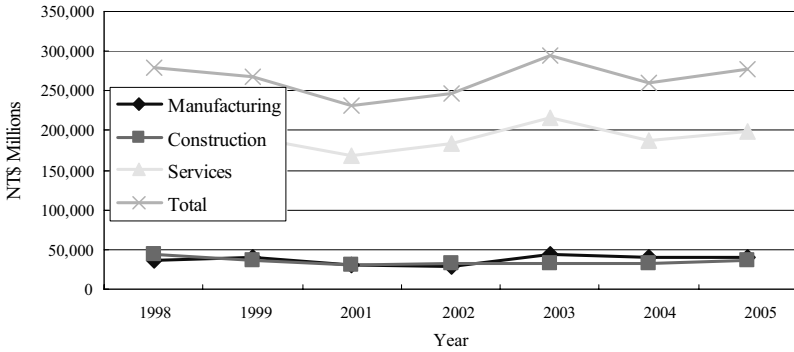
Figure 12: The Number of New SMEs Established in Chinese Taipei Each Year



Small and Medium Enterprise Administration, Ministry of Economic Affairs, White Paper on Small and Medium Enterprises in Taiwan.

With regard to annual sales, startups' performance lags behind their achievement in the increase of the number of firms. Between 1998 and 2005, the number of startups increased by 20.67%, but the annual sales decreased by 0.51%, demonstrating a tendency on the shrinking of scale of startups during recent years. The ratios between annual sales and the number of startups can prove this observation. In 1998, the average annual sale of each startup is NT\$ 2.69 million, but it decreased to NT\$ 2.22 million by 2005. Compared to overall SME sector, the performance of startups is obviously surpassed by average SMEs on annual sales. An average each SME' annual sale is NT\$ 8.16 million in 2005, while an average startup's annual sale is only NT\$ 2.22 million. The shrinking size of startups during recent years is attributable to a large number of startups rushing in the service sector. Average annual sale of each startup in the service sector was NTD 2.27 million in 1998, but it quickly decreased to NTD 1.85 million in 2005, while during the same period, average annual sale of each startup in the manufacturing sector increased from NT\$ 5.61 to NT\$ 6.93 million.

Figure 13: Total Annual Sales of All Newly-established SMEs



Small and Medium Enterprise Administration, Ministry of Economic Affairs, White Paper on Small and Medium Enterprises in Taiwan.

On the basis of the statistical data presented above, the following trends can be identified as having affected the development of Chinese Taipei's SME sector in the last few years.

1.SMEs' Share of Economic Activity in Chinese Taipei Has Been Falling Steadily

It can be seen from the data presented above that SMEs' share of several key aspects of economic activity - including employment, annual sales, exports, R&D spending and value added creation - has been falling, while large enterprises' share has risen. In the case of annual sales, SMEs' share of the total fell from 40.28% in 1986 to 29.46% in 2005. The decline in SMEs' shares of export sales and R&D spending was almost as pronounced, while the decline in SMEs' shares of employment and value added creation was more modest. The increase in the importance of large enterprises has been particularly marked in the manufacturing sector.

2.The Service Industries Now Constitute the Core Element in Chinese Taipei's SME Sector, and the Number of Service Sector SMEs has Grown Rapidly

Whether viewed in terms of the number of enterprises, the number of working force, or annual sales, the center of gravity of the Chinese Taipei's SME sector has been shifting towards the service industries. In the last few years, it is the service sector that has seen the most rapid increase in the number of SMEs. Most newly established SMEs have been in service industries; the number of SMEs in the manufacturing sector has in fact been falling since 1992. The service sector has also been the source of most SME job creation. This change is related to the tendency of the development of Chinese Taipei's industrial structure towards the service sector. By contrast, there is higher threshold for the survival of manufacturing SMEs; the higher limitation is not only placed on the capital requirements but on technology level.⁴

3.There Has Been a Significant Improvement in SME Labor Productivity

Regardless much of the data for Chinese Taipei's SME sector make depressing reading, SMEs in Chinese Taipei have achieved an impressive increase in labor productivity. Although labor productivity in SMEs is still inferior to that in large enterprises, SMEs' productivity has been growing faster than that of large enterprises. SMEs' share of the market may have contracted, but they have become more efficient.

4.SME Spending on R&D Has Fallen, and the Percentage of SMEs that Undertake R&D Has Declined

Although SMEs' labor productivity has improved significantly, this is not the result of increased spending on R&D. Both the amounts that SMEs spend on R&D and the percentage of SMEs that undertake R&D activity have fallen; the smaller the size of the enterprise, the more evident the decline. This trend reflects not only the SMEs' ignorance of the importance of R&D, but also the fact that a growing percentage of Chinese Taipei's SMEs are in the service sector; most service sector enterprises (small retailers for example) have neither the capability nor the motivation to undertake R&D.

5.Integration into Value Chains Has Gradually Become the Main Business Model for SMEs in the Manufacturing Sector

With indirect exports via other manufacturers gradually replacing direct exports by the SME itself, for SMEs in the manufacturing sector at least, integration into value chains (or center-satellite system) has become the main production/sales business model. As a result, SMEs today need to acquire new skills and capabilities; while they may no longer need to be able to develop customers for themselves, they do need to be able to collaborate efficiently with the other companies in the value chain.

6.The Percentage of SMEs Making Use of E-Commerce Has Risen

The percentage of SMEs that have computerized their operations and the percentage that have adopted e-commerce have both risen dramatically. The e-commerce adoption rate is now almost as high among SMEs as it is among large enterprises. Under cost pressure, SMEs still devote resource to e-commerce, indicating that they clearly have strong demand for e-commerce. The spread of e-commerce in the SME sector is also related to the integration of SMEs into larger supply chains, and to the growth of online shopping.

7.After Falling for Several Years, the Number of New SMEs Established Each Year Has Started to Rise Again

New business establishment is one of the most important indicators of the strength of a economy's entrepreneurship. It can be seen from the data presented above that, after falling during the period 1998 - 2002, the number of new SMEs established in Chinese Taipei each year started to rise again in 2003 - 2005, reflecting a strengthening of entrepreneurial activity. However, the increase can be attributable to the large scale increase of small service startups.

Policy to Cope with the Changes

1. CHANGES IN THE GOVERNMENT'S SME POLICY

Up until the 1990s, the Chinese Taipei government's policy with respect to the development of the SME sector was dominated by the concept of "guidance"; there was little in the way of policy measures to achieve structural improvement in the overall business environment. "Guidance" generally involved recruiting experts to provide consulting services, visiting SMEs to provide on-site support, organizing training courses for SME employees, etc. For the most part, guidance content was limited to traditional business skills, such as finance, business administration, etc. Guidance measures like these could help only a limited number of SMEs (mainly those who actively requested assistance); they had limited impact on the vast majority of SMEs in Chinese Taipei. Very few attempts were made to achieve an across-the-board improvement of the business environment; the most significant of these was the establishment of the SME Credit Guarantee Fund, which made it easier for SMEs to secure financing.

From 2000 onwards, the government's SME policy began to change. Although SME policy continued to emphasize "guidance", there was an increased emphasis on improving the business environment for SMEs. Measures were introduced to simplify the administrative procedures and reduce the transition cost for establishing a new enterprise. The government has also worked to provide a better environment for e-commerce, and has leveraged information and communications technology (ICT) to make it easier for SMEs to access the information they need. The last few years have seen the launch of several integrated ICT platforms, whereby different plans in the same area are integrated using the Internet, making it possible to provide better and more comprehensive services for SMEs.

The biggest single change in the Chinese Taipei's government SME policy since 2000 is that almost all new policy measures have taken the emergence of the knowledge economy into account. Many of the tools that business enterprises require in the era of the knowledge economy are things that individual SMEs cannot develop on their own. Active government assistance is needed to support the development of e-commerce, industrial clusters, and

stronger intellectual property right protection. The following sections will examine the policies adopted by the Chinese Taipei in response to a changing business environment, and those adopted in response to the changing nature of the SME sector itself.

2. POLICY MEASURES ADOPTED IN RESPONSE TO A CHANGING BUSINESS ENVIRONMENT

(1) Business Start-up and Incubation Policy

Business start-up and the entrepreneurship are two of the most important factors in the worldwide striving for innovation and sustainable development. The decline in the number of new SMEs established each year that Chinese Taipei experienced in 1998 - 2002 constituted a clear warning that Chinese Taipei needed to do more to cultivate business start-ups, and pointed up the need to create a business environment conducive to the establishment and development of new firms. Recognizing the importance of this issue (while also responding to the global trend towards encouraging entrepreneurial activity), the Chinese Taipei's government began to provide active support for new business start-up. Government policy in this area covered two key aspects: stimulating new business establishment, and start-up incubation.

The government has introduced a series of new policy measures to promote the establishment of new business enterprises, including the provision of information and consulting services, the establishment of "entrepreneur academies" and business start-up guidance centers (the Entrepreneurship Lab), and awards for innovative new business ventures. The first Entrepreneurship Lab was set up in 2005. They provide one-to-one on-site guidance, diagnostic services, technology matching, in-depth guidance programs, etc. In addition, the Realization of Entrepreneurial Dreams website serves as a portal site integrating the various plans and policy measures outlined above, and provides a wide range of information for entrepreneurs.

Chinese Taipei's Company Law was revised in 2001, greatly simplifying the process of new business establishment and eliminating unnecessary legal and regulatory restrictions. For example, a registration system replaced the old business licensing system; in the vast majority of industries, all that is

necessary to establish a new enterprise is to register it with the relevant government authorities. The minimum number of shareholders that a company is required to possess has also been reduced; in the case of a limited corporation, a company can now be established with just one shareholder. The administrative procedures relating to company establishment have also been simplified.

As regards the government's incubator policy, the basic purpose of a business incubator is to meet the needs of different types of start-up with regard to space, equipment, technology, expert manpower support, business services, information etc. Business incubators can help start-ups to develop new products and new technologies, thereby contributing to the goal of industrial upgrading and transformation. Over 80% of the business incubators in Chinese Taipei are located in universities, which are able to provide a comprehensive range of services - including technology, marketing, accounting and management services - at low cost. Those incubators are also in a good position to commercialize the results of academic research. Besides serving as a hotbed for start-up establishment, incubators can thus also contribute to the furthering of collaboration between universities and industry; they can also play an important role in industrial cluster development.

(2) Promoting Computerization and E-Commerce Adoption in the SME Sector

Since 2001, the Chinese Taipei's government has introduced a series of policy measures intended to promote e-enablement in the SME sector, including both guidance measures and plans for improving the overall ICT application environment. The key items in this comprehensive set of measures are as follows:

- a. Helping SMEs to make effective use of business-related ICT applications:
The government has provided industries support for the development of B2B e-commerce system and oriented towards the needs of SMEs. It has also set up an e-enablement service team, implemented measures to cultivate e-business talent, and set up electronic marketplaces.
- b. Promoting broadband Internet access in the SME sector: The government has encouraged SMEs to adopt broadband Internet access, which is the

foundation for successful e-enablement. A service team has been established to provide consulting services and help SMEs to deploy new broadband services.

c.Promoting online learning: Important measures adopted by the government in this area include the establishment of online learning platforms, the creation of online learning content, curriculum design and the production of online training materials.

d.Online integration of government services for SMEs: A website has been established to integrate all SME-related policy measures and projects, to make it as easy as possible for SMEs to access the information they need. This site provides a wide range of services, business matching functions and databases for the use of SMEs.

Given that a large number of SMEs demand for e-enablement service, the success or failure of the government's policies in this area will depend on how effectively the measures can be made available to all SMEs. In order to reach as many SMEs as possible, the policies should be implemented in close collaboration with local government authorities.

One major gap in the government's policy package is the need to reduce the cost of adopting e-commerce, including both broadband Internet access costs and the cost of deploying e-commerce. These costs can constitute a major burden for SMEs. While it is always possible for SMEs to rent space for website establishment or to set up an online store in an existing electronic marketplace at a lower cost, these options may not be ideally suited to the needs of individual SMEs. From SMEs' point of view, lowering costs are a very fundamental step to make e-commerce feasible for their adoption.

3. INDUSTRIAL CLUSTER POLICY

It can be seen from the statistical analysis presented above that integration into a supply chain has become the mainstream business model for SMEs in Chinese Taipei. Industrial clusters are one of the most important mechanisms for the formation and strengthening of value chains, so the Chinese Taipei's government has introduced a series of policy measures to promote industrial

cluster formation. Although not all of these measures are designed specifically for SMEs, SMEs can still benefit from them. The government has for many years been providing support for the establishment of center-satellite systems; these measures can help SMEs enter a supply chain. In the case of industrial parks and science parks, the presence of large enterprises in these parks can encourage large numbers of SMEs to locate themselves there, which therefore is more possible to become members of supply chains. In recent years, the emphasis in Chinese Taipei's industrial park and science park policy has shifted towards a focus on integration, building links with the local economy, strengthening private-sector participation, and encouraging cross-industry interactions. An industrial cluster is no longer just a collection of companies in the same industry; it will often also include research facilities, venture capital providers, business incubators, technology services providers and other types of service industry enterprises. The promotion of industrial cluster development can thus help to create new business opportunities for SMEs in the knowledge- and technology-intensive service industries and in other branches of the service sector.

Chinese Taipei's policy also includes measures to promote the development of industrial clusters in some specific areas and industries. For example, where 12 or more related enterprises are located in the same district, government supports are available for joint manufacturing, joint R&D, collaborative design, joint purchasing, joint marketing, joint distribution, etc. The goal here is to strengthen the integration of business capabilities between enterprises.⁵ The government has also been helping particular industries (such as the car parts industry) to integrate their B2B e-commerce activities, leveraging e-commerce to strengthen the industry value chain.

4. PROVIDING SUPPORT FOR R&D ACTIVITY IN THE SME SECTOR

Failure to invest in R&D is one of the major threats to the long-term development of Chinese Taipei's SMEs. As can be seen from the data presented in this report, the government's efforts have not so far been very successful in improving the R&D environment or getting SMEs to spend more on R&D. One of the key elements in the government's SME R&D policy is the Small Business Innovation Research (SBIR) project, implementation of which began in 1999. The SBIR project aims to encourage SMEs in Chinese

Taipei to step up the development of innovative technology and new product R&D. SMEs submit R&D proposals; if the proposal is approved, the SME will receive up to NT\$10 million in funding from the government, or up to NT\$50 million in the case of R&D alliances. As a quota were established in SBIR program, the SBIR project may help a limited number of SMEs that have already possessed first-rate R&D capabilities to develop innovative new products and technologies, but it is unlikely to provide a significant boost to R&D activity in the SME sector as a whole.

Another measure adopted by the government to encourage R&D activity in the SME sector is the promotion of collaboration between universities and industry. By and large, SMEs lack R&D resources and have only limited R&D capabilities. In theory, promoting collaboration between SMEs and universities should go some way towards compensating for these deficiencies, thereby helping SMEs to raise their overall technology level. In reality, however, SMEs' lack of resources and information makes it difficult for them to build collaborative relationships with the academic sector. For example, SMEs are usually not in a position to pay for technology transfer, lack the capabilities needed for collaborative R&D, do not have access to information about opportunities for collaboration with universities, and may not even be aware of the training courses and other resources that universities have to offer. In 2002, the National Science Council introduced a Plan for the Upgrading of Industrial Technology and Manpower Cultivation that targeted the SME sector. The objective was to leverage the R&D capabilities of universities and colleges to help SMEs undertake collaborative R&D. The amount of funding per project was set at NT\$400 - 500 thousands; SMEs would be required to pay 25% of the R&D costs themselves. Like the SBIR project, this plan will benefit only a small percentage of SMEs, and the funding provided will be even more limited.

Evaluation and Conclusion

Comparison of the major trends affecting the SME sector in Chinese Taipei with the government's SME policy points up two issues that have not really been addressed by the government: the gradual decline in SMEs' share of

overall economic activity, and the shift in the center of gravity of Chinese Taipei's SME sector towards the service industries with a significant increase in the number of service industry SMEs. While the decline in SMEs' share of economic activity may simply reflect a natural trend resulting from the changing pattern of economic development in Chinese Taipei, before concluding that there is no cause for concern, we need to clarify whether the decline is due to a worsening in the overall business environment for SMEs. This is a complex issue that is beyond the scope of this report; the government might want to consider undertaking systematic research in this area.

Another issue that the government has done little to address is the growing importance of the service industries within Chinese Taipei's SME sector. Leaving aside the question of whether this trend is a good or bad thing for the Chinese Taipei's economy as a whole, given that government SME policy is intended to provide service and support for SME development, there is clear need for the government to formulate a set of policies that will ensure the provision of this service and support for SMEs in the service sector.

Another important trend that the government has addressed, but where the results achieved so far appear to be rather limited, is the decline in SMEs' R&D spending and the fall in the percentage of SMEs that engage in R&D activity. It can be seen from the data presented in this report that these trends are worsening; the measures adopted by the government to tackle the problem have had little effect. The SBIR plan has much to recommend it, and will certainly help some SMEs that have already possessed significant R&D capabilities to undertake cutting-edge innovation; however, it will do little to boost R&D spending among the great mass of Chinese Taipei's SMEs. The government will therefore need to formulate additional measures that can provide an across-the-board boost to R&D activity in the SME sector as a whole.

Notes

1. Tien-Chen Chou and Chih Cheng Lin, *The Mechanisms of Taiwns' SME Development* (Taipei: Lianjing , 1999), Chapter 3(in Chinese).

2. Tien-Chen Chou, "The Impact of Industrialization on Industrial Organizations: Theory and Practice (I), Business Bank Quarterly, Vol 7. No. 3, 1984: 96-111; ien-Chen Chou, "The Impact of Industrialization on industrial organizations: Theory and Practice (II), Business Bank Quarterly, Vol 7. No. 4, 1984: 74-88.
3. Ministry of Economic Affairs · White Paper on Small and Medium Enterprises in Taiwan, 2006 (Taipei: Small and Medium Enterprises Administration), 159-168.
4. Concerning the Changing Competitiveness of Chinese Taipei's Manufacturing SMEs, please refer to Ming-Wen Hu and Chi Schive, "The Changing Competitiveness of Taiwan's Manufacturing SMEs," Small Business Economics, 11:315-329, 1998.
5. Small and Medium Enterprise Administration, Ministry of Economic Affairs, White Paper on Small and Medium Enterprises in Taiwan, 2003.