2014 White Paper on Small and Medium Enterprises in Taiwan

Taiwan SMEs: Challenges and Opportunities of U.S. Reindustrialization

Small and Medium Enterprise Administration

Ministry of Economic Affairs

October 2014

2014 White Paper
on Small and Medium Enterprises in Taiwan

Published by

Small and Medium Enterprise Administration, Ministry of Economic Affairs
3F., No. 95, Section 2, Roosevelt Rd.
Daan Dist.,Taipei City 10646
Taiwan, R.O.C.

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Designed and Printed by:

HONG YOU PRINTING CO., LTD.
6F., No. 10, Ln. 366, Section 2, Jhongshan Rd.
Jhonghe Dist., New Taipei City 23584
Taiwan, R.O.C.

Foreword

The recovery starting to take hold in advanced economies in 2013 is becoming broader. Global activity has broadly strengthened and is expected to improve further in 2014, with much of the impetus coming from advanced economies, especially from the U.S. However, activity in many emerging market economies has disappointed in a less favorable external financial environment, such as the normalization of monetary policy - both conventional and unconventional, particularly the U.S. QE tapering and expected exit in October. With accommodative monetary policy and a smaller fiscal drag, economic growth is projected to rise above trend in the U.S. and to be close to trend in the core euro area economies. Going forward, the U.S. economy could again become the major driving force of the global economic growth.

Taiwan's economic growth rate improved modestly from 1.48 percent in 2012 to 2.09 percent in 2013, amid mild global recovery and slowing growth in Mainland China, the most important trading partner of Taiwan. As for the performance of SMEs in 2013, of particular note is the number of SMEs, which reached a record level of 1,331,182 and accounted for 97.64 percent of all enterprises in Taiwan. In addition, the number of employed persons in SMEs rose to 8,588,000 - the highest level in recent years - and represented 78.30 percent of all employed persons in Taiwan. These statistics clearly illustrate that SMEs function as a stabilizing force in labor market and a key driving force of the country's economic development. The annual sales of SMEs in 2013 came to NT$11,322 billion, accounting for 29.44 percent of the total annual sales of all business enterprises in Taiwan, which was 0.53 percentage points lower than in 2012.

In order to witness the development of SMEs in Taiwan, the Small and Medium Enterprise Administration, Ministry of Economic Affairs has published the Chinese and English version White Paper on SMEs in Taiwan on an annual basis since 1992 and 1998 respectively.

In Part One of the 2014 White Paper, an extensive array of statistical figures is provided to describe the development of SMEs from a wide variety of perspectives in 2013, which includes a comparison with their performance in previous years, as well as with the performance of large enterprises.

In Part Two of 2014 White Paper, two special topics are tackled through an in-depth analysis on the significant challenges and opportunities faced by SMEs in recent times. They are "SME Export Strategy in Response to the U.S. Reindustrialization" and "Development Strategy for New Ventures in the Era of the U.S. Manufacturing Renaissance."

The government has been actively helping SMEs in various ways ensuring an overall innovation and business friendly environment in which necessary resources are available to them. In Part Three, the major government policies and measures related to SMEs along with their resulting effects over the past year are examined. These policies and measures can be categorized into five areas: (1) improving financial and funding services and strengthening investment in SMEs; (2) promoting transformation, upgrade and R&D for SMEs; (3) strengthening start-up capabilities and promoting incubation and acceleration programs; (4) revitalizing local industries by in-depth development,

marketing and expansion; (5) other government resources and measures to support SMEs, such as government procurement and policy loans for special projects. The Appendix to 2014 White Paper also provides important SME statistics covering the years from 2011 to 2013 for reference purposes.

Providing guidance to support the development of SMEs requires a long-term effort and commitment. It is hoped that this White Paper will give readers both in Taiwan and overseas a better understanding of Taiwan's SMEs, while at the same time providing a useful reference work to assist SME managers in their decision-making. Your comments on the content of the White Paper would be most welcome and appreciated.

Yun-Lung Yeh
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Ministry of Economic Affairs
October 2014

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Summary

Taiwan's small and medium enterprises (SMEs) have been recognized as the key driving force of the country's economic development over the past half century. For many years, export-oriented SMEs, small and medium sized manufacturers in particular, relied heavily on an industrial original equipment manufacturers (OEM) contract manufacturing model, supplying electronic parts and other components to developed countries. Since the mid-1980s, many Taiwan's manufacturers including SMEs moved production to Mainland China and ASEAN member nations to fulfill their overseas orders with low cost. This trend helped drive export growth with competitive price but also slow down the technology upgrades for advanced manufacturing. The main focus in contract manufacturing was on raising the efficiency of production processes, rather than on developing key technology or the end-user markets. Lacking key technology, and without their own brands and distribution channels, most SMEs have had to resort to competing on price and failed to achieve significant enhancement of the value-added.

Given significant challenges posed by slowing growth in Mainland China, pronounced global trend towards regional economic integration, intensified competition from Japan, South Korea, and Mainland China, and the U.S. Reindustrialization, how can the SME sector adapt and thrive in navigating the challenging environment and maintain its position as key players in global supply chain and the mainstay of Taiwan's economy for years to come?

2014 White Paper on Small and Medium Enterprises in Taiwan comprises three parts. Part One presents an overview and discussion of the most recent operational results, developing trends, and strategic directions of SMEs in Taiwan. Part Two provides in-depth discussion on export transformation of well-established SMEs and strategies for proactive new ventures in response to the U.S. Reindustrialization. Part Three reviews various government policy measures related to SMEs and examines their goals, implementation and results.

Part One consists of five chapters, covering macroeconomic environment, SMEs' current state and development, and SMEs' strategy and government policy measures in response to the changing economic and business environment.

Taiwan's economic growth rate improved modestly from 1.48 percent in 2012 to 2.09 percent in 2013 amid mild global recovery and slowing growth in Mainland China, the most important trading partner of Taiwan. As for the performance of SMEs in 2013, the number of SMEs reached a record level of 1,331,182, up 1.87 percent from 2012, and accounted for 97.64 percent of all enterprises in Taiwan. In addition, the number of employed persons in SMEs increased to 8,588,000, up 1.22 percent from 2012 - the highest level in recent years - and represented 78.30 percent of all employed persons in Taiwan. The annual sales of SMEs in 2013 came to NT$11,322 billion, accounting for 29.44 percent of the total annual sales of all business enterprises in Taiwan, which was 0.53 percentage points lower than in 2012 due to 18.53 percent drop in total exports, partially

offset by 2.74 percent rise of domestic sales. In 2013, a total of 98,821 new SMEs were established.

Amid industrial structure adjustment in Taiwan, the number of SMEs is mostly concentrated in the service sector, with the proportion being 80 percent. 56 percent of SMEs are Sole Proprietorships. In terms of the industries, over 50 percent of SMEs are in wholesale and retail trade, followed by manufacturing (10.5 percent) and hotel and restaurant industry (9.8 percent). In regional terms, 46.5 percent of all SMEs were concentrated in Northern Taiwan. The shares of total sales and export sales held by SMEs in the service sector both rose in 2013 compared to the previous year.

In terms of market entry and exit, SMEs often display more flexibility than large enterprises. However, there were nearly 49 percent SMEs had been going concerns 10 years and over by the end of 2013, and the share of SMEs in existence for 20 years and over had been rising consistently over the past 5 years, climbing from 20.5 percent by 2008 to 23.5 percent by 2013, showing improved consistency and resilience.

Five Special Municipalities and Taoyuan County combined represent 77.1 percent sales and 69.0 percent employed persons of SMEs, and have 956,235 SMEs, representing 71.8 percent of all SMEs in Taiwan.

Global economic recovery strengthened during the second half of 2013 and is expected to improve further in 2014-15. The impulse has come mainly from advanced economies, although their recoveries remain uneven. Two main forces in 2014 and going forward that will greatly impact Taiwan's export oriented economy are the U.S. Reindustrialization and the marked global trend towards regional economic integration. The former force could present an opportunity for Taiwan's industrial upgrade while the latter one may decide the role Taiwan will play in regional economy and in the production and supply chain in Asia. The government is taking a series of policy measures spanning short-, mid- and long-term to promote regional economic integration and facilitate SMEs' upgrade and transformation. Main plans and measures include "Three Industries, Four Reforms," "Industrial Upgrade and Transformation Action Plan," "Free Economic Pilot Zones," and "Cross-Strait Agreement on Trade in Services."

Two dominant ongoing trends of U.S. Reindustrialization policy toward re-shoring of advanced manufacturing and development of emerging industries pose significant opportunities and challenges to Taiwan SMEs. Taiwan should facilitate export transformation of its matured SMEs and gives birth to more proactive new ventures to deepen their connections to advanced economies in order to maintain the lead on emerging market countries in science, technology, and innovation. Taiwan SMEs have gained extensive experience in customized manufacturing through decades of export development in advanced economies. They should use the experience and know-how to actively participate in the supply chain of advanced manufacturing to enhance their own technology, innovation and quality for further linkage to developed markets.

Part Two consists of two chapters, in which two special topics are tackled through an in-depth analysis on the significant challenges and opportunities faced by SMEs in recent times and the corresponding strategies. They are "SME Export Strategy in Response to the U.S. Reindustrialization" and "Development Strategy for New Ventures in the Era of the U.S. Manufacturing Renaissance."

The recovery starting to take hold in advanced economies in 2013 is becoming broader. Global activity has broadly strengthened and is expected to improve further in 2014, with much of the impetus coming from advanced economies, especially from the U.S. With accommodative monetary policy and a smaller fiscal drag, economic growth is projected to rise above trend. Going forward, the U.S. economy could again become the major driving force of the global economic growth.

The two dominant themes under the U.S. Reindustrialization policy that pose both opportunities and significant challenges to Taiwan's SMEs remain the re-shoring of advanced manufacturing and the rise of emerging industries. Based on MIT's U.S. Re-shoring Survey, the decision drivers for companies to re-shore can be further divided into three main categories: time-to-market, cost reductions, and new technology development.

Based on the concept of modularity and cost reduction, the U.S. manufacturing sector's offshore outsourcing had escalated all throughout the 1990s, causing lack of domestic manufacturing talent. As U.S. manufacturing repatriation look to regain momentum, encouraged by the U.S. re-industrialization policy, many U.S. manufacturers will likely face a significant gap between the talent they need to keep growing their businesses and what they can actually find domestically. Therefore, highly intelligent automation via process sensors, controllers and robotics is indispensable for the U.S. based advanced manufacturing.

Most SMEs in Taiwan had gained first-hand experience in customized manufacturing through decades of export development in advanced economies before entering into emerging markets. They are well recognized by international peers for good reputation. Therefore, faced with more competitive U.S. peers, well-established Taiwanese SMEs should seize opportunities in U.S. market and North American supply chain presented by the U.S. Re-industrialization by developing new technologies in emerging industries and filling the talent gap through value added products and services to meet the rising demand of highly intelligent automation products and systems. Taiwan SMEs should build on their past experience developing the U.S. market and taking advantage of quality certifications previously secured in the advanced economies; adopt a differentiation strategy through own brand development, integrating manufacturing with services, and expanding from conventional product manufacturing to product and system design (such as small-scale automation systems), and more systematic services to balance "cost down" and "value up" in order to capture competitive advantage in U.S. niche markets.

With regard to development strategy for SME start-ups in emerging industries, based on the extensive case studies and review of the U.S. Manufacturing Renaissance policy measures, Chapter 7 proposes that, in relation to building business and innovation friendly environment in Taiwan, tax breaks and support for the commercialization of R&D results be used to foster the establishment of SME start-ups in these industries, while at the same time, on the finance side, efforts should be made to coordinate the resources of different government agencies and to encourage banks to increase the size of loans they are willing to grant to SMEs engaged in the development of cutting-edge technologies.

Part Three consists of five chapters that review various government policy measures related to SMEs and examine their goals, implementation and results.

Many SMEs in Taiwan possess unique technology and innovative products, but lack the scale, capital, technology, and talents of many large businesses with which they regularly compete. Taiwanese government has been working actively to establish effective policy measures to facilitate the development of SMEs and resolve the hurdles facing SMEs. Multiple policy measures were taken by relevant government departments to assist SMEs in funding and credit guarantee, marketing, talent cultivation, technology upgrading and transformation, start-up promotion, incubation and acceleration mechanism, free trade policy, and improved legal and regulatory environment.

The government's development strategy for SMEs in 2013-2014 has focused on four key areas: improving the provision of financing services to SMEs and boosting investment in the SME sector, encouraging SMEs to upgrade and transform themselves and to enhance their R&D capabilities, putting in place the mechanisms needed to support innovation and new business start-up and incubation, and promoting the in-depth development of local industries and helping these industries to capitalize on market opportunities. A large number of projects and ancillary measures have been implemented in order to help achieve these goals. Each year, the government revises its SME development strategy to reflect changes in the economic environment in Taiwan and the global economy as a whole and carries out planning and implementation of related ancillary measures to boost the competitiveness of Taiwan's SMEs and contribute to their stable, continued development. New guidance and measures recently instituted by the government include the Young Entrepreneur Start-Up Financing Loans, Policy Loans for Special Projects to Help Innovative SMEs, the A+ Innovation and R&D Program, the Youth Entrepreneurship Project, and the Taiwan-Japan SME Business Matching and Taiwan-Japan SME Cooperation and Exchange Platform.

Part One Recent Development of SMEs

SMEs play a vital role in the course of economic development in Taiwan for decades. To maintain SMEs as a backbone of Taiwan's economy, we need to pay special attention to the current state and developing trends of SMEs as well as the macroeconomic environment. Official data published by central government of R.O.C. are analyzed to facilitate a deep understanding of SMEs. First, four major indicators including number of enterprises, total annual sales, domestic sales, and export sales are examined for observations in terms of scales, industries, and sectors. Second, SMEs' financial structure and source of finance as well as human resources utilization, working conditions, and talent development are analyzed.

Global economic recovery strengthened during the second half of 2013 and is expected to improve further in 2014-15. The impulse has come mainly from advanced economies, although their recoveries remain uneven. Two main forces in 2014 and going forward that will greatly impact Taiwan's export oriented economy are the U.S. Reindustrialization and the marked global trend towards regional economic integration. The former force could present an opportunity for Taiwan's industrial upgrade while the latter one may decide the role Taiwan will play in regional economy and in the production and supply chain in Asia. This will be addressed in Chapter 5 to end Part One.


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Chapter 1

Macroeconomic Environment

Faced with high unemployment rate and falling housing price in U.S. after global financial crisis, Federal Reserve adopted three rounds of unprecedented large scale quantitative easing (QE) from Nov. 2008 to Dec. 2013, in order to promote a stronger pace of economic recovery by holding rates low on mortgages and other financial instruments and increasing the availability of credit.

Countries all over the world introduced similar monetary easing policy. Among them, Japan was the most aggressive. To counter the long-term economic stagnation, deflation, and increasing trade deficit after 2011 earthquake, Japanese Prime Minister Shinzō Abe initiated his version of QE as one of his famous "Three Arrows" of Abenomics immediately after he took office in Dec. 2012. The magnitude of QE in Japan was second only to that of United States.

QE3 and the two-year budget deal reached by U.S. Congress in 2013 have defused some economic uncertainty caused by the fear of "fiscal cliff." As the drag from earlier spending cuts and fiscal brinkmanship that affected businesses and consumers in 2013 faded (such as temporary government shutdown and worsening job market), the U.S. economy picked up momentum in 2013 with rising home price, growing private sector and consumer spending, and improving job market.

On the other hand, over the course of the global financial crisis and European debt crisis during the period of 2007-2011, economic fundamentals of a large number of countries were severely hurt, causing some irreversible damages and subsequent crises, such as remarkably high youth unemployment across countries, and the potential monetary policy normalization / QE exit induced emerging markets' asset bubble bust. Besides, the sharp depreciation of the Japanese Yen (which hit 6 year low in September 2014 at 109 per US$) could significantly weaken the competitiveness of neighboring Asian countries. Taiwan's export-oriented economic structure has always been sensitive to the impact of the global economy, and SMEs, accounting for over 97 percent of the number of all business enterprises in Taiwan, are not immune to the impact.

This chapter, which is divided into three sections, analyzes the impact of the changes that have been taking place in macroeconomic environment from 2013 to early 2014. Section I examines the major changes in global economic environment; section II analyzes the business environment in Taiwan; section III presents an overview of the development of SMEs in major nations.

I Changes in the Global Economic Environment: 2013-2014

The recovery starting to take hold in advanced economies in 2013 is becoming broader. Global activity has broadly strengthened and is expected to improve further in 2014, with much of the impetus coming from advanced economies, especially from the U.S. Activity in many emerging market economies has disappointed in a less favorable external financial environment, such as the normalization of monetary policy - both conventional and unconventional, including QE tapering and the expected exit in October.

1. Advanced Economies

(1) Strong U.S. economy with improving employment and expected QE exit

Growth in the U.S. was 1.9 percent in 2013, with the continued growth of private sector partly offset by the hefty fiscal drag, which subtracted between 1¼ and 1½ percentage points from GDP growth.

In 2013, U.S. GDP grew at an average annualized rate of only 1.3 percent in Q1 and 1.6 percent in Q2, partly due to automatic government spending cut, deep worry of early QE exit causing sharp rise of long-term rates in late second quarter, and weak overseas demand. Economic momentum picked up during the second half of 2013, with GDP growing at a faster-than-anticipated pace of 2.0 percent in Q3 and 2.6 percent in Q4, led by buoyant domestic demand including auto and housing, robust inventory accumulation, and strong export growth. Consumer spending also picked up, boosted by higher house and stock prices and a further decline in household debt relative to disposable income. The unemployment rate continued to fall in 2013, reaching 6.7 percent in February 2014, with headline consumer price index inflation standing at 1.6 percent in February 2014 (Table 1-1-1).

Table 1-1-1 Economic Growth of Advanced Economies

Unit: %

Country / Region	2012	2013	Quarter			
			I	II	III	IV
Advanced Economies	1.4	1.3	0.5	1.1	1.5	2.0
U.S.A.	2.8	1.9	1.3	1.6	2.0	2.6
European Union	-0.3	0.1	-0.7	-0.03	0.2	1.0
Germany	0.9	0.5	-0.3	0.5	0.6	1.4
France	0.0	0.4	-0.2	0.7	0.3	0.8
U.K.	0.3	1.7	0.5	1.7	1.8	2.7
Italy	-2.6	-1.8	-2.4	-2.2	-1.9	-0.9
Japan	1.4	1.5	-0.05	1.3	2.4	2.4

Source：Global Insight Inc., *Global Insight's Comparative World Overview* (May 2014).

Although the harsher-than-usual winter weather may have slowed activity in early 2014, the underlying fundamentals of private demand remain strong, as evidenced by a surge of GDP at a seasonally adjusted annual rate of 4.6 percent in the second quarter rebounding from the first quarter's 2.1 percent weather-driven drop. Growth is expected to advance at an above potential rate for the rest of 2014, driven by strong growth in residential investment, solid personal consumption, and a pickup in nonresidential fixed-investment growth as consumer and business confidence improves Although the continued economic momentum justifies the measured reductions and the exit (expected in Oct. 2014) of the Federal Reserve's QE, the overall monetary policy should remain accommodative, considering the sizable slack and steady inflation expectations. Growth will also be supported by a smaller fiscal drag, which is declining to ¼ to ½ percentage point of GDP in 2014.

(2) European Union (EU): Still faltering recovery

After European debt crisis, EU countries reached a consensus to implement austerity measures, which was unable to stop the domino effect of the crisis as high unemployment, continued deleveraging by firms and households, continued banking fragility and tight credit, heightened sovereign risks, fiscal tightening, and slower growth viciously feed into one another. In 2013 Cyprus became the fifth EU country following Greece, Ireland, Portugal and Spain to apply for emergency bailout for its banking sector, which has been hit by exposure to Greece and for its budget deficit.

Responding to deflation threat and rising unemployment, the European Central Bank (ECB) cut its benchmark interest rate by 0.25 percent to 0.50 percent in May 2013, and another quarter percentage point cut to 0.25 percent in Nov. 2013. In June 2014, the ECB cut its deposit rate for banks from zero to -0.1 percent, to encourage banks to lend to businesses rather than hold on to money. It also further cut its benchmark interest rate to a record low 0.15 percent from 0.25 percent. Mr Draghi said the ECB's policymakers unanimously agreed to consider more unconventional measures to boost inflation if it stays too low. The ECB stopped short of instituting a large asset-buying program like QE undertaken by the US Federal Reserve. However, He insisted that more would be done, if necessary, and promised to provide as much liquidity as euro zone banks need.

In the first half of 2013, EU industrial output and retail sales grew slightly but GDP shrank by 0.70 percent in Q1 and 0.03 percent in Q2, with no improvement in job market and stubbornly high youth (age 15-24) unemployment rate in particular. The EU area finally emerged from recession; growth has been positive since Q3 after a long period of output decline (GDP up 0.2 percent in Q3 and 1.0 percent in Q4). The turnaround - attributable, in part, to less fiscal drag and some impetus from private domestic demand for the first time since 2010 - is materializing largely as anticipated.

Among EU advanced economies, growth has rebounded more strongly than anticipated in the United Kingdom with GDP growth of 1.7 percent in 2013 on easier credit conditions, robust consumption, increased investment, and increased confidence. In Germany, EU's most important economic force, GDP slowed to a tepid 0.5 percent growth in 2013, below 0.9 percent in 2012, partly attributable to weak export driven by weak demand worldwide. France's economies were stagnating in 2012 but showed 0.4 percent growth in 2013 but unemployment rate was still rising and fiscal deficit was higher than expectation. Italy remained in recession with GDP down 1.8 percent in 2013 with still sluggish domestic demand and stubbornly high unemployment rate, though less severe than 2.6 percent contraction in 2012 (Table 1-1-1).

(3) Japan: Economy is gradually strengthening

To boost Japanese economy, Prime Minister Shinzō Abe immediately initiated fiscal stimulus, monetary easing and structural reforms - the "Three Arrows" of Abenomics - immediately after he took office in Dec. 26, 2012.

Abe's first arrow was unprecedented aggressive monetary easing (setting a target of 2 percent inflation to support a target of 2 percent real GDP growth: 4 percent nominal growth) with large scale QE resulting in substantial depreciation of the yen, which is a double-edged sword to net exports. For exporters, yen depreciation means more competitive pricing and/or high profit margins and more profit. Sony, Toyota and other larger exporters of televisions, cars, appliances and other products benefited significantly, causing the Nikkei leaping by over 80 percent in the first few months from the announcement.

On the other hand, many leading manufacturers who moved their production bases overseas, and shipped back parts and goods for final processing in Japan, was facing significant headwind of elevated import cost. This plus higher cost of imported goods and substantial increase in demand of fossil fuels as an alternative to electricity shortfall due to disabled nuclear generators after 2011 Fukushima earthquake, contributed to the 18 consecutive month trade deficit into 2013 with record high trade deficit of 11.5 trillion Yen since 1979.

Abe's second arrow was a blowout deficit-financed supplemental government budget filled with new public works spending to expand fiscal spending (equivalent to US$50 billion of public projects and an additional US$100 billion to stimulate domestic investment), in order to achieve immediate improvement in economy and employment. Whether it can achieve the desired effect is still open to question. No matter what, it will continue to worsen Japan's debt burden and its financial integrity of the government, as Japan has a far bigger debt load relative to the size of its economy than any other major industrialized country.

It is the "Third Arrow" - Abenomics' reform program for promoting private sector investment-led growth to enhance payroll, export, and domestic demand - that is by far the most strategically important. Indeed, it is vital and imperative. However, the proposed reforms are thus far mostly vague, but include relaxations of labor market rigidities, less protection for farmers, and utility deregulation. These reforms may be made more credible by the Japanese government's part in the Trans-Pacific Partnership, which suggests a willingness to take on special interests. Overall, the following announcements left many disappointed by its timid attempt at structural reform. Many Japanese SMEs cannot pass on the higher cost of energy and imported materials, pushed up by Yen depreciation, resulting in profit decline and salary stagnation in the foreseeable future. Japanese SMEs' operation profit fell 15 percent in Q2 and 32 percent in Q3 in 2013. By the year end of 2013, private sector payroll in Japan was still stagnant.

Overall, Abenomics' continuous implementation help the Japanese economy grow in 2013 with GDP growth rate gradually increased from -0.05 percent in Q1 to 1.3 percent, 2.4 percent and 2.4 percent in the next three quarters in 2013. To return to stable, relatively rapid growth, Japan's economy and markets must become more flexible and competitive. This reality cannot be overemphasized.

2. Emerging Economies

(1) Mainland China: Growth slowing down

Growth in the Mainland China was 7.7 percent in 2013, same as in 2012 but much slower than double digit growth in the past (Table 1-1-2). With China's decision to transition away from growth driven by investment and a growing global trade surplus toward one more service oriented and dependent on domestic consumption, manufacturing supply chain in Asia Pacific has changed. In recent years, Chinese firms have become increasingly competitive in moving upward across the value chain through both traditional cost advantage and proprietary technologies and brands, forcing many companies including some of their former partners to move out setting up plants in Southeast Asia.

There are plenty of risks, such as diminishing demographic dividend due to one-child policy, a rapid aging population, and serious overcapacity problem driven by investment and export driven growth model that could erode Chinese firms' profitability and their competitiveness.

Besides, the 2008 global financial crisis caused China's exports to plunge, forcing China's leaders to abruptly refocus their worries from overheating to a potential domestic economic crisis and its very realistic threat to social stability. In November 2008, China launched a massive RMB4 trillion (US$586 billion) economic stimulus program. China's stimulus plan was successful at staving off a recession and social crisis but inflation, overheating and overbuilding quickly became a concern again as the newly printed stimulus money sloshed around the economy, creating very alarming distortions and speculative activity in property and wealth-management products. Often sold through banks, wealth-management products offer higher yields than deposits, but are mostly advertised as low-risk or risk free. The money raised is often funneled through the shadow-banking system - lenders outside the traditional banking sector - to lend to property developers and miners who are struggling with overcapacity and have less access to bank credit. The link between the formal banking sector and shadow banking has raised concerns over the potential for defaults that would threaten financial stability, especially as the economy slows. Recently, China's banking regulator imposed fresh requirements on banks to keep their wealth-management product business in check, in another step to tighten its grip on a once-loosely regulated part of the shadow-banking business.

(2) ASEAN: Uncertainty in economic development

As Mainland China is facing diminishing demographic dividend and rising labor and property cost, on the other side of the South China Sea, ASEAN countries have been benefited from accelerated regional economic integration, and rising urbanization rate, middle class and demographic dividend. This region has become the next Asian Pacific manufacturing base after the BRIC for its cost advantage and the growth potential. Countries all over the world have been coming in the region to invest. Japan and South Korea are among the most active ones.

However, developments in the ASEAN economies will remain uneven. Indonesia's growth is projected to slow this year as subdued investor sentiment and higher borrowing costs weigh on the domestic economy, although the currency depreciation since mid-2013 should give exports a lift. In Thailand, the near-term outlook remains clouded by the political situation; the economy is slowing as private demand weakens and public investment plans are delayed. Malaysia and the Philippines, however, are on a more positive trajectory, and growth is expected to remain robust in both countries.

Table 1-1-2 Economic Growth of Emerging Economies

Unit: %

Country / Region	2012	2013
Emerging Economies	4.9	4.8
Asian Pacific	5.8	5.8
Mainland China	7.7	7.7
Singapore	1.9	4.1
South Korea	2.3	3.0
Taiwan	1.5	2.1
Hong Kong	1.5	2.9
Thailand	6.5	2.9
Malaysia	5.6	4.7
Indonesia	6.3	5.8
Philippine	6.8	7.2
India	4.7	5.0
Pakistan	4.0	4.4
Latin America/Caribbean	2.3	2.9
Brazil	1.0	2.3
Argentina	0.9	3.0
Columbia	4.2	4.2
Peru	6.0	5.8
Chile	5.6	4.1
Mexico	4.0	1.1
Emerging Europe	2.4	2.1
Russia	3.4	1.3
Turkey	2.1	4.0
Hungary	-1.7	1.2
Czech	-0.9	-0.9
Poland	2.0	1.6
Middle East	2.8	2.8
Israel	3.3	3.4
Saudi-Arabia	5.8	3.8
North Africa	8.3	0.7
Egypt	2.2	2.1
Morocco	2.7	4.4
Republic of South Africa	2.5	1.9

Source：Global Insight Inc., *Global Insight's Comparative World Overview* (May 2014).

(3) India and Brazil: Growth lagging in emerging economies

Brazil's economy remained in low gear, with growth of 2.3 percent in 2013, mainly driven by increase in investment. Weighing on activity are domestic supply constraints, especially in infrastructure, and weak export as compared to import. in 2013 India grew at a lackluster rate of 5

percent partly attributable to policy failure, increased deficit, high inflation, declining foreign investment, and currency the stock market volatility caused by Federal Reserve's QE tapering.

3. The Rise of Regional Economic Integration

Since WTO Doha round was delayed, there has been a rising trend towards the formation of multilateral and bilateral free trade agreements (FTAs) and in particular, regional comprehensive economic partnership (RCEP) and Trans-Pacific Strategic Economic Partnership (TPP) in Asia. RCEP is a proposed FTA between the ten member states of the Association of Southeast Asian Nations (ASEAN) (Brunei, Myanmar, Cambodia, Indonesia, Laos, Malaysia, the Philippines, Singapore, Thailand, Vietnam) and the six states with which ASEAN has existing FTAs (Australia, China, India, Japan, Korea and New Zealand). RCEP negotiations were formally launched in November 2012 at the ASEAN Summit. All above 16 countries could join the RCEP in 2015 if the negotiation goes well, forming a vast new economic region of over 2 billion people and US$20 trillion market.

TPP is a proposed regional free trade agreement that is currently being negotiated by twelve countries throughout the Asia-Pacific region (Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore, the United States, and Vietnam). TPP could be further delayed due to the timing uncertainty for the U.S. Congress to pass the Trade Promotion Authority (TPA) Bill. TPA is the authority of the President of the United States to negotiate international agreements that the Congress can approve or disapprove but cannot amend or filibuster.

The FTA signed between the U.S. and South Korea (one of Taiwan's main competitors in terms of foreign trade) came into effect in Mar. 2012, while the FTA signed between South Korea and Australia came into effect on Apr., 2014. South Korea could also sign the FTA with Mainland China in late 2014 after 4 rounds of negotiation. These FTAs have resulted in intensified competitive pressure on Taiwanese firms, particularly in electronics exports, with high degree of overlap between two countries.

Taiwan has 75 percent foreign trade and investment concentrated in Asia-Pacific region. 35 percent of Taiwan's trade volume was with TPP member in 2012, amounted to NT$200 billion; 57 percent of was with RCEP member, amounted to NT$323 billion. It is vital for Taiwan to join TPP and/or RCEP as these two regions, RCEP in particular, have a decisive influence on Taiwan's export, especially when the major competitor South Korea has been so active in FTA and regional economic integration; or else Taiwan could face the threat of being marginalized.

4. Youth Unemployment: A Worldwide Structured Problem

The world is facing a worsening youth (age 15-24) employment crisis: almost 75 million youth worldwide are looking for work in 2013; that is almost 1 million more than in the year before. The global youth unemployment rate has reached 13.1 percent, which is almost three times as high as the adult unemployment rate. Indeed, the youth-to-adult unemployment ratio has reached a historical peak. The ILO (International Labor Organization) has warned of a "scarred" generation of young workers facing a dangerous mix of high unemployment, increased inactivity and precarious work in

developed countries, as well as persistently high working poverty in the developing world.

Five key policy areas that can be adapted to national and local circumstances were identified by the representatives of governments, employers and workers of the 185 ILO member States at the International Labour Conference in June 2012 and were included in the resolution "The youth employment crisis: a call for action." The five areas are: (1) employment and economic policies to increase aggregate demand and improve access to finance; (2) education and training to ease the school-to-work transition and to prevent labour market mismatches; (3) labour market policies to target employment of disadvantaged youth; (4) entrepreneurship and self-employment to assist potential young entrepreneurs; (5) labour rights that are based on international labour standards to ensure that young people receive equal treatment.

5. 2014: Improving Advanced Economies amid Emerging Economies Slowing Down

The recovery starting to take hold in advanced economies is becoming broader in 2014 with smaller fiscal drag, improving debt sustainability and stronger banking system. These dynamics imply a changing environment where emerging economies' high growth has slowed down while advanced economies have shown sign of stronger growth. Swiss Bank, The Economist, and OECD all predict that advanced countries will have better growth in 2014 and thereafter (Table 1-1-3).

In 2014 the U.S. is the bright spot in advanced countries. Global Insight predicted that U.S. economic growth rate in 2014 will reach 2.2 percent and higher going forward, driven by strong growth in residential investment, solid personal consumption, and a pickup in nonresidential fixed-investment growth as consumer and business confidence improves. Growth will also be supported by less fiscal drag - thanks in part to the Bipartisan Budget Act, reducing the uncertainty that has characterized fiscal policy in the past few years. One key to America's long-term growth lies in so called "the U.S. Manufacturing Renaissance." Main reasons why the U.S. manufacturing sector seems likely to gain global market share are wages and productivity, energy costs, and policy measures promoting reindustrialization and re-shoring, including unit labor costs among the lowest in the industrialized world, lowest energy costs outside of the Middle East due to the gas bonanza and the hydraulic fracturing revolution, very low cost of capital given the Fed's ultra-accommodative monetary policy even after QE exit, and the rebounding housing market.

Advanced European economies are expected to resume growth in 2014, domestic demand in the euro area has finally stabilized and turned toward positive territory, with net exports also contributing to ending the recession. But high unemployment and debt, low investment, and tight credit will weigh on the recovery. Overall, Abenomics helped the Japanese economy grow in 2013. Private consumption and public spending remained robust but wages stagnant. Global Insight forecast its 2014 economic growth rate will be about 1.4 percent.

Emerging economies have experienced significant spillover effects from unusually large degree of U.S. monetary policy loosening including QE after global financial crisis through, such as better export prospects to the U.S and large-scale capital inflows which in turn led to low interest rates, low borrowing costs, excessive credit expansion, over-investment, speculation, and asset bubble. All

these, low borrowing costs and easy money in particular, help stimulate emerging economies but also substantially reduce the impetus for much needed structured reform.

Table 1-1-3 Economic Growth of Advanced and Emerging Economies

Unit: %

Country / Region	2014	2015	2016
Advanced Economies	1.9	2.4	2.5
U.S.A.	2.2	3.1	3.4
EU	1.5	1.9	2.4
Germany	2.1	2.0	1.7
France	0.6	1.3	1.7
U.K.	3.1	2.7	2.7
Italy	0.3	1.1	1.2
Japan	1.4	1.3	0.9
Asia-Pacific Region	4.9	5.0	5.1
Mainland China	7.3	7.1	7.2
Taiwan	3.3	3.8	4.2
South Korea	3.6	3.7	3.7
Hong Kong	3.4	4.0	4.4
Singapore	3.3	4.1	4.1
Thailand	1.8	3.7	4.2
Malaysia	5.4	5.3	5.1
Indonesia	5.2	5.5	6.0
Philippine	6.1	5.8	5.5
Vietnam	5.3	6.2	6.7

Source：Global Insight Inc., *Global Insight's Comparative World Overview* (May, 2014).

While the initial spillover effects from global easing appear to have been beneficial to the emerging economies who have been lulled into a false sense of security by easy global liquidity conditions and have allowed large external and domestic imbalances to develop, it could pose a significant challenge for them as the U.S. Federal Reserve begins the process of exiting from QE.

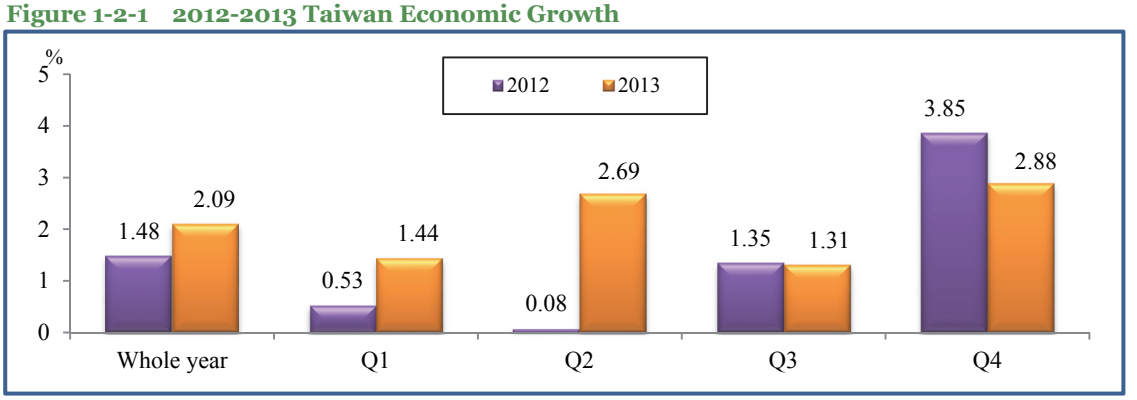
An indication of the downside risks to the global economy that could be posed by an unwinding of QE was provided by the sharp selloff in emerging market assets in the aftermath of Chairman Ben Bernanke's May 2013 congressional testimony. In that testimony, Mr. Bernanke intimated that the Fed had under consideration the unwinding of its third-round of QE. In the three months following that testimony, the currencies and bonds of those emerging market countries that had experienced high rates of credit expansion and that had wide external current account deficits, including notably Brazil, India, Indonesia, South Africa, and Turkey, came under considerable market pressure. This pressure was seen in an 8 percent drop in assets under management for emerging market fixed-income investment, a sharp rise in emerging market local currency bond yields, and stock market selloff.

To summarize, 2014 and going forward could see improved advanced economies amid emerging economies slowing down from fast growth in the past. With the U.S. economic recovery and its re-industrialization gaining steam, the process of monetary normalization and exit of QE is under way, which will inevitably drive up interest rates sooner or later. The challenge could be particularly pronounced for a group of important emerging market economies with large-scale capital inflow and/or large current deficit. This makes those countries especially vulnerable to any abrupt reversal of capital flows that might be prompted by the Federal Reserve's prospective monetary normalization and exit from QE. Other important risk factors include unstable political and economic environment in ASEAN countries; shadow banking and local debt problems, overcapacity, rising wages, and property bubble in Mainland China. In addition, two main themes under the U.S. Reindustrialization policy are to promote re-shoring and enhance technology upgrade and core competency of U.S. manufacturers. This presents both opportunities and significant challenges to emerging economies' export expansion, particularly in U.S.

II Changes in the Economic Environment in Taiwan

Taiwan's economic growth rate improved modestly from 1.48 percent in 2012 to 2.09 percent in 2013, amid mild global recovery and flat economic growth in China, the most important trading partner of Taiwan. With few exception (tourism, for example), important industries such as petrochemical and electronics performed below expectation. Overall, Taiwan economy saw improvement in 2013 while long-term structural issues, such as payroll, industrial structure and government budget deficits, remained unsolved (Figure 1-2-1).

Figure 1-2-1 2012-2013 Taiwan Economic Growth



Source：Directorate General of Budget, Accounting and Statistics (DGBAS)，Executive Yuan, National Statistics, accessed May, 2014, http://ebas1.ebas.gov.tw/pxweb/Dialog/statfile9L.asp.

1. Overall Weak Indicator Signals in 2013

The National Development Council uses "traffic light" symbols to represent the state of health of the economy. Only June and December of 2013 were given a "green light," denoting steady growth.

June's indicator was mainly due to improving industrial production index, customs-cleared exports, and imports of machineries and electrical equipment; December's indicator was mainly due

to improving industrial production index, customs-cleared exports, and imports of machineries and electrical equipment, and manufacturing related signals (Figure 1-2-2).

Figure 1-2-2 Monitoring Indicators for Taiwan in 2013

Item \ Month		Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sep.	Oct.	Nov.	Dec.
Monitoring indicators (Total Score)	Total Score	19	20	18	17	19	23	20	20	20	21	21	24
	Compared to the same period last year	6	5	4	3	4	8	4	5	0	2	0	2
Monitoring indicators (Light Signal)													
Monetary aggregates, M1B													
TAIEX average closing price													
Industrial production index													
Non-agricultural employment													
Customs-cleared exports													
Imports of machineries and electrical equipment													
Index of producer's shipment for manufacturing		-	-	-	-	-	-						
The TIER manufacturing composite indicator		-	-	-	-	-	-						
Sales of trade and food services		-	-	-	-	-	-						

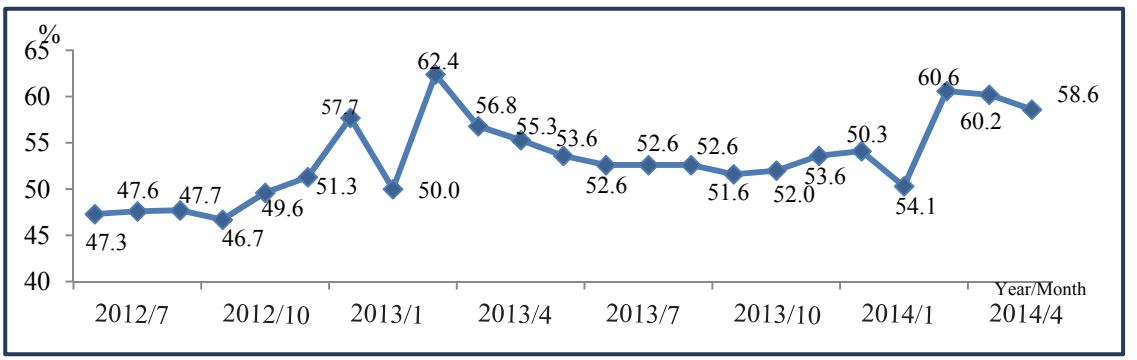
Notes: 1. indicates a "red light"; indicates a "yellow-red light"; indicates a "green light"; indicates a "yellow-blue light"; indicates a "blue light." 2. The overall growth performance scores corresponding to each light are as follows: 45 – 38 = red light; 37 – 32 = yellow-red light; 31 – 23 = green light; 22 – 17 = yellow-blue light; 16 – 9 = blue light..

3. With the exception of stock prices, all of the items making up the growth performance index are seasonally adjusted. Please note that the items used in each year's index do not necessarily correspond exactly to those used in previous years; care should therefore be exercised when interpreting the scores.

Source: National Development Council, *Composite Indicators for Taiwan* (May. 2014).

As of January 2014, Taiwan manufacturing PMI (Purchasing Managers Index) showed 10th consecutive month expansion (Figure 1-2-3). The June "green light" signal was short-lived, partly attributable to declining overseas orders; the December return of "green light" was due to seasonal rise of domestic consumption before lunar New Year and improving economies in EU and U.S. It is worth noting that Taiwan economic growth is expected to be better in 2014 with the benefit of the strong U.S. economy. The Directorate-General of Budget, Accounting, and Statistics forecast an annual growth rate of about 2.98 percent. Global Insight predicted a 3.3 percent growth rate.

Figure 1-2-3 Taiwan Manufacturing PMI



Notes：More than 50 means economic expansion.

Source : Chung-Hua Institution for Economic Research, *Taiwan Manufacturing Purchasing Managers' Index*（May, 2014）.

2. A Slight Increase in Consumer Prices

2013 consumer price index (CPI) rose slightly by 0.79 percent, due to stable commodity price and weak domestic demand (up only 1.26 percent from 2012). The main drivers were over 2 percent rise of food, and electricity and gasoline price.

Wholesale price (WPI) fell 2.43 percent, mainly driven by falling prices of basic metals, computers, machinery and equipment, electronics and optical products (Table 1-2-1).

Table 1-2-1 Key Indicators for the Taiwanese Economy, 2007 – 2013

Unit: %

Indicator / Year	Economic growth rate	Wholesale price index	Consumer price index	Tax revenue	Money supply		Overnight interbank call loan rate	Exchange rate (NT$ to the US$)	Labor force participation rate	Unemployment rate
					M1B	M2				
2007	5.98	6.47	1.80	8.31	6.44	4.16	1.998	32.84	58.25	3.91
2008	0.73	5.14	3.52	1.53	-2.94	2.71	2.014	31.52	58.28	4.14
2009	-1.81	-8.73	-0.86	-13.07	16.54	7.45	0.109	33.05	57.90	5.85
2010	10.76	5.46	0.96	6.01	14.93	4.53	0.185	31.64	58.07	5.21
2011	4.19	4.32	1.42	8.78	7.16	5.83	0.341	29.46	58.17	4.39
2012	1.48	-1.16	1.93	1.48	3.45	4.17	0.428	29.61	58.35	4.24
2013	2.09	-2.43	0.79	2.09	8.47	5.79	0.386	29.77	58.43	4.18

Note: With the exception of the labor force participation rate, unemployment rate and exchange rate (which are all full-year averages) as well as overnight interbank call loan rate (which is weighted average), all other indicators are expressed as annual growth rates.

Sources: 1.DGBAS, Executive Yuan, Quarterly National Economic *Trends* (May 2014); DGBAS, *Monthly Bulletin of Manpower Statistics* (May 2014).
2.Central Bank, *Financial Statistics Monthly*.

3. Private Investment Led by ICT Industry

Domestic investment in 2013 rose 10.4 percent, amounting to NT$1.22 Trillion or 16 percent of GDP. 42 percent (NT$512 billion) came from ICT (information and communications technology), followed by metal, electronics, and chemical industry. Re-shoring investments (including

investment plans) from Taiwanese businesses totaled 85, amounting to NT$180 billion, led also by ICT, followed by metal, electronics, and chemical industry. Similar trend is expected to continue in 2014.

4. Foreign Trade Rose with Hidden Worries

In 2012, with continued slowdown in economic growth domestically and internationally, heighted competition from Mainland China, and falling ICT sales, Taiwan's total foreign trade suffered a mild recession 2nd time in four years, down 3.06 percent to US$571.7 billion.

In 2013, with improved recovery in advanced countries but slowed growth in emerging countries and increased competition from Mainland China, Taiwan's total foreign trade rose slightly at 0.64 percent to US$575.5 billion. Exports increased 1.42 percent to US$305.4 billion, while imports fell 0.2 percent to US$270.0 billion mainly due to weak private demand and reduced import of pearls, precious stones, precious metals, jewelry, coins, corn and soybeans. Trade surplus increased by 15.7 percent to US$35.5 billion.

Taiwan's exports to U.S., EU, and Japan grew by -1.25 percent, -0.04 percent and 1.23 percent respectively in 2013 compared to 2012; Mainland China (including Hong Kong) and ASEAN countries accounted for 38.46 percent (US$121.2 billion) and 18.64 percent (US$58.8 billion) of Taiwan's total exports (Table 1-2-2 and Table 1-2-3).

Table 1-2-2 Taiwan's Foreign Trade Performance, 2007-2013

Units: US$ billions; %

Indicator / Year	Total foreign trade		Exports		Imports		Trade surplus / deficit	
	Amount	Annual growth rate	Amount	Annual growth rate	Amount	Annual growth rate	Amount	Annual growth rate
2007	465.9	9.19	246.7	10.12	219.3	8.17	27.4	28.64
2008	496.1	6.47	255.6	3.63	240.4	9.67	15.2	-44.65
2009	378.0	-23.79	203.7	-20.32	174.4	-27.48	29.3	93.03
2010	525.8	39.09	274.6	34.82	251.2	44.08	23.4	-20.47
2011	589.7	12.14	308.3	12.26	281.4	12.02	26.8	14.79
2012	571.7	-3.06	301.2	-2.30	270.5	-3.90	30.7	14.50
2013	575.3	0.64	305.4	1.42	270.0	-0.20	35.5	15.70

Source: Bureau of Foreign Trade, MOEA, *Foreign Trade Statistics* (June, 2014).

Table 1-2-3 Taiwan's Trade with Its Main Trading Partners in 2013

Units: US$ millions; %

Indicator / Country / Region	Exports			Imports			Trade surplus / deficit	
	Amount	Share of total	Annual growth rate	Amount	Share of total	Annual growth rate	Amount	Annual growth rate
Total	315,224	100.00	1.41	272,773	100.00	-0.21	42,451	15.75
China (Hong Kong included)	121,222	38.46	2.17	44,248	16.22	1.56	76,973	2.52
China	81,788	25.95	1.33	42,589	15.61	4.11	39,199	-1.53
Hong Kong	39,433	12.51	3.96	1,659	0.61	-37.61	37,775	7.09
U.S.A.	32,564	10.33	-1.25	25,201	9.24	677	7,363	-21.44
Japan	19,222	6.10	1.23	43,162	15.82	-9.27	-23,939	16.25
South Korea	12,077	3.83	1.99	15,768	5.78	4.61	-3,691	-14.23
ASEAN (10 member nations)	58,769	18.64	3.93	32,606	11.95	3.41	26,163	4.59
EU	25,280	8.02	-0.04	24,599	9.02	0.09	681	-0.81
Other	46,090	14.62	2.25	87,189	31.96	0.19	-41,101	0.30

Notes：China and Hong Kong are sub-items. ASEAN includes Singapore, Malaysia, Indonesia, Vietnam, Thailand, Philippine, Cambodia, Burma, Brunei and Laos.

Source：Bureau of Foreign Trade, MOEA, *Foreign Trade Statistics* (June, 2014).

5. Mildly Improved Job Market with Worsening Youth Employment

Unemployment rate dropped slightly in 2013 to 4.18 percent from 4.24 percent in 2012, the fourth consecutive annual decline. However, youth (age 15-24) unemployment rate of 13.17 percent was at four year high mainly due to increased initial jobseekers by the year end. Labor force participation rate reached 58.43 percent, the highest since 1996. Employment grew to a total of 10.967 million in Taiwan.

In 2013, regular monthly earnings (excluding bonuses) averaged NT$37,527, a historical high; total monthly earnings averaged NT$44,446 (37,527 plus bonus 8,137 minus 0.79 percent inflation), representing a 0.63 percent decline from 2012. Real consumer consumption rose 2.02 percent in 2013.

6. Taiwan's Economy Is Expected to Improve in 2014

Taiwan economic growth is expected to be better in 2014 than 2013 with the benefit of improved global economy and overseas demand. With a robust 3.3 percent growth in Q1 and supported by the momentum of net export growth, the Directorate-General of Budget, Accounting, and Statistics forecast Q2 growth rate of 3.14 percent and an annual growth rate of about 2.98 percent in 2014.

III Development of SMEs in Major Nations

This section examines the state of development of SMEs in selected nations in light of the global economic environment mentioned above.

1. SMEs in U.S.

The SBA (Small Business Administration) defines a small business as an enterprise having fewer than 500 employees. Based on the 2011 data from Statistics of U.S. Businesses (SUSB), published by US Census Bureau, there were approximately 5,666,753 small businesses in U.S., accounting for 99.6 percent of the 5,684,424 business enterprises in the country. SMEs employed 54,998,312 people, representing 48.4 percent of all employed people totaled 113,425,965 in the U.S.

NSBA (National Small Business Association) indicated in "2013 Year-End Economic Report" that over half of respondents of its survey showed increased confidence and thought the current economy was better than previous 5 years. Results of Well Fargo/Gallup Small Business Survey in Jan. 2014 showed that Small Business Index reached 45, 21 points, above 24 in Oct. 2013, the highest since Q3, 2008; majority of the small business respondents planned to hire more people and expected higher revenue and improved cash flow.

President Barack Obama in his State of the Union Address on Jan. 28, 2014 indicated that ninety-eight percent of U.S. exporters are small businesses, and new trade partnerships with Europe and the Asia-Pacific will help them create more jobs. He promised to do more to help the entrepreneurs and small business owners who create most new jobs in America, and work together on tools like bipartisan trade promotion authority to protect workers, environment, and open new markets to new goods stamped "Made in the USA." "China and Europe aren't standing on the sidelines. Neither should we," said Mr. Obama. Besides, the recent established U.S. Export Assistance Centers (USEACs) provide front-line outreach and service operations for U.S. exporters. There are International Trade specialists based in more than 100 USEACs located across the United States and Puerto Rico. The centers assist U.S. businesses that are new to exporting, want to expand to additional export markets, or want to increase their market share in existing markets.

Under the framework of the U.S. Reindustrialization, the National Export Initiative (NEI) was launched in 2010 to help meet the U.S. Administration's goal of doubling exports over the next 5 years by working to remove trade barriers abroad, by helping firms - especially small businesses - overcome the hurdles to entering new export markets, by assisting with financing, and in general by pursuing a government-wide approach to export advocacy abroad, among other steps.

Responding to President Obama's call to double exports in the next five years, U.S., Commerce Department and the United States Postal Service (USPS) formed a strategic partnership to launch the "The New Market Exporter Initiative" (NMEI) in July 2010 to help boost U.S. exports. It will identify current USPS customers who are exporting their goods and services abroad, and help expand their reach to additional international markets. The combined strength of customized consulting from the Commerce Department's Commercial Service officers and the value-based logistics expertise and business solutions from the Postal Service provide a simplified roadmap for companies to

successfully enter new markets. Through its network of 32,000 post offices and partner posts in 191 countries, the Postal Service will identify SMEs that already export and alert these customers to government sources that can help them find new overseas markets. The Commerce Department, with its network of trade specialists posted in 109 U.S. cities and U.S. embassies and consulates in 77 countries, will serve as a resource to the companies, connecting them with potential international buyers.

Commerce and the Postal Service will work with these businesses to identify key markets, build market entry strategies and provide the guidance needed to take high-quality products and services from the U.S. to markets worldwide - building their businesses, increasing American exports and supporting new jobs at home. SMEs interested in expanding into new markets will have access to the free resources and tools available through a nationwide network of international trade experts and global shipping specialists. Activities to build awareness will include outreach at trade shows, direct mail campaigns and online registration for resource support.

2. SMEs in Germany

According to the German definition, an SME is an enterprise up to 500 employees and up to €50 million annual turnover. Based on the estimates from Institut für Mittelstandsforschung Bonn, by the end of 2013, there were approximately 3.70 million small businesses in Germany, accounting for 99.6 percent of the 3.72 million business enterprises in the country. Based on 2011 data from Federal Statistical Office and Federal Employment Agency, SMEs employed 15.71 million people, representing 59.4 percent of all employed people, and contributed €2.128 trillion sales (35.9 percent of total), €1.952 trillion export amount (18.2 percent of total), and 55 percent of total added value in Germany.

Mittelstandspolitik and Mittelstandsbeirat, under Bundesministeriumsfuir Wirtschaft und Technologie, are responsible to help SMEs by analyzing changing environment of science, technology and economy domestically and internationally and offering SME related policy advices.

Hermann Simon in his renowned book “Hidden Champions: Lessons from 500 of the World's Best Unknown Companies” (1996), revealed the secrets of success of the best of the best unknown companies. Simon selected them according to three criteria: they must be #1 or #2 in a world market or in their European market; they must be small-to-midsize; and they must have low public visibility. Although Germany is best known for giants such as BMW, Siemens and BASF, its SMEs, “Hidden Champions” in particular, are the economy's driving force and the reason why Germany has been the most competitive exporter in Europe for decades. The current version of the book showed that the Hidden Champions prove that even management in the 21st Century should be based on healthy common sense, vision, and flexibility. By improving upon the small things every day, a company can ascend to world market leadership.

The Federal Ministry for Economic Affairs and Energy is using a variety of measures to improve the policy environment for small and medium-sized enterprises, including (1) lowering tariffs and non-tariff trade barriers through active WTO negotiations and free trade agreements; (2) relaxation of restrictions on credit guarantee for SMEs; (3) accelerating and simplifying the administration of export procedures (logistics, overseas exhibitions, etc.)

3. SMEs in Italy

According to the EU definition, an SME is an enterprise up to 250 employees and up to €5 million annual sales. Based on the statistics from the Ministry of Economic Development, by the end of 2010, there were approximately 5.28 million small businesses in Italy, accounting for 99.9 percent of the business enterprises in the country. Italian SMEs play a very important role in supporting the employment. SMEs employed 81.7 percent of all employed people; among them micro-enterprises hired 48 percent of all employed people.

According to the "Annual Report on European SMEs," Italian SMEs face three main problems: difficulty in access to finance, lack of innovation, and low degree of internationalization.

To improve access to finance for SMEs, Central Guarantee Fund for SME provides SMEs guarantee through Mediocredito centrale SPA. In addition, SMEs could obtain government subsidy to interest expense by offering overseas buyers competitive mid to long term payment options.

To facilitate innovation, the government works with and supports industrial associations to integrate resources of universities and research institutions, establish industrial networks and marketing platforms to encourage SME clusters and innovation.

To promote the internationalization of the SMEs, the ICE-Italian Trade Promotion Agency operates worldwide from a large network of Trade Promotion Offices linked to Italian embassies and consulates and works closely with local authorities and businesses. ICE provides a wide range of services overseas helping Italian SMEs and foreign businesses connect with each other. In addition, SMEs can apply for loans to cover costs in participating overseas biddings in non-EU countries.

4. SMEs in Japan

A SME in Japan defined under its "SME Basic Law" Article 2 is an enterprise or an individual with total capital under 300 million Yen and employees under 300. According to the data presented in "The White Paper on Small and Medium Enterprises in Japan," there were approximately 3,852,934 SMEs in Japan (excluding primary industrial sectors), accounting for 99.7 percent of the 3,863,530 business enterprises in the country. SMEs employed 24.33 million people, representing 62.7 percent of all employed people in Japan by the end of 2013.

Overall the whole-year performance was improved. In 2013, business conditions improved slightly in first two quarters, but slightly worsened in Q3, and then picked up in Q4. Manufacturing industry performed well in first three quarters and better in Q4. Non-manufacturing industry improved slightly in first two quarters, but slightly worsened in Q3,

In the manufacturing sector: in Q1, business conditions improved in transportation machinery, non-ferrous metals industry, fiber industry, ceramic, wood products, stone and clay products industry, etc. while business conditions worsened in food products and paper products; in Q2, food products and paper products improved while fiber industry and printing industry worsened; in Q3, fiber industry improved while food products worsened; in Q4, most industries improved while chemical industry deteriorated.

In the non-manufacturing sector: in Q1, construction, wholesale, retail, and services improved while transportation and storage worsened; in Q2, construction, wholesale, retail, and services, and transportation and storage improved while communications and advertising industry worsened slightly; in Q3, communications and advertising industry improved while other industries altogether worsened; in Q4, wholesale, retail, and services improved while hotel and dining worsened.

The Conference on Supporting SMEs in Overseas Business, chaired by the Minister of Economy, Trade and Economy, was held in June 2011 to formulate a “Framework for Supporting SMEs in Overseas Business,” which outlined comprehensive action to support SMEs’ overseas business expansion for joint implementation by the Ministry of Finance (MOF), Ministry of Agriculture, Forestry and Fisheries (MAFF), Financial Services Agency (FSA), and other related agencies. Following this outline, regional councils led by the Regional Bureaus of Economy, Trade and Industry in each region of Japan were set up to strengthen coordinated action by regional financial institutions, regional administrative agencies, SME organizations, and other related parties. Five main topics under the framework are: information and consultation, marketing support, talent acquisition and training, funding assistance, and improving trade and investment environment. In addition, in line with promoting Abenomics' "third arrows growth strategy," the “Framework for Supporting SMEs in Overseas Business” was revised in March 2012, to achieve synergy with JICA (Japan International Cooperation Agency) and other related official development assistance (ODA) agencies to accelerate the overseas development of SMEs.

SMEs’ source of funding comes from either internal funding or external financing. External financing comes from government agencies, financial institutions, and society. As more SMEs enter the Asian and other emerging markets for fast growth, Japan Finance Corporation, Central Bank and other public institutions all have stepped up financing for SMEs’ overseas expansion. In April 2012, the new international business department was established to strengthen the support of SMEs’ overseas production and sales.

On the other hand, the Japanese government established direct financing market for SMEs through public offering of stocks and bonds, including a secondary market, where SMEs could access capital through listing even though they are still in red. SMEs can also raise capital by issuing corporate bond with credit guarantee extended by Credit Guarantee Association. In 2013 Japanese government also set up a new SME group subsidy program for overseas expansion for a group of over 10 SMEs in order to promote SMEs in formation of industrial clusters for overseas expansion (subsidy ceiling: ¥20 million).

5. SMEs in Mainland China

The actual number of SMEs in China, by definition, is the sum of the number of actually existing business enterprises and the number of actually existing small private businesses. Currently, the Chinese government does not compile data regarding the number of SMEs in China. It is estimated that 99 percent of enterprises in China are SMEs. Therefore, the “2013 Blue Book of Small and Medium Enterprises in China” used the above definition as proxies to gauge the overall trend in the number of SMEs.

As of the end of 2012, there were 13.6660 million actually existing business enterprises, and 40.5927 million actually existing small private businesses, for a total of 54.2587 million.

The 13.6660 million actually existing business enterprises represented an increase of 9.05 percent from 2011: the total consisted of 2.3682 million domestic enterprises, down 1.65 percent from 2011, 10.8572 million private enterprises, up 12.2 percent, and 0.4406 million foreign-invested enterprises, down 1.32 percent. The 40.5927 million actually existing small private businesses represented an increase of 8.06 percent from 2011.

2012 to 2013 saw slowing economic growth, inflation, and credit tightening. From Q3 2011, small and medium-sized enterprises development index (SME index) fell below 100. A reading below 100 represented contraction sequentially. In Q1 2012, the index was 92.6, down 0.9 percentage points from Q4 2011; In Q2 2012, the index fell again to 90.3, down 2.3 percentage points from Q1 2012; In Q3 2012, the index dropped further to 87.5, down 2.8 percentage points from Q2 2012.

To promote stable growth of international trade, and the development of export-oriented SMEs, the State Council of Mainland China issued opinions on promoting the steady growth of foreign trade, for development of relevant provisions in order to improve the export tax rebate and financial services, facilitate trade, improve trade environment, and optimize the trade structure.

Apart from heavy tax burden and elevated production cost, SMEs' lack of access to funding and short term financing has long been the bottleneck to their growth, and in some cases, the cause of failure. Chinese policymakers have announced multiple measures to make it easier to meet the productive private sectors' credit needs. In 2003 the government promulgated "Law of the Peoples Republic of China on Promotion of Small and Medium-sized Enterprises," "Company Law," and "Real Right Law." In 2005 the government promulgated the "New Article 36." The New Article 36 and other related measures was aimed to lessen the tax burden and boost financing to SMEs, remove floor on lending rates, allow the creation of small loan companies (SLCs, privately funded entities not regulated by the China Banking Regulatory Commission, or CBRC), strengthen credit guarantee industry, etc. Measures including the notice on supporting commercial banks to further improve financing for SMEs by China Banking Regulatory Commission (CBRC) in July 2011, the opinion on strengthening credit guarantee to SMEs by Ministry of Finance and Ministry of Industry and Information Technology of China in 2010, and recent regulation on credit guarantee industry. In 2012, 42 rules detailing implementation of the "New Article 36" were introduced, especially for small and micro-enterprises to access to credit and encourage private investment and local government to set up rural banks to help solve financing problems of small and micro-enterprises.

6. SMEs in South Korea

An SME in South Korea defined by The Small and Medium Business Administration (SMBA) is an enterprise with total capital under 8 billion Won (for wholesale and retail: annual sales under 20 billion Won) or employees under 300. According to the National Statistic Office, as of 2011, there were 3,231,634 SMEs in South Korea, accounting for 99.9 percent of the 3,234,687 all enterprises in the country (96 percent are small enterprises). SMEs employed 12,626,746 people in 2011, representing 86.9 percent of all employed people. In 2012, there were 74,162 new SMEs, up 9,052

from 2011 – the 4th consecutive annual increase; among them 28,193 were categorized as new venture, up 2,045 from 2011 – the 10th consecutive annual increase.

In recent years, Korean SMEs suffered severe blow of funding shortage and liquidity problems amid weak demand from prolonged weak European markets and tight financing environment. A conservative banking culture makes obtaining financing in South Korea far more difficult, leading to widespread SMEs bankruptcy. The need for a more dynamic small-business sector in overseas expansion became one of the dominant themes in the Inaugural Address of President Park Geun Hye.

Policymakers have announced multiple programs related to marketing, branding, financing, and so on to foster the development of SMEs with particular focus on Asian emerging markets such as ASEAN. Korea Trade-Investment Promotion Agency (KOTRA) said it would actively facilitate internationalization of SMEs, seek emerging market opportunities, and lead domestic economic recovery. Specifically,

KOTRA contributes to the globalization of Korean companies through various and professional overseas marketing activities. In particular, it provides customized marketing activities to strategic and future industries. Major activities to boost the capability of SMEs in export include diagnosis of their global competitiveness, support for the commencement of export, encouragement of overseas marketing, and provision of online marketplaces based on advanced IT technology. KOTRA has operated a corporation-wide export emergency support system for SMEs to actively cope with the eurozone crisis. This system includes a one-to-one mentoring service, inquiry development to create demands, and hotlines for export emergency, which contributes to boosting exports of SMEs. A total of 2,612 discrepancies in export have been seamlessly resolved within the year through this system. Moreover, based on the analysis of the strategy matrix to support overseas exhibitions as well as differentiation of marketing activities, KOTRA pursues value-added marketing activities, through which it can discover prospective buyers and induce actual consultations.

To effectively cope with sluggish export triggered by the global economic recession, South Korea implements differentiated strategies for each overseas market: provision of presentations on how to use the FTA in advanced countries such as the U.S and the EU; promotion of customized cooperation projects to meet the needs of large corporations in Japan; expansion of marketing activities targeting the domestic market in China; and segmentation of targets according to market maturity in emerging markets.

South Korea has actively negotiated and signed FTAs (Free Trade Agreement) to help large enterprises and SMEs expand into emerging markets. Recently, the Korean government opens 24 hour helpline and 24 hour online consulting, such as "OK FTA Consulting," providing advices on application for certificates of origin, documentation, manuals, etc.

7. SMEs in Singapore

By the end of 2013, Singapore SMEs accounted for 99 percent of the business enterprises in the country. SMEs employed 70 percent of all employed people, and contributed about 50 percent of GDP.

Singapore government has been actively promoting various policies and measures to enhance the capacity of SME marketing. The Capability Development Grant (CDG) is a financial assistance program aimed at helping SMEs defray up to 70 percent of qualifying project costs, relating to consultancy, manpower, training, certification, upgrading productivity and developing business capabilities for process improvement, product development and market access; Enterprise One Business Information Services (EBIS), is a multi-agency initiative led by Singapore Business Federation (SBF) to provide SMEs with most updated information on government information & e-services, business information, and advisory / consulting services, including newsletter, industry research reports, workshops, seminars, and so on; Export Technical Assistance Centre helps SMEs understand and comply with the product standards, technical specifications, food safety and so on.

CHAPTER 2

Major Trends in the Development of SMEs

Over the course of the global financial crisis, European debt crisis, and the unprecedented large scale global monetary easing (U.S. and Japan in particular), economic fundamentals of a large number of countries were severely hurt, causing some irreversible damages and subsequent crises, such as remarkably high youth unemployment across countries and potential QE exit-induced emerging markets' asset bubble bust. Besides, the sharp depreciation of the Japanese Yen could significantly weaken the competitiveness of neighboring Asian countries. Taiwan's export-oriented economic structure has always been sensitive to the impact of the global economy, and SMEs, accounting for over 97 percent of the number of enterprises in Taiwan, are not immune to the impact.

This chapter consists six sections to examine main indicators to understand the development of Taiwan SMEs in 2013. Section I deals with the general business environment of SMEs. There are four major indices (number of enterprises, total annual sales, domestic sales, and export sales) for observations in terms of scales, industries, and sectors, as well as a year-by-year comparison. Section II shows the distribution of the number of enterprises and total annual sales in different regions in terms of sectors and counties/cities. Section III focuses on the current situation of female enterprises based on the four indices mentioned above. Section IV covers business environment of the manufacturing industry based on the survey results from the Department of Statistics, Ministry of Economic Affairs. Section V covers business environment of the wholesale and retail industry. Section VI is an overview of innovation, R&D, and e-commerce.

Statistics on number of enterprises and total annual sales in this chapter are from Tax Data of Fiscal Information Agency, Ministry of Finance, while statistics on employed persons (not in Tax Data) comes from DGBAS, *Monthly Bulletin of Manpower Statistics*. When it comes to SME scale defined by annual sales or capital one needs to pay attention that in good time, a SME could become a large enterprise with its annual sales across over NT$100 million, while a large enterprise could fall into SME category in bad time with sales down under NT$100 million.

I General Business Environment of SMEs

All major indices show growth in 2013 from 2012 except slightly lower total annual sales due to export contraction, particularly in Manufacturing industry.

1. A Total of 1,331,182 SMEs in 2013, a Record High

Number of SMEs set records several times after contraction during 2007-2009 global financial crisis. As of 2013, there were a total of 1,331,182 SMEs in Taiwan, accounting for 97.64 percent of the total number of business enterprises in Taiwan, a record high. This figure represented an increase of 24,453 enterprises or 1.87 percent from 2012. The number of large enterprises was 32,211 enterprises, up 3.37 percent from 2012, accounting for 2.36 percent of the total number of business enterprises (Table 2-1-1).

Table 2-1-1 Number of Enterprises, Annual Sales, the Number of Employed Persons and the Number of Paid Employees in Taiwan in 2012 and 2013

Units: Enterprises; NT$ millions; thousand persons; %

Enterprise size / Indicator	All enterprises		SMEs		Large enterprises	
	2012	2013	2012	2013	2012	2013
No. of enterprises	1,337,890	1,363,393	1,306,729	1,331,182	31,161	32,211
Share of total	100.00	100.00	97.67	97.64	2.33	2.36
Annual growth rate	2.07	1.91	2.11	1.87	0.5	3.37
Total annual sales	37,649,075	38,460,894	11,381,770	11,321,842	26,267,306	27,139,052
Share of total	100.00	100.00	30.23	29.44	69.77	70.56
Annual growth rate	-0.61	2.16	1.38	-0.53	-1.45	3.32
Domestic sales	27,797,659	28,624,527	9,633,690	9,897,617	18,163,970	18,726,910
Share of total	100.00	100.00	34.66	34.58	65.34	65.42
Annual growth rate	0.15	2.97	0.59	2.74	-0.08	3.10
Export sales	9,851,416	9,836,367	1,748,080	1,424,225	8,103,336	8,412,142
Share of total	100.00	100.00	17.74	14.48	82.26	85.52
Annual growth rate	-2.72	-0.15	5.95	-18.53	-4.41	3.81
No. of employed persons	10,860	10,967	8,484	8,588	1,349	1,359
Share of total	100.00	100.00	78.12	78.30	12.42	12.39
Annual growth rate	1.41	0.99	1.76	1.22	1.1	0.76
No. of paid employees	8,495	8,615	6,122	6,237	1,346	1,357
Share of total	100.00	100.00	72.06	72.40	15.85	15.76
Annual growth rate	2.01	1.41	2.74	1.89	1.07	0.82

Note:

1. The figures (and percentages) given in the table for the number of employed persons and number of paid employees working in all enterprises include 1,020,000 government employees, accounting for 9.30 percent of all employed persons and 11.84 percent of all paid employees.
2. The figures of exports which include trade values of goods and services in agricultural, manufacturing and service industries are total sales with zero sales tax applied.

Sources:

1. Fiscal Information Agency, Ministry of Finance, VAT Data for 2012, 2013.
2. DGBAS, *Monthly Bulletin of Manpower Statistics* (2012, 2013).

2. No. of Employed Persons in SMEs Reached 8,588,000 in 2013, a Record High

In 2013, no. of employed persons in SMEs reached 8,588,000, of which 6,237,000 were paid employees; both were record high. SMEs contributed 78.3 percent of total employed persons and 72.4 percent of total paid employees (Table 2-1-1).

In terms of the sectors, shares of SMEs by sectors have been quite stable and share of Industrial SMEs grew slightly. SMEs are mostly concentrated in the Service sector, with the proportion being around 80 percent, and the Industrial sector accounts for about 19 percent. As of 2013, there were a total of 1,063,748 SMEs in Service sector, accounting for 79.91 percent of the total number of SMEs, represented an increase of 18 thousand SMEs or 1.73 percent from 2012; there were a total of 255,454 SMEs in Industrial sector, accounting for 19.19 percent of the total number of SMEs, represented a growth at 2.51 percent, faster than that in Service sector. (Table 2-1-2).

Table 2-1-2 Shares of All SMEs in Taiwan Held by Individual Sectors, 2008-2013

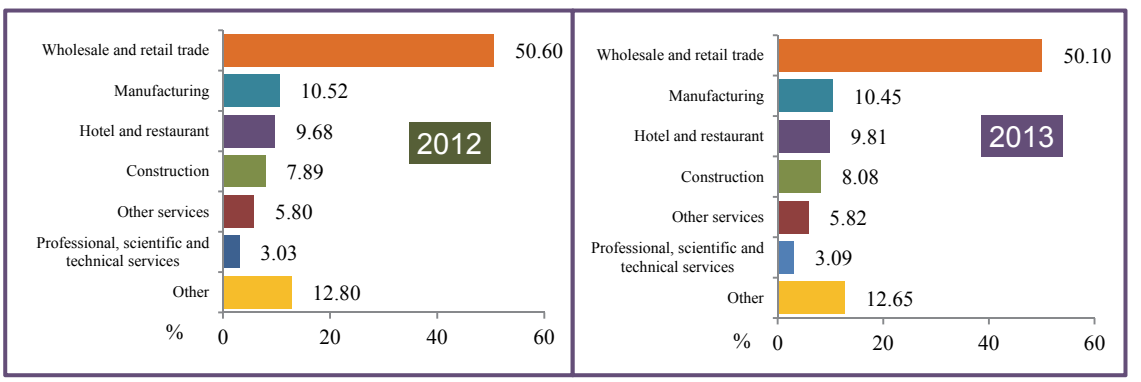
Units: Enterprises; NT$ millions; %

Year / Sector	2008	2009	2010	2011	2012	2013
All SMEs	1,234,749	1,232,025	1,247,998	1,279,784	1,306,729	1,331,182
Agricultural sector	0.89	0.90	0.91	0.90	0.90	0.90
Industrial sector	18.83	18.75	18.67	19.01	19.07	19.19
Service sector	80.28	80.24	80.42	80.09	80.02	79.91
Total sales	10,462,696	9,189,463	10,709,005	11,226,933	11,381,770	11,321,842
Agricultural sector	0.16	0.18	0.17	0.16	0.18	0.19
Industrial sector	50.09	45.85	49.41	50.13	50.13	48.67
Service sector	49.75	53.96	50.42	49.7	49.69	51.13
Domestic sales	8, 817,989	7,873,111	9,088,972	9,576,948	9,633,690	9,897,617
Agricultural sector	0.16	0.19	0.18	0.17	0.19	0.19
Industrial sector	46.05	42.35	45.47	46.28	45.65	45.72
Service sector	53.79	57.46	54.36	53.55	54.16	54.09
Export sales	1,644,707	1,316,352	1,620,033	1,649,985	1,748,080	1,424,225
Agricultural sector	0.11	0.15	0.14	0.12	0.10	0.19
Industrial sector	71.77	66.82	71.52	72.5	74.82	69.21
Service sector	28.12	33.03	28.34	27.38	25.08	30.60

Source: Fiscal Information Agency, Ministry of Finance, VAT Data for 2008 - 2013.

In terms of the industries, 50.10 percent of SMEs are in Wholesale and Retail Trade, a total of 666,857 in 2013, followed by Manufacturing with 10.45 percent of SMEs, a total of 139,099, and 3rd in Hotel and Restaurant industry with 9.81 percent (Figure 2-1-1).

Figure 2-1-1 Distribution of Industry of SMEs in 2012 and 2013



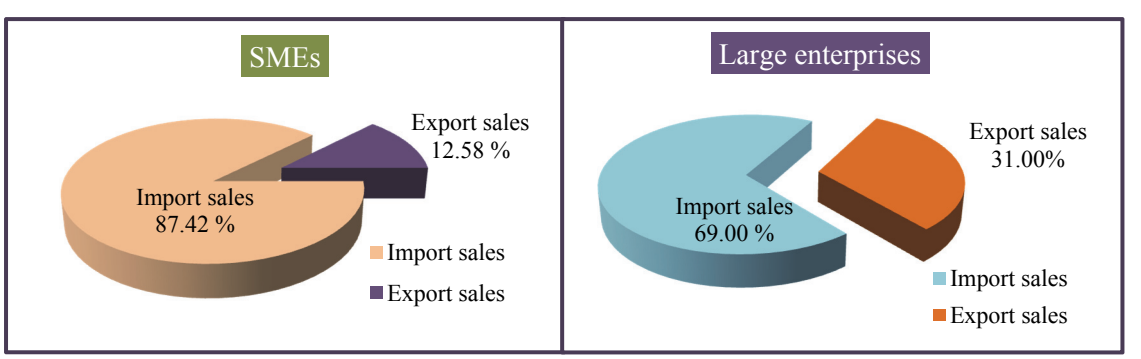
Source: Fiscal Information Agency, Ministry of Finance, VAT Data for 2012, 2013.

3. Domestic Share of Total Sales of SMEs in 2013 Accounted for 87 Percent

In 2013, SMEs' sales totaled NT$11,321.8 billion, accounting for 29.44 percent of total sales of all enterprises; domestic share of total SMEs' sales accounted for 87.42 percent, up about 3 percentage points from 2012.

Taiwan's economic growth rate improved modestly from 1.48 percent in 2012 to 2.09 percent in 2013, amid mild global recovery and flat economic growth in China, the most important trading partner of Taiwan. However, in 2013, the total sales of SMEs declined by 0.53 percent mainly due to 18.53 percent drop in total exports. SMEs' domestic sales totaled NT$9,897.6 billion, up 2.74 percent from 2012. On the other hand, large enterprises posted robust growth both in exports (up 3.81 percent) and domestic sales (up 3.10 percent): total exports reached NT$8,412.1 billion, representing 85.52 percent of total exports. Large enterprises' dominance is growing for Taiwan exports (Figure 2-1-2 and Table 2-1-1).

Figure 2-1-2 Shares of Domestic and Export Sales in Total Sales by Enterprise Size in 2013



Source: Fiscal Information Agency, Ministry of Finance, VAT Data for 2013.

4. Decreased SMEs' Share of Exports and SMEs' Export-Orientedness

In 2013 SMEs' export contribution rate was 14.48 percent (of total exports), down 3.26 percentage points from 2012, the lowest in 6 years; SMEs' export-orientedness (SME export sales' share of the SMEs' total sales) also hit bottom at 12.58 percent, down 2.78 percentage points, the lowest in 6 years (Table 2-1-3).

Table 2-1-3 Number of SMEs and SMEs' Sales, 2008–2013

Units: Enterprises; NT$ millions; %

Year / Indicator	2008	2009	2010	2011	2012	2013
No. of SMEs	1,234,749	1,232,025	1,247,998	1,279,784	1,306,729	1,331,182
Ratio	97.7	97.91	97.68	97.63	97.67	97.64
Annual growth rate	-0.2	-0.22	1.3	2.55	2.11	1.87
SME sales	10,462,696	9,189,463	10,709,005	11,226,933	11,381,770	11,321,842
Ratio	29.69	30.65	29.55	29.64	30.23	29.44
Annual growth rate	-0.18	-12.17	16.54	4.84	1.38	-0.53
SME domestic sales	8, 817,989	7,873,111	9,088,972	9,576,948	9,633,690	9,897,617
Ratio	34.23	35.5	34.67	34.51	34.66	34.58
Annual growth rate	-0.28	-10.72	15.44	5.27	0.69	2.74
SME export sales	1,644,707	1,316,352	1,620,033	1,649,985	1,748,080	1,424,225
Ratio (export contribution)	17.36	16.87	16.16	16.29	17.74	14.48
Export propensity	15.72	14.32	15.13	14.7	15.36	12.58
Annual growth rate	0.35	-19.96	23.07	1.85	5.95	-18.53

Note:
1. The ratio indicates SMEs' share in total enterprises; the annual growth rate is the current year rate of change compared to the previous year.
2. Export contribution = (the export value of SMEs / the export value of all enterprises) * 100 percent.
3. Export propensity = (the export value of SMEs / the sales value of SMEs) * 100 percent.

Source: Fiscal Information Agency, Ministry of Finance, VAT Data for 2008 - 2013.

The changes in the export contribution rate and export-orientedness of SMEs are generally attributed to the transformation in the structure of Taiwan's industries. Traditional export-oriented SMEs have powered Taiwan through economic take-off and decades of rapid expansion. However, the comparative advantage that labor intensive SMEs used to enjoy as low cost producers in export has been gradually migrated to larger enterprises in high tech and high value added industries. More SMEs have become satellite firms of large enterprises. SMEs have thus continued to make a major contribution to Taiwan's export; it is simply that there has been a shift away from direct exportation by SMEs towards indirect exports via large enterprises. Besides, SMEs' export has become more sensitive to overseas business environment as they play a role of OEMs and move upward across value chain as ODMs and OBMs.

To understand why total exports of SMEs dropped 18.53% in 2013, we show the breakdown of SMEs exports by industries in Table 2-1-4. In terms of export amount, the dominant driver was the

Manufacturing export, down sharply by 24.82%, amounting to NT$321.58 billion, representing over 99% of the decreased amount of total exports of SMEs. Within the Manufacturing sector, electronic components exports declined over 50%, amounting to NT$288.05 billion, representing almost 90% of the decreased amount of total Manufacturing exports of SMEs, followed by machinery and equipment, which declined almost 6%, amounting to NT$7.95 billion, representing another 2.5% of the decreased amount of total Manufacturing exports of SMEs.

Two main possible drivers were (1) the overall challenging overseas environment for SMEs, as evidenced by falling exports across several Taiwan's major trading partners such as Singapore, EU and the U.S.; (2) a few successful SMEs in 2012 moved up to be categorized as large enterprises in 2013 by definition as annual sales across over NT$100 million, as shown by 3.37% increase in no. of large enterprises in 2013 while at the same time, 99.77% of all new enterprises created in 2013 were SMEs.

Table 2-1-4 Export Decline of SMEs by Industry in 2013

Unit: NT$ millions; %

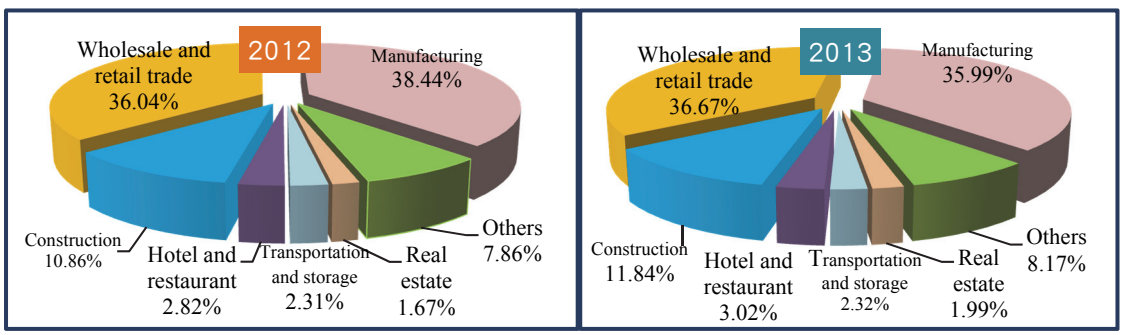
Industry \ Indicator	Export value of SMEs , 2012	Export value of SMEs , 2013	Export decline of SMEs , 2013	Rate of change
Education	40	19	21	-52.89
Manufacturing	1,295,476	973,892	321,584	-24.82
Real Estate	773	691	82	-10.65
Construction	10,881	10,207	674	-6.19
Finance and Insurance	689	677	12	-1.72
Water Supply and Remediation Services	1,409	1,391	18	-1.26
Wholesale and Retail Trade	413,761	409,856	3,905	-0.94

Source: Fiscal Information Agency, Ministry of Finance, VAT Data for 2012, 2013.

5. Wholesale and Retail Trade and Manufacturing Remained Top Contributors of Sales

In terms of shares of sales by industries, top three industries in 2013 were Wholesale and Retail Trade with share of 36.67 percent (NT$4,151.6 billion), followed by Manufacturing share of 35.99 percent (NT$4,743.0 billion) and Construction share of 11.84 percent (NT$1,340.7 billion). Share of Construction dropped by 2.45 percentage points from 2012 while shares of Wholesale and Retail Trade and Manufacturing rose slightly (Figure 2-1-3).

Figure 2-1-3 The Industry Distribution of Sales in SMEs, 2012-13



Source: Fiscal Information Agency, Ministry of Finance, VAT Data for 2012, 2013.

6. 99.77 Percent New Enterprises in 2013 Were SMEs; Most Sales Came from Domestic Market

Newly-established enterprises are defined as those that have been in existence for less than one year. In 2013, there were 98,821 newly-established SMEs in Taiwan, representing 99.77 percent of the total of 99,044 newly-established enterprises. 94.14 percent of newly-established SMEs' total sales came from domestic market in 2013, higher than 86.27 percent for newly-established large enterprises (Table 2-1-5).

Table 2-1-5 The Number of Newly-Established and Their Sales Performance, 2013

Unit: Enterprises; NT$ million; %

Indicator \ Enterprise size	Total	SMEs ratio	Share of SMEs total	Large enterprises ratio	Share of large enterprises total
No. of enterprises	99,044	99.77	-	0.23	-
Total sales	238,848	78.14	100.00	21.86	100.00
Domestic sales	220,750	79.60	94.14	20.40	86.27
Export sales	18,097	60.39	5.86	39.61	13.73

Notes:"–" : not applicable.

Source: Fiscal Information Agency, Ministry of Finance, VAT Data for 2013.

In terms of the sectors, the service sector accounted for the most in the largest number of newly-established SMEs (83,415 or 84.41 percent of all new SMEs) in 2013, and accounted for over 76 percent sales and 50 percent exports of all new SMEs (Table 2-1-6). In terms of the industries, 44.13 percent of all newly-established SMEs were in Wholesale and Retail Trade, followed by Hotel and Restaurant at 15.68 percent, and Construction at 8.96 percent in 2013 (Figure 2-1-4).

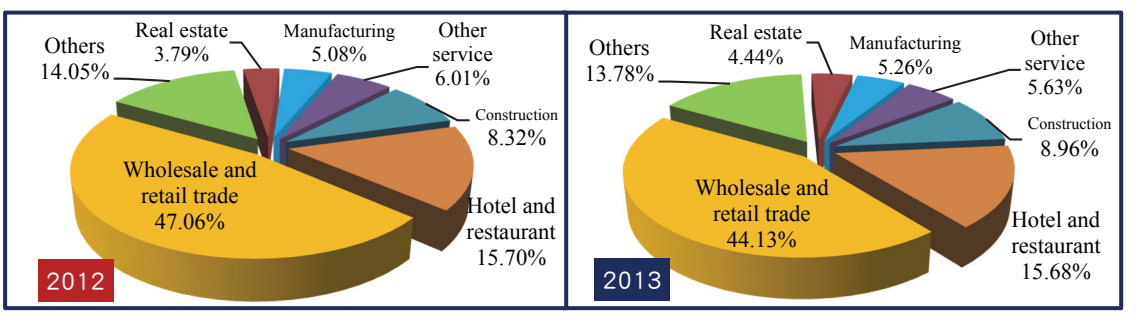
Table 2-1-6 The Number of Newly-Established SMEs and Their Sales Performance by Sector, 2013

Units: Enterprises; NT$ millions; %

Indicator / Sector	No. of enterprises	Share of total	Total sales	Share of total	Domestic sales	Share of total	Export sales	Share of total
All sectors	98,821	100.00	186,644	100.00	175,715	100.00	10,929	100.00
Agricultural sector	718	0.73	498	0.27	463	0.26	36	0.33
Industrial sector	14,688	14.86	46,577	24.96	41,200	23.45	5,377	49.20
Service sector	83,415	84.41	139,568	74.78	134,052	76.29	5,516	50.47

Source: Fiscal Information Agency, Ministry of Finance, VAT Data for 2013.

Figure 2-1-4 The Industry Distribution of Newly-Established SMEs, 2012-13



Source：Fiscal Information Agency, Ministry of Finance, VAT Data for 2012, 2013.

7. Share of Taiwan's SMEs in Existence for 20 Years and Over Have Been Rising Consistently; SMEs are More Flexibile in Entry / Exit

As of 2013, 7.42% of SMEs had been in existence for less than one year. 30.89% of SMEs had been operating within 5 years, and 51.32% within 10 years. The corresponding shares for large enterprises were only 0.69%, 10.05% and 26.32%, respectively. 73.67% large enterprises had been in existence for 10 years and over. These figures show that, in terms of market entry and exit, SMEs display more flexibility than large enterprises. However there were still nearly 49% SMEs had been going concerns for 10 years and over.

An examination of the changes in the percentage of SMEs that had been in business for a particular length of time shows that, from 2009 to 2013, the share of SMEs in existence for over 20 years had been rising consistently (Table 2-1-7).

8. 55.68 Percent SMEs are Sole Proprietorships

Sole proprietorships constituted the largest group of SMEs, with 741,166 firms or 55.68% of the total, followed by limited corporations, with 385,770 firms (28.98% of the total), and corporations limited, with 112,182 firms (8.43%). These three types accounted for a combined total of 93.09% of all SMEs in Taiwan. On the other hand, corporations limited by shares constituted the largest group of larger enterprises, at 55.56% of the total, followed by limited corporations at 23.12% and subsidiaries at 10.13%. These three types accounted for a combined total of 88.81% of all larger enterprises in

Taiwan (Table 2-1-8).

Table 2-1-7 Share of All SMEs Held by SMEs of Particular Ages, 2009-2013

Units: Enterprises; %

Year / Age	2009	2010	2011	2012	2013	
					SMEs	Large enterprises
Total no. of SMEs	1,232,025	1,247,998	1,279,784	1,306,729	1,331,182	32,211
Less than 1 year	7.19	7.50	7.78	7.34	7.42	0.69
1 – 2 years	6.76	6.95	7.20	7.44	7.12	1.61
2 – 3 years	6.16	5.75	5.88	6.15	6.37	2.32
3 – 4 years	6.45	5.38	5.04	5.14	5.39	2.61
4 – 5 years	6.33	5.75	4.79	4.51	4.59	2.82
5 – 10 years	21.01	21.95	22.30	21.53	20.43	16.27
10 – 20 years	25.10	25.33	25.05	24.93	25.17	34.20
20 years and over	21.02	21.39	21.96	22.95	23.52	39.47

Source：Fiscal Information Agency, Ministry of Finance, VAT Data for 2012, 2013.

Table 2-1-8 Business Enterprises in Taiwan by Form of Organization, 2012-2013

Units: Enterprises; %

Year / Form of Organization	2012				2013			
	SMEs	Share of SMEs total	Large enterprises	Share of total	SMEs	Share of SMEs total	Large enterprises	Share of total
Total	1,306,729	100.00	31,161	100.00	1,331,182	100.00	32,211	100.00
Corporation limited by shares	111,014	8.50	17,362	55.72	112,182	8.43	17,895	55.56
Limited corporation	373,964	28.62	7,186	23.06	385,770	28.98	7,446	23.12
Unlimited corporation	58	0.00	2	0.01	76	0.01	2	0.01
Unlimited corporation with limited liability shareholders	17	0.00	1	0.00	30	0.00	1	0.00
Partnership	23,176	1.77	102	0.33	24,637	1.85	98	0.30
Sole proprietorship	734,434	56.20	162	0.52	741,166	55.68	161	0.50
Foreign company	3,402	0.26	725	2.33	3,629	0.27	748	2.32
Representative office of foreign company	100	0.01	16	0.05	85	0.01	10	0.03
Subsidiary	31,882	2.44	3,094	9.93	32,451	2.44	3,264	10.13
Other	28,682	2.19	2,511	8.06	31,156	2.34	2,586	8.03

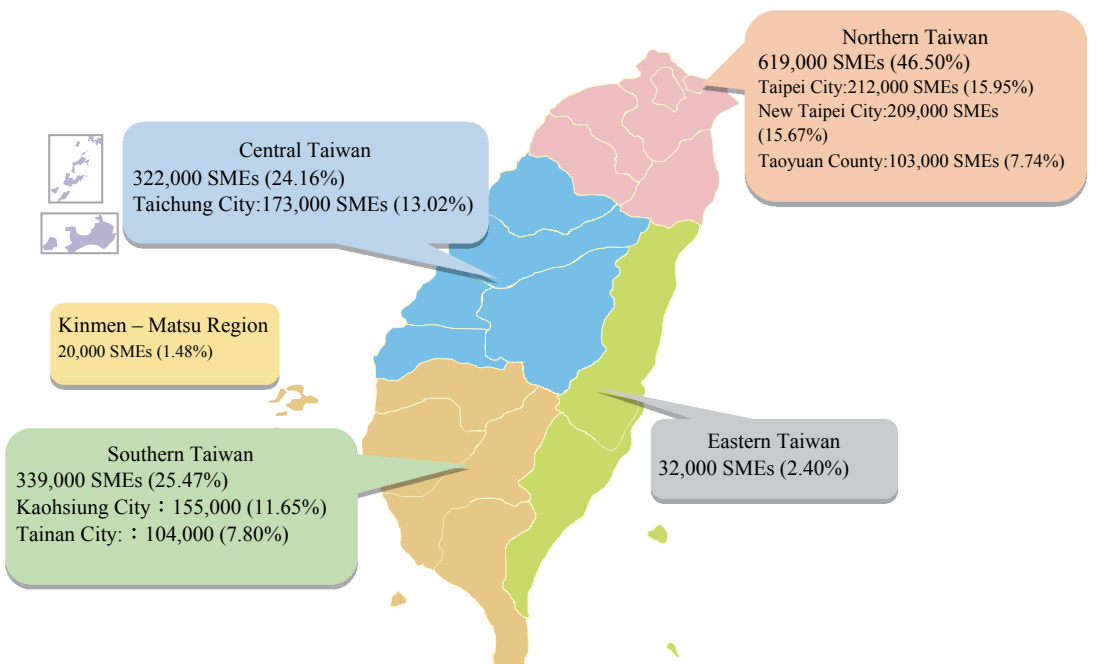
Source：Fiscal Information Agency, Ministry of Finance, VAT Data for 2012, 2013.

II SMEs and the Regional Development

1. Taiwan's SMEs Are Heavily Concentrated in Northern Taiwan

In regional terms, in 2013, 46.50% (619 thousand) of all SMEs were concentrated in Northern Taiwan; 24.16% were located in Central Taiwan and 25.47% in Southern Taiwan (Figure 2-2-1).

Figure 2-2-1 The Distribution of SMEs by Region in 2013



Note: Northern Taiwan includes Taipei City, New Taipei City, Keelung City, Ilan County, Taoyuan County, Hsinchu City, and Hsinchu County. Central Taiwan includes Miaoli County, Taichung City, Changhua County, Nantou County and Yunlin County. Southern Taiwan includes Chiayi City, Chiayi County, Tainan City, Kaohsiung City, Pingtung County and Penghu County. Eastern Taiwan includes Hualien County and Taitung County. The Kinmen-Matsu Region includes Kinmen County and Lienchiang County.

Source: Fiscal Information Agency, Ministry of Finance, VAT Data for 2013.

2. Taiwan's Five Special Municipalities and Taoyuan County Are the Top 6 with Largest Number of SMEs; Taipei City Remained as No.1

Taiwan's Five Special Municipalities and Taoyuan County are the top 6 with largest number of SMEs: 956 thoushand or 71.83% of total SMEs combined. As can be seen from the data presented in Table 2-2-1, of the Five Special Municipalitiesa and Taoyuan County, Taipei City had the largest number of SMEs: 212 thousnad or 15.95% of all SMEs, followed by 209 thousand or 15.66% in 2nd ranked New Taipei City, 13.02% in 3rd ranked Taichung City, 11.65% in 4th ranked Kaohsiung City, 7.80% in 5th ranked Tainan City, and 7.74% in 6th ranked Taoyuan County. Compared to 2012, all five Special Municipalities and Taoyuan County reported rising numbers of SMEs.

Examination of the distribution of SMEs among the Five Special Municipalities by sectors

shows that, Kaohsiung City had the largest share of Agriculture (incl. arable and pastoral farming, forestry and fisheries) SMEs at 34.98% while Taipei City, the commercial and financial center of Taiwan, had the largest share of Service SMEs.

Table 2-2-1 The Number of SMEs and the Total Sales of Taiwan's Six Major Cities in 2013 - by the Size of Enterprise

Unit：Enterprises；NT$ millions; %

Major cities / Enterprise Size	Total	Combined total for the six major cities	Taipei City	New Taipei City	Taoyuan County	Taichung City	Tainan City	Kaohsing City
Number								
All eterprises	1,363,393	983,025	222,655	213,574	105,780	176,995	105,705	158,316
SMEs	1,331,182	956,235	212,356	208,603	102,999	173,362	103,843	155,072
Ratio	100.00	71.83	15.95	15.67	7.74	13.02	7.80	11.65
Annual growth rate	1.87	1.80	1.64	1.94	2.94	1.64	1.94	1.18
Large enterprise	32,211	26,790	10,299	4,971	2,781	3,633	1,862	3,244
Total Sales								
All enterprises	38,460,894	30,002,077	12,117,576	4,279,045	3,467,054	3,683,380	2,271,230	4,183,792
SMEs	11,321,842	8,729,969	1,888,272	1,893,064	1,140,198	1,613,783	900,836	1,293,817
Ratio	100.00	77.11	16.68	16.72	10.07	14.25	7.96	11.43
Annual growth rate	-0.53	-1.42	3.09	1.52	1.24	2.61	-24.09	1.59
Large enterprise	27,139,052	21,272,108	10,229,304	2,385,982	2,326,856	2,069,597	1,370,394	2,889,975

Source: Fiscal Information Agency, Ministry of Finance, VAT Data for 2013.

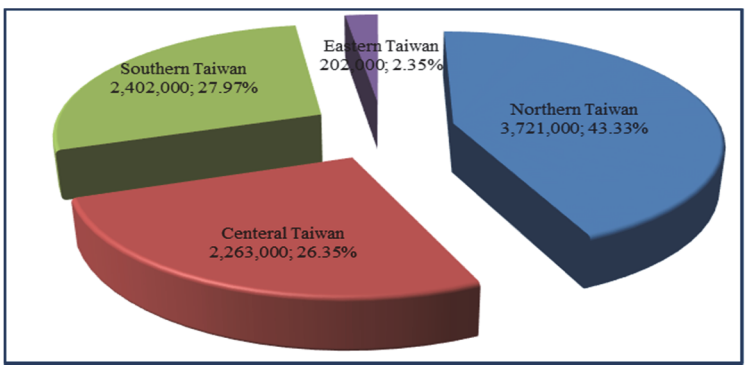
3. SME Sales by County/City: New Taipei City on Top

Examination of SME sales in 2013 by county/city shows that the largest share of overall SME sales was held by those SMEs located in New Taipei City with 16.72% of total sales, followed by Taipei City in the second place with 16.68%, Taichung City (14.25%), Kaohsiung City (11.43%), Taoyuan County (10.07), and Tainan City (7.96%). SMEs in Five Special Municipalities and Taoyuan County combined had 77% of total sales. Compared to 2012, All Special Municipalities Taoyuan County SME sales rose in 2013 except Tainan City (down 24.09%) (Table 2-2-1).

4. SME Employment by Five Special Municipalities and Taoyuan County, and by Regions

As can be seen from the 2013 data presented in Figure 2-2-2, of the four regions, northern region had the largest number of employed persons by SMEs (3,721 thousand or 43.33 percent), followed by southern region (27.97 percent), and central region (26.35 percent).

Figure 2-2-2 The Regional Distribution of SME Employment in 2013



Source: Fiscal Information Agency, Ministry of Finance, VAT Data for 2013.

Of the Five Special Municipalities and Taoyuan County, New Taipei City had the largest number of employed persons by SMEs in 2013 (1,592 thousand or 18.54 percent), followed by Taichung City (12.41 percent), and Kaohsiung City (11.62 percent). Five Special Municipalities and Taoyuan County had combined employment of 68.98 percent of all people employed by SMEs (Table 2-2-2).

Table 2-2-2 Number of People Employed in Taiwan's Six Major Cities, 2013

Unit: Persons; %

Major cities / Enterprise size	Total	Combined total for six major cities	Taipei City	New Taipei City	Taoyuan County	Taichung City	Tainan City	Kaohsiung City
All enterprises	10,967	7,602	1,243	1,910	955	1,276	924	1,293
SMEs	8,588	5,924	843	1,592	695	1,066	730	998
Share of total	100.00	68.98	9.82	18.54	8.09	12.41	8.50	11.62
Annual growth rate	1.23	1.49	-1.41	1.64	2.51	2.02	2.27	1.96
Large enterprises	1,359	990	239	157	197	109	114	174
Government employees	1,020	689	161	161	63	102	81	121

Note: Share in the table represents the percentage of city's SMEs in all SMEs.
Source: Fiscal Information Agency, Ministry of Finance, VAT data for 2013.

III Female-Owned SMEs

Based on data from Fiscal Information Agency, Ministry of Finance, the gender of a person is determined by the first digit of her (his) identity card number. Therefore, enterprises where the owner is a juridical person or foreigner have to be excluded from the calculations. In addition, it is not possible to eliminate those enterprises where a woman is the nominal owner but is not actually running the business, or where the female "owner" actually controls only a minority of the firm's shares. It follows that the total number of SMEs in section I may not match the sum of female-owned SMEs and male-owned SMEs.

1. Female-Owned Enterprises Account for Over 36 Percent of All Enterprises; about 99 Percent Female-Owned Enterprises Are SMEs

In 2013, there were 1,351,254 business enterprises in Taiwan for which the sex of the business owner could be determined. Of these, 489,109 (36.20 percent of the total) were owned by women. Female-owned enterprises increased by 9,306 or 1.94 percent from 2012. 98.80 percent (483,253) of female-owned enterprises were SMEs (Table 2-3-1).

Table 2-3-1 Number of Enterprises and Sales Performance in 2013 – by Sex of Business Owner

Units: Enterprises; NT$ millions; %

Indicator \ Enterprise size	All enterprises	SMEs	Large enterprises
No. of enterprises	1,351,254	1,321,069	30,185
Female-owned enterprises	489,109	483,253	5,856
Share of total 1	100.00	98.80	1.20
Share of total 2	36.20	36.58	19.40
Male-owned enterprises	862,145	837,816	24,329
Total sales	34,549,316	10,938,415	23,610,901
Female-owned enterprises	5,201,179	2,689,388	2,511,791
Share of total 1	100.00	51.71	48.29
Share of total 2	15.05	24.59	10.64
Male-owned enterprises	29,348,137	8,249,027	21,099,110
Domestic sales	26,356,035	9,652,686	16,703,349
Female-owned enterprises	4,407,051	2,439,370	1,967,681
Share of total 1	100.00	55.35	44.65
Share of total 2	16.72	25.27	11.78
Male-owned enterprises	21,948,985	7,213,316	14,735,669
Export sales	8,193,282	1,285,729	6,907,553
Female-owned enterprises	794,129	250,018	544,111
Share of total 1	100.00	31.48	68.52
Share of total 2	9.69	19.45	7.88
Male-owned enterprises	7,399,153	1,035,711	6,363,442

Notes:
1. Whether an enterprise should be classified as male-owned or female-owned was determined using the registered identity of the business owner.
2. The totals for all enterprises given in this table do not conform to those given in Table 2-1-1 because some enterprises are registered as being owned by other enterprises or by foreigners; these enterprises were excluded from the data used in this table.
3. Share of total 1 in the table represents the percentages of SMEs and large enterprises in all female-owned enterprises; share of total 2 represents the percentage of female-owned enterprises in all enterprises.

Source: Fiscal Information Agency, Ministry of Finance, VAT Data for 2013.

2. 62 Percent of Female-Owned Enterprises Are Sole Proprietorships

Sole proprietorships were the most common form of organization for both female-owned enterprises (62.34 percent) and male-owned enterprises (50.56 percent), followed by limited corporations at 26.65 percent and 30.10 percent respectively (Table 2-3-2).

Table 2-3-2 Number of Different Enterprises in 2013 – by Sex of Business Owner

Units: Enterprises; %

Indicator \ Sex of owner	All enterprises		Female-owned enterprises		Male-owned enterprises	
	No. of enterprises	Share of total	No. of enterprises	Share of total	No. of enterprises	Share of total
Total	1,351,254	100.00	489,109	100.00	862,145	100.00
Corporation limited by shares	126,454	9.36	30,851	6.31	95,603	11.09
Limited corporation	389,819	28.85	130,335	26.65	259,484	30.10
Unlimited corporation	77	0.01	24	0.00	53	0.01
Unlimited corporation with limited liability shareholders	30	0.00	8	0.00	22	0.00
Partnership	24,711	1.83	8,686	1.78	16,025	1.86
Sole proprietorship	740,760	54.82	304,896	62.34	435,864	50.56
Foreign company	2,416	0.18	845	0.17	1,571	0.18
Representative office of foreign company	53	0.00	15	0.00	38	0.00
Subsidiary	34,339	2.54	6,200	1.27	28,139	3.26
Other	32,595	2.41	7,249	1.48	25,346	2.94

Notes and Source: See Table 2-3-1.

3. Female-Owned Enterprises Are More Oriented toward Domestic Market

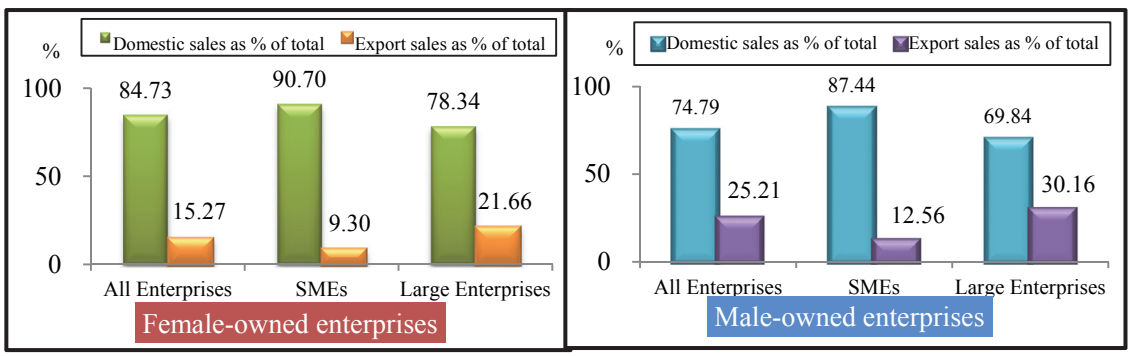
In 2013, domestic sales accounted for a dominant 90.70 percent of the total sales of female-owned SMEs, with export sales accounting for only 9.30 percent, (giving a disparity of 81.40 percentage points). For male-owned SMEs, export sales accounted for 12.56 percent and domestic sales accounted for 87.44 percent, giving a disparity of 74.88 percentage points (Figure 2-3-1).

4. Female-Owned Enterprises are Heavily Concentrated in the Service Sector

The service sector accounts for the largest share of the total number of female-owned enterprises at 85%, compared to 77% share of male-owned enterprises (Figure 2-3-2).

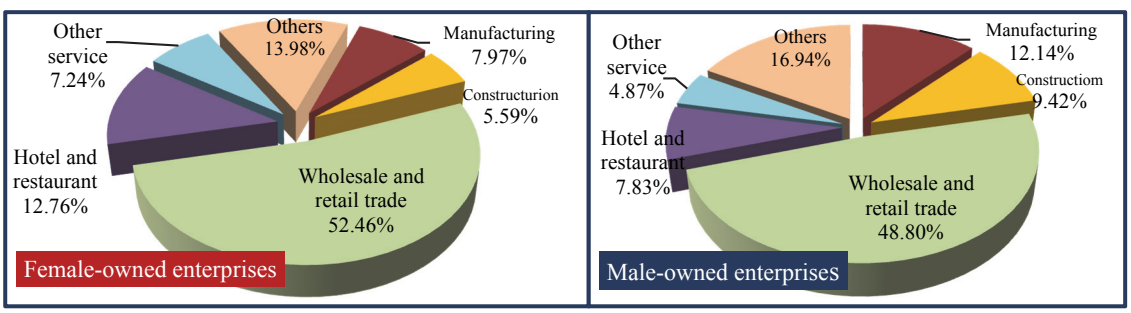
The Wholesale and Retail Trade industry accounted for the largest share of the total number of female-owned enterprises, and also for the largest share of female-owned enterprises in total sales, domestic sales and export sales, at 52.46%、49.68%、47.56%, and 61.44% respectively in 2013.

Figure 2-3-1 Shares of Domestic Sales and Export Sales in 2013 – by Sex of Business Owner



Notes and Source: See Table 2-3-1.

Figure 2-3-2 Industrial Distribution of SMEs in 2013 – by Sex of Business Owner



Notes and Source: See Table 2-3-1.

IV Business Environment for SME Manufacturing Sector

To provide a clear picture of the current state of Taiwan's Manufacturing sector, its export performance, development of self-owned brands, and the impact of trade liberalization, this section presents data from the *Manufacturing Investment and Operation of the Survey Report* published by the Department of Statistics, Ministry of Economic Affairs.

1. Status of Overseas Production for Manufacturing Sector

(1) SMEs' overseas production bases

Based on the *Manufacturing Investment and Operation of the Survey Report* by the Department of Statistics, Ministry of Economic Affairs, 20.62 percent of medium-sized enterprises and 11.21 percent of small-sized enterprises had set up overseas production bases in 2012 with low cost as the No. 1 reason (Table 2-4-1).

Table 2-4-1 Whether Manufacturers Establish Overseas Production Bases and Factors of the Establishment, 2013

Unit: %

Item	Total	Large enterprise	Medium-sized enterprise	Small-sized enterprise
No overseas production bases	79.34	63.24	79.38	88.79
With overseas production bases	20.66	36.76	20.62	11.21
Factors of setting overseas production bases (multiple responses)				
Low labour cost	70.68	69.97	65.59	74.72
Cheap or convenient supply of raw materials and of components	43.65	39.07	45.16	51.69
To meet the needs of foreign customers	39.58	41.69	29.03	41.01
Potential local market	33.22	34.69	37.63	28.09
Tax concessions and other incentives given by local government	19.54	22.16	17.2	15.73
Overseas investment with domestic partners	15.64	15.16	11.83	18.54
To expand sales to the third country	7.33	9.33	7.53	3.37
To avoid international trade barriers	3.58	2.92	5.38	3.93
To introduce foreign talent with advanced technologies	1.14	1.17	2.15	0.56
Other	2.44	1.75	3.23	3.37

Notes:

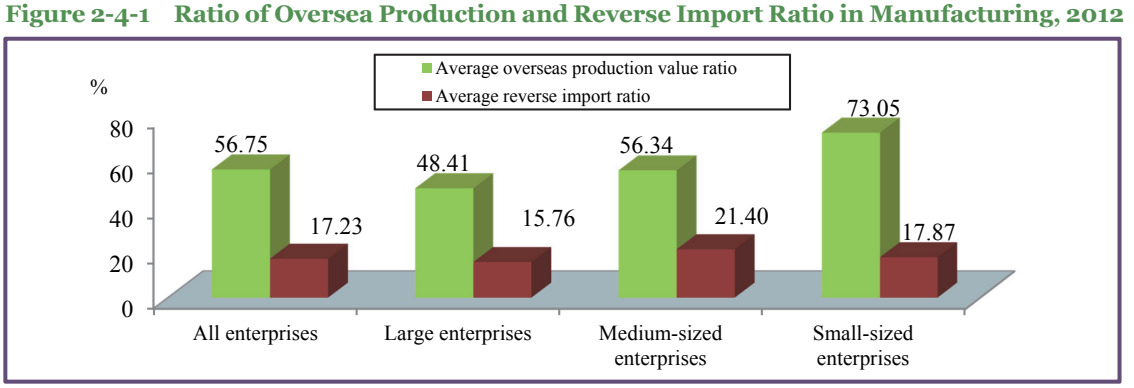
1. The sample size of the survey is 2,972 enterprises, including 933 large enterprises, 451 medium-sized enterprises, and 1,588 small enterprises.
2. An enterprise with 200 employees or more is classified as a large enterprise; medium-sized enterprise: employees equal to 100 or more but less than 200; small enterprise: less than 100 employees.

Source: Ministry of Economic Affairs, *Manufacturing Investment and Operation of the Survey Report, Quarter1* (June 2013).

(2) SMEs' overseas production value ratio and reverse import ratio

For SMEs with overseas production bases in 2012, the average overseas production value ratio for medium-sized enterprises and small-sized enterprises were 56.34 percent and 73.05 percent respectively; the average reverse import ratio for medium-sized enterprises and small-sized enterprises were 21.40 percent and 17.87 percent respectively (Figure 2-4-1).

Figure 2-4-1 Ratio of Oversea Production and Reverse Import Ratio in Manufacturing, 2012



Notes and Source: See Table 2-4-1.

2. Challenges Faced by SMEs

(1) The No. 1 challenge faced by overseas operations

Based on the *Manufacturing Investment and Operation of the Survey Report* by the Department of Statistics, Ministry of Economic Affairs, 61.27% of large enterprises' ranked "intensified competition whthin the industry" as the No. 1 challenge faced by overseas operations; 53.42% of medium-sized enterprises' ranked "higher raw material cost" as the No. 1 challenge faced by overseas operations; 54.12% of small-sized enterprises' ranked "decreased domestic demand" as the No. 1 challenge faced by overseas operations (Table 2-4-2).

Table 2-4-2 External Difficulties Faced by the Manufacturing Operation (Multiple Responses), 2013

Unit：%

Item	Total	Large enterprise	Medium-sized enterprise	Small-sized enterprise
Intensified competition within the industry	52.48	61.27	50.72	47.36
Higher raw material cost	50.33	46.45	53.42	51.82
Decreased domestic demand	49.78	43.74	48.45	54.12
Decreased oversea demand	35.81	40.40	39.54	31.62
Rising labour cost	34.92	34.76	31.26	36.22
Variation of exchange rate	27.66	35.49	35.2	20.14
Tax burden	11.02	10.86	10.14	11.42
Law and regulation restriction	8.39	10.65	9.73	6.49
Difficulties in land acquisition	3.63	4.07	3.93	3.24
Other	2.84	3.03	1.45	3.18

Notes:1.The sample size of the survey is 2,921 enterprises, including 958 large enterprises, 483 medium-sized enterprises, and 1480 small enterprises.
2. An enterprise with 200 employees or more is classified as a large enterprise; medium-sized enterprise: employees equal to 100 or more but less than 200; small enterprise: less than 100 employees.

Source: Ministry of Economic Affairs, *Manufacturing Investment and Operation of the Survey Report, Quarter 3* (Dec, 2013)

(2) The No. 1 internal challenge faced by SMEs

Based on the Survey Report, over 63% of enterprises regardless of size, the No. 1 internal challenge faced by them was "difficulty for new business development."

Over 24% % of large enterprises' ranked "insufficient product innovation" and "lack of basic and professional manpower" as the No. 2 and No. 3 internal challenges; 25.05% of medium-sized enterprises' ranked "lack of basic and professional manpower" as the No. 2 internal challenge; 23.24% of small-sized enterprises' ranked "lack of basic and professional manpower" as the No. 2 internal challenge (Table 2-4-3).

Table 2-4-3 Internal Difficulties Faced by the Manufacturing Operation (Multiple Responses), 2013

Unit：%

Item	Total	Large enterprise	Medium-sizes enterprise	Small-sized enterprise
Difficult to develop new business	64.60	65.34	65.42	63.85
Lack of basic and professional manpower	23.79	24.01	25.05	23.24
Insufficient product innovation	21.16	24.63	23.40	18.18
High staff turnover rate	18.32	23.28	19.67	14.66
Unable to grasp the market demand	12.63	12.11	11.59	13.31
Inefficient production operation	9.31	7.83	12.01	9.39
Lack of brand name image and reputation	8.49	9.08	9.11	7.91
Unable to countrol product quality	7.19	6.16	9.11	7.23
Fund dispatching problems	5.96	3.13	5.59	7.91
Other	8.28	7.52	6.83	9.26

Notes and Source: See Table 2-4-2.

(3) Priority list of business activities to be strengthened in the future

Based on the Survey Report, regardless of size, the top 3 business activities to be strengthened in the future were “raise product quality,” “enhance customer satisfaction,” and “lower raw and fishishd products inventory” (Table 2-4-4).

Table 2-4-4 Improved Operations for Manufacturing in the Future (Multiple Responses), 2013

Unit：%

Item	Total	Large enterprise	Medium-sized enterprise	Small-sized enterprise
To raise product quality	70.97	79.33	73.08	64.86
To enhance customer satisfaction	52.35	60.13	51.14	47.70
To lower raw and finished products inventory	50.84	55.22	54.87	46.69
To shorten time between order and delivery	31.53	37.68	31.68	27.50
To improve the company and brand name image	33.48	41.13	39.13	26.69
To improve R&D rate of return	30.47	43.53	37.06	19.86
To strengthen communications between suppliers and contractors	21.81	25.37	22.36	19.32
To speed up commercialization of R&D	27.94	39.35	33.54	18.72
To speed up maintenance	7.29	8.98	7.04	6.28
Other	1.57	1.04	0.83	2.16

Notes and Source: See Table 2-4-2.

3. List of Services Offerd by Manufacturers

(1) Regardless of size, over 50% of manufacturers offered services other than pure manufacturing of products, of which "technical consultation" was on top of the list

Of the surveyed manufacturers, 62% of large enterprises, 55% of medium-sized ones and 51% of the small-sized ones offered services other than pure manufacturing of products. Over 60% of large and medium-sized enterprises as well as 56% of the small-sized ones offered "technical consultation." Higher percentage of large enterprises offered services than that of SMEs (Table 2-4-5).

Table 2-4-5 The Service Offered by Manufacturing Firms Other Than Selling Products(Multiple Responses), 2013

Unit：%

Item	Total	Large enterprise	Medium-sized enterprises	Small-sized enterprises
Manufacturing product only	44.88	38.41	44.51	49.19
Providing service beside manufacturing	55.12	61.59	55.49	50.81
Providing product and technical consultation	59.81	63.99	62.53	56.22
Providing timely production schedule	36.39	39.98	35.40	34.39
Shipping directly to end customers	30.47	36.12	33.54	25.81
Providing support service to downstream wholesaler or sales agents	23.79	30.58	27.74	18.11
Providing timely information of the process yield to customers	21.26	23.59	19.05	20.47
Providing customized one-stop service	20.58	27.14	21.53	16.01
Establishing customer service centers	17.67	28.29	21.74	9.46
Offering technical or maintenance service for other company's products	11.54	13.36	8.49	11.35
Products with monitoring and diagnostic module	9.11	11.38	9.73	7.43
Providing intellectual property, database and ODM	7.50	9.71	8.90	5.61
Providing financing to customers	3.90	3.44	4.35	4.05
Other	12.56	5.74	9.73	17.91

Notes and Source: See Table 2-4-2.

(2) Priority list of services to be strengthened in the future

Based on the Survey Report, regardless of size, the top 3 services to be strengthened in the future were "techinal consultation for products," "customized one-stop service" and "timely update of production schedule." "techincal consultation for products" was on top of the list for SMEs while "customized one-stop service" was on top of the list for large enterprises (Table 2-4-6).

Table 2-4-6 Services to Be Strengthened for Manufacturing Firms (Multiple Responses), 2013

Unit ：%

Item	Total	Large enterprise	Medium-sized enterprises	Small-sized enterprises
Providing product and technical consultation	26.50	25.89	26.09	27.03
Providing customized one-stop service	25.06	30.90	25.05	21.28
Providing timely production schedule	20.27	24.43	19.25	17.91
Providing timely information of the process yield to customers	14.86	18.27	12.22	13.51
Shipping directly to end customers	14.62	14.30	15.94	14.39
Establishing service or repair locations in major markets	13.87	17.64	13.87	11.42
Providing support service to downstream wholesaler or slaes agents	12.19	15.45	10.35	10.68
Establishing customer service centers	10.89	12.00	13.46	9.32
Providing intellectual property, database and ODM	9.35	11.69	10.35	7.50
Products with monitoring and diagnostic module	9.07	10.13	11.80	7.50
Offering tecnical or maintenance service for other company's products	8.52	9.60	6.63	8.45
Providing financing to customers	4.72	4.70	3.93	5.00
Other	27.11	21.40	24.22	31.76

Notes and Source: See Table 2-4-2.

V Business Environment for SME Service Sector

To provide a clear picture of the current state of Taiwan's service sector, this section presents data from the *Commerce Operations Surveys* published in May 2013 by the Department of Statistics, Ministry of Economic Affairs. The response rate was 94.1% as 3,044 enterprises answered the survey of a sample of 3,235 enterprises. The sample included 1,728 wholesalers, 1,106 retailers, and 210 resturants (an SME is an enterprise with less than 100 employees; a large enterprise is an enterprise with no less than 100 employees).

1. 95.33 Percent of Wholesale SMEs Operated as Independent Stores

Based on the Survey, in 2012, 95.33% of wholesale SMEs operated as independent stores; 4.47% of wholesale SMEs operated as franchisor; 0.2% of wholesale SMEs operated as franchisee. 5.87% of wholesale SMEs had overseas investment (Table 2-5-1).

Table 2-5-1 Management Forms of Wholesalers, 2012

Units：Enterprises; %

Item	Total	SMEs	Large enterprises
Sample size	1,728	1,500	228
Management forms	100.00	100.00	100.00
Independent stores	93.17	95.33	78.95
Franchisors	6.60	4.47	20.61
Franchisees	0.23	0.20	0.44
Overseas investment	100.00	100.00	100.00
Yes	8.91	5.87	28.95
No	91.09	94.13	71.05

Note: Standard day of data is the end of April, 2013.
Source: Ministry of Economic Affairs, *Commerce Operations Surveys* (2013).

2. Top 3 Key Success Factors for Wholesalers: "Product Quality and Safety," "Sound and Thoughtful Customer Service" and "Diverse Products to Meet Customer Needs"

Based on the Survey, in 2012, the top 3 key success factors for wholesalers were "product quality and safety," "sound and thoughtful customer service" and "diverse products to meet customer needs."

In terms of size, SMEs rank of key success factors were "product quality and safety" (55.60 percent), "sound and thoughtful customer service" (43.27 percent) and "diverse products to meet customer needs" (30.80 percent). Large enterprises focused more on "sound and thoughtful customer service," "diverse products to meet customer needs," "brand advantage," "marketing," and "diversification." SMEs focused more on "low price strategy" and "cost advantage" (Table 2-5-2).

Table 2-5-2 Key Factors in the Success of Wholesale Operation (Multiple Responses)

Unit：%

Item	Total	SMEs	Large enterprises
Product quality and safety	55.73	55.60	56.58
Sound and thoughtful customer service	44.85	43.27	55.26
Diverse products to meet customer needs	33.16	30.80	48.68
Brand advantage	28.53	26.67	40.79
Low price strategy	15.74	16.87	8.33
Marketing	17.07	16.33	21.93
Cost advantage	11.98	12.40	9.21
Diversification	5.79	5.13	10.09
Other	1.50	1.47	1.75

Note and Source: See Table 2-5-1.

3. Top 3 Challeges for Wholesalers: "Intensified Industrial Competition," "Difficulty to Develop New Markets" and "Large-Scale Competitors"

Based on the Survey, in 2012, top 3 challenges for wholesalers: "intensified industrial competition within the industry," "difficulty to develop new markets" and "large-scale competitors."

In terms of size, large enterprises focused more on "large-scale competitors" than SMEs did (18.9 percent vs. 15.0 percent); SMEs focused more on "difficulty to develop new markets" than large enterprises did (43.3 percent vs. 38.6 percent) (Table 2-5-3).

Table 2-5-3 Operational Difficulties Faced by Wholesalers (Multiple Responses)

Units: %

Item	Total	SMEs	Large enterprises
Intensified industrial competition within the industry	78.18	78.13	78.51
Difficulty to develop new markets	42.71	43.33	38.60
Large-scale competitors	15.51	15.00	18.86
Increased personnel expense	13.66	13.00	17.98
Lack of talent	9.20	9.07	10.09
Fund dispatching problems	7.29	7.87	3.51
Pressure of manufacturing entering	4.28	4.73	1.32
Lack of access to market information	2.66	2.73	2.19
Other	7.23	7.33	6.58

Note and Source: See Table 2-5-1.

4. Top 3 Future Business Strategies for Wholesale SMEs: "Improve Service," "Develop New Markets" and "Maintain Status Quo"

The survey results in 2012 showed that the top 3 future business strategies for wholesale SMEs were "improve service" (40.13 percent), "develop new markets" (38.53 percent) and "maintain status quo" (32.33 percent). The top 3 future business strategies for large wholesalers were "improve service" (55.70 percent), "develop new markets" (43.90 percent) and "expand product lines" (32.33 percent).

SMEs were more likely (32.33 percent) to "maintain status quo" than large firms did (16.23 percent), which suggested that SMEs were adopting a more conservative strategy compared to their larger peers (Table 2-5-4).

Table 2-5-4 Future Management Strategies of Wholesalers (Multiple Responses)

Unit：%

Item	Total	SMEs	Large enterprises
Improve service	42.19	40.13	55.70
Develop new markets	39.24	38.53	43.86
Maintain status quo	30.21	32.33	16.23
Expand product lines	28.76	26.93	40.79
Improve professional staff	23.09	21.73	32.02
Product differentiation or brand name development	16.90	15.80	24.12
Mergers and acqusition or business cooperation	4.11	4.00	4.82
Branch expansion	4.05	3.20	9.65
Overseas investment	2.26	1.87	4.82
Other	1.22	1.27	0.88

Note and Source: See Table 2-5-1.

5. 83 Percent of Retail SMEs Operated as Independent Stores

Based on the Survey results in 2012, 82.72 percent of retail SMEs operated as independent stores; while 61.86 percent of large retailers operated as franchisor. Large retailers much more likely had “overseas investment” than SMEs had (13.02 percent vs. 1.12 percent). Large retailers also much more likely offered “year-round 365 day service” than SMEs did (70.70 percent vs. 37.04 percent) (Table 2-5-5).

Table 2-5-5 Management Forms of Wholesalers in 2012

Unit：%

Item	Total	SMEs	Large enterprises
Sample size	1,106	891	215
Forms	100.00	100.00	100.00
Independent stores	73.24	82.72	33.95
Franchisors	24.41	15.38	61.86
Franchisees	2.35	1.91	4.19
Overseas investment	100.00	100.00	100.00
Yes	3.44	1.12	13.02
No	96.56	98.88	86.98
Days Off	100.00	100.00	100.00
Year-round service	43.58	37.04	70.70
One day per week	18.26	20.88	7.44
Two days per week	27.12	31.09	10.70
One day per month	1.90	2.02	1.40
Other	9.13	8.98	9.77

Note and Source: See Table 2-5-1

6. Top 3 Key Success Factors for Retail SMEs: "Sound and Thoughtful Customer Service," "Diverse Products to Meet Customer Needs" and "Brand Advantage"

Based on the Survey, in 2012, the top 3 key success factors for retail SMEs were "sound and thoughtful customer service," "diverse products to meet customer needs." and "brand advantage." The top 3 key success factors for large retailers were "sound and thoughtful customer service," "diverse products to meet customer needs" and "marketing" (Table 2-5-6).

Table 2-5-6 Key Factors of Successful Wholesales Management (Multiple Responses)

Unit：%

Item	Total	SMEs	Large enterprises
Sound and thoughtful customer service	46.11	41.86	63.72
Diverse products to meet customer needs	41.50	38.27	54.88
Brand advantage	29.84	25.81	46.51
Marketing	29.57	24.80	49.30
Convenient location	25.41	24.24	30.23
Low price strategy	19.44	20.88	13.49
Cost advantage	9.95	10.33	8.37
Diversification	6.60	6.29	7.91
Other	2.62	2.92	1.40

Note and Source: See Table 2-5-1.

7. Top 3 Challenges for Retail SMEs: "Intensified Industrial Competition," "Increased Personnel Expense" and "Large-Scale Competitors"

Based on the Survey, in 2012, top 3 challenges for retail SMEs were "intensified industrial competition within the industry," "increased personnel expense" and "large-scale competitors." "Intensified industrial competition" was the top challenge for over 80 percent of retailers regardless of size (Table 2-5-7).

8. Top 3 Future Business Strateges for Rtail SMEs: "Improve Service," "Maintain Status Quo" and "Improve Professional Staff"

The survey results in 2012 showed that the top 3 future business strategies for retail SMEs were "improve service" (50.06 percent), "maintain status quo" (38.61 percent) and "improve professional staff" (25.59 percent). Large retailers were much more likely to focus on "improve service" (73.49 percent), and "improve professional staff" (46.98 percent) than retail SMEs did.

SMEs were much more likely (38.6 percent) to "maintain status quo" than large firms did (12.09 percent), which suggested that SMEs were adopting a more conservative strategy compared to their larger peers (Table 2-5-8).

Table 2-5-7 Operation Difficulties Faced by Wholesalers (Multiple Responses)

Unit：%

Item	Total	SMEs	Large enterprises
Intensified industrial competition within the industry	81.83	81.59	82.79
Increased personnel expense	25.77	23.12	36.74
Large-scale competitors	21.43	21.77	20.00
Price of operational land or rent is too high	22.51	18.18	40.47
Turnover rate of personnel is too high	12.84	11.56	18.14
Fund dispatching problems	7.59	8.53	3.72
Lack of parking lot	5.70	5.50	6.51
Store is too old and small	4.07	4.26	3.26
Other	7.23	7.30	6.98

Note and Source: See Table 2-5-1.

Table 2-5-8 Future Management Strategy of Wholesalers (Multiple Responses)

Unit：%

Item	Total	SMEs	Large enterprises
Improve service	54.61	50.06	73.49
Maintain status quo	33.45	38.61	12.09
Improve professional staff	29.75	25.59	46.98
Expand product lines	25.50	22.67	37.21
Develop new markets	19.17	19.19	19.07
Product differentiation or brand name development	15.10	12.91	24.19
Branch expansion	14.29	8.64	37.67
Mergers and acqusition or business cooperation	2.44	2.36	2.79
Overseas investment	1.45	1.12	2.79
Other	0.54	0.56	0.47

Note and Source: See Table 2-5-1.

VI SMEs: Innovation, R&D, and E-commerce

Innovation, R&D and fast growing e-commerce are very important for enterprises to remain competitive and profitable, and to develop new markets in ever changing environment. To measure enterprises' innovation and R&D impact, the most commonly used indicator is firms' R&D expenditure. This section will explore the R&D spending of the nation as a whole and of the corporate sector. At the same time, in order to gain a clear understanding of the R&D strategies of SMEs, we will also analyze the original data from the *Manufacturing Investment and Operation of the Survey Report*, the *Commerce Operations Surveys* published by the Department of Statistics, Ministry of Economic Affairs, and other source, to provide a comprehensive picture of the current state of innovation, R&D, and e-commerce of Taiwan enterprises.

1. SMEs: Innovation and R&D Overview

(1) National R&D expenditure increased 4.3 percent in 2012

According to the data presented in the 2013 edition of Taiwan's *Indicators of Science and Technology*, in 2012 total R&D expenditure in Taiwan came to NT$431,296 million, rising 4.3% from 2011. 74.17% of this spending was in the business sector; 14.18% was undertaken by government; 11.34% was in the higher education sector, and just 0.31% was in the nonprofit sector. Only business sector showed growth in 2012. These data reflect the fact that the business sector has always accounted for the largest share of R&D spending in Taiwan (Table 2-6-1).

Table 2-6-1 R&D Expenditure by Sector, 2008-2012

Unit: NT$ millions; %

Sector	2008	2009	2010	2011	2012	Ratio	Growth rate
All sectors	351,405	367,174	394,960	413,293	431,296	100.00	4.36
Business sector	248,363	257,405	282,546	300,358	319,906	74.17	6.51
Public sector	58,928	61,587	63,020	62,546	61,172	14.18	-2.20
Higher education sector	42,905	46,823	47,970	48,978	48,898	11.34	-0.16
Non-profit sector	1,209	1,359	1,424	1,410	1,321	0.31	-6.31

Source: Ministry of Science and Technology, *Indicators of Science and Technology* (2013).

(2) R&D spending in the business sector: SMEs' growth lower than large enterprises

In terms of size, total R&D expenditure by SMEs (defined as enterprises with fewer than 200 employees) had risen for three years in a row from 2008 to 2010, with a growth rate of 17.17% in 2008, 2.05% in 2009 and 4.46% in 2010. It was down 6.19% in 2011, but grew 3.07% in 2012. R&D spending by large enterprises had risen consistently from 2008 to 2012, with a growth rate of 6.68% in 2008, 3.98% in 2009, 10.89% in 2010, 8.78% in 2011, and 7.1% in 2012. The growth rates of R&D expenditure of large firms in recent four years (2009-2012) were significantly higher than the corresponding growth rates of SMEs (Table 2-6-2).

Table 2-6-2 Business Sector R&D Expenditure by Enterprise Size, 2008-2012

Unit: NT$ millions; %

Item	2008	2009	2010	2011	2012	Ratio	Growth rate
Total	248,363	257,405	282,546	300,358	319,906	100.00	6.51
SME sub-total	43,864	44,764	46,759	43,865	45,213	14.13	3.07
0 - 99 employees	23,200	23,600	23,115	23,431	24,725	7.73	5.52
100 - 199 employees	20,664	21,164	23,644	20,434	20,488	6.40	0.26
Large enterprises sub-total	204,498	212,640	235,787	256,493	274,693	85.87	7.10
200 – 499 employees	36,039	35,401	38,530	40,889	45,561	14.24	11.43
500 employees or above	168,459	177,239	197,257	215,604	229,132	71.62	6.27

Source: See Table 2-6-1.

(3) Own R&D: The main source of R&D and innovation in manufacturing industry

Based on *Manufacturing Investment and Operation of the Survey Report*, own R&D was the main source of R&D and innovation in manufacturing industry regardless of size. Large manufacturers have more capital to investment in R&D in multiple ways (Table 2-6-3).

Table 2-6-3 Operation Activities Which Manufacturing Firms Hope to Strengthen in the Future (Multiple Responses)

Unit：%

Item	2013 total	Large enterprises	Medium-sized enterprises	Small-sized enterprises
Own R&D	80.86	88.83	82.19	75.27
Jointly develop technology	15.37	20.88	16.77	11.35
Participating in government subsidized research projects	10.75	21.29	12.22	3.45
Access to technology transfer from headquarter or other subsidiaries	9.59	13.36	10.56	6.82
Purchase technology or patent	9.38	15.24	10.14	5.34
Commissioned research on new technology	8.70	11.27	8.28	7.16
Other	8.18	2.40	5.80	12.70

Notes:1.The sample size of the survey is 2,921 enterprises, including 958 large enterprises, 483 medium-sized enterprises, and 1480 small enterprises.
2. An enterprise with 200 employees or more is classified as a large enterprise; medium-sized enterprise: employees equal to 100 or more but less than 200; small enterprise: less than 100 employees.

Source: Ministry of Economic Affairs, *Manufacturing Investment and Operation of the Survey Report, Quarter 3* (Dec, 2013).

(4) 68.53 percent of medium-sized manufacturers had their own R&D in Taiwan to grow market share or develop new markets

Based on *Manufacturing Investment and Operation of the Survey Report*, own R&D was the main source of R&D and innovation in manufacturing industry regardless of size. Large manufacturers have more capital to investment in R&D in multiple ways. Of the 2,921 surveyed manufacturers, 84.45 percent of large manufacturers had set up their own R&D domestically, significantly high than that of medium-sized manufacturers (68.53 percent) and small-sized manufacturers (31.76 percent).

Among the 1,573 surveyed manufacturers who set up their own R&D domestically, the top 2 motivations were “market share growth or market development” and “products or services expansion” (Table 2-6-4).

Table 2-6-4 Motivations Which Manufacturing Firms Set Domestic R&D Sector (Multiple Responses)

Unit：%

Item	2013 total	Large enterprises	Medium-sized enterprises	Small-sized enterprises
Without R&D sector	44.88	15.55	31.47	68.24
With R&D sector	55.12	84.45	68.53	31.76
Motivations of setting up domestic R&D sector				
Market share growth or market development	61.54	62.84	64.53	56.98
Products or services expansion	55.69	58.10	58.72	49.10
Support local production	49.46	55.49	44.95	41.89
Reduce production cost	48.06	49.88	48.01	44.82
Obtain advanced technology	47.04	54.11	39.76	39.64
Use of high-quality personnel	34.65	41.15	31.19	25.45
Master the technological development of competitors	29.05	30.30	27.22	28.15
Measure of government tax cut or subsidy	16.40	22.94	11.31	8.33
Relatively low wage of R&D personnel or equipment cost	12.71	12.59	9.48	15.32
Abundant technical and scientific resources	12.52	13.84	9.48	12.39
Access to technology transfer from headquarter	8.84	10.60	7.34	6.76
Other	0.51	0.62	0.31	0.45

Notes and Source: See Table 2-6-3.

2. SMEs: E-commerce Overview

(1) SMEs (micro-enterprises in particular): Grew fast in e-commerce and online information

In 2011, 390,670 enterprises in commercial and service industries conducted e-coomerce or offered online information. Among them, 62.77% were micro-enterprises (98.89% of all SMEs), and 1.11% were large enterprises (Table 2-6-5).

Over the course of the 5 year period (2006-2011), no. of enterprises in commercial and service industries who conducted e-commerce or offered online information almost doubled (up 98.96%); no. of enterprises in commercial and service industries who offered online in formation (up 105.11%) or conducted online purchases (up 92.12%) or online sales (up 93.52%) increased substantially; no. of SMEs in commercial and service industries who offered online in formation (up 106.79%) or conducted online purchases (up 92.00%) or online sales (up 93.88%) also increased substantially (Table 2-6-5 and Table 2-6-6).

In 2011, enterprises in commercial and service industries spent 16.69% of total purchase online and generate 17.83% operating revenue from online sales; SMEs in commercial and service industries spent 14.20% of total purchase online and generate 17.62% operating revenue from online sales (Table 2-6-5 and Table 2-6-6).

Table 2-6-5 Overview of Industry, Commerce and Service Census in 2011 (1)

Unit：Enterprises；%

Sector	Business with e-commerce			Business information provided through internet		
	Number	Ratio	Compare to 2006 (%)	Number	Ratio	Compare to 2006 (%)
Total	390,670	100.00	98.96	377,980	100.00	105.11
Large enterprises	4,345	1.11	20.09	4,323	1.14	20.52
Medium-sized enterprises	386,325	98.89	100.44	373,657	98.86	106.79
Small-sized enterprises	245,219	62.77	131.16	235,894	62.41	140.25
Industry sector	97,082	100.00	97.30	93,390	100.00	99.73
Large enterprises	1,617	1.67	24.19	1,613	1.73	24.65
Medium-sized enterprises	95,465	98.33	99.29	91,777	98.27	101.87
Small-sized enterprises	38,425	39.58	155.54	36,300	38.87	158.64
Service sector	293,588	100.00	99.52	284,590	100.00	106.93
Large enterprises	2,728	0.93	17.79	2,710	0.95	18.19
Medium-sized enterprises	290,860	99.07	100.83	281,880	99.05	108.44
Small-sized enterprises	206,794	70.44	127.13	199,594	70.13	137.18

Note：Enterprises use information system to assist the internal management and e-commerce, or the business in e-commerce may fit more than one of the operations—"business information provided through internet", "purchase through internet" and "sale through internet" at the same time, therefore, the sum of each item is bigger than the number of the enterprises at the end of the year.

Source：DGBAS, *2011 Industry, Commerce and Service Census*.

Table 2-6-6 Overview of Industry, Commerce and Service Census in 2011 (2)

Unit：Enterprises；%

Sector	Internet purchase				Internet sales			
	Number	Ratio	Compare to 2006 (%)	Amount as % of operating expense	Number	Ratio	Compare to 2006 (%)	Amount as % of operating income
Total	79,530	100.00	92.12	16.69	70,933	100.00	93.52	17.83
Large enterprises	904	1.14	103.15	17.72	895	1.26	68.55	17.88
Medium-sized enterprises	78,626	98.86	92.00	14.20	70,038	98.74	93.88	17.62
Small-sized enterprises	45,043	56.64	97.64	14.01	43,646	61.53	107.24	19.16
Industry sector	18,637	100.00	100.94	24.30	11,485	100.00	96.09	31.31
Large enterprises	247	1.33	87.12	27.48	196	1.71	108.51	34.05
Medium-sized enterprises	18,390	98.67	101.14	12.78	11,289	98.29	95.89	16.41
Small-sized enterprises	5,817	31.21	104.61	9.84	3,459	30.12	105.28	12.23
Service sector	60,893	100.00	89.57	9.29	59,448	100.00	93.03	7.41
Large enterprises	657	1.08	109.90	5.96	699	1.18	59.95	3.69
Medium-sized enterprises	60,236	98.92	89.37	15.01	58,749	98.82	93.50	18.19
Small-sized enterprises	39,226	64.42	96.64	14.57	40,187	67.60	107.41	19.73

Source: See Table 2-6-5.

(2) Over 90 percent wholesale SMEs didn't use e-commerce due to "products unfit"

Baesd on survey results in 2012, only 9.20% wholesale SMEs conducted online sales, much lower than that of larger wholesalers (21.93%). The top three reasons not to use e-commerce for wholesale SMEs were "products unfit" (43.10%), "most customers don't use e-commerce" (31.35%), and "little help to business expansion" (23.64%). The reasons No. 2 and 3 were more likely addressed by SMEs (Table 2-6-7 and 2-6-8).

Table 2-6-7 Whether Sales through the Electronic Network for Wholesalers, 2012

Unit: Enterprises; %; NT$ millions

Item	Total	SMEs	Large enterprises
Without electronic network transaction	1,540	1,362	178
Ratio	89.12	90.80	78.07
With electronic network transaction	188	138	50
Ratio	10.88	9.20	21.93
Revenue of e-commerce	531,504	353,398	178,106
Ratio of e-commerce accounted for total revenue	5.31	8.17	3.13

Note: Standard day of data is the end of April 2013.
Source: Ministry of Economic Affairs, *Commerce Operations Surveys* (2013).

Table 2-6-8 Reasons for Not Using E-commerce in Wholesales Industry, 2012 (Multiple Responses)

Unit: %

Item	Total	SMEs	Large enterprises
Products unfit	44.16	43.10	52.25
Most customers don't use e-commerce	30.71	31.35	25.84
Little help to business expansion	22.99	23.64	17.98
Not widespread within the industry	19.48	19.60	18.54
Security problems	10.32	10.57	8.43
Lack of personnel with suitable skill	8.31	8.74	5.06
High cost (hardware and software or personnel)	5.45	5.73	3.37
Small business scale	5.00	5.14	3.93
Other	2.14	2.13	2.25

Source: See Table 2-6-7.

CHAPTER 3

Financial and Funding Analysis of SMEs

Financial analysis has a vital role to play in understanding of the current state of Taiwan's SMEs and the outlook for their future development. The first two sections of this chapter presents an overview of the financial status of Taiwan's SMEs as well as ratio analysis, using Business Income Tax Return data for 2012 provided by the Fiscal Information Agency of the Ministry of Finance; there is thus a one-year time lag as compared with the data presented in the other chapters of this White Paper. The third section examines the interaction between SMEs and the banking sector, using survey data from the Central Bank or statistics collected by the Financial Supervisory Commission.

I SMEs: Consolidated Financial Analysis

In this section, consolidated balance sheet and income statement data (where the figures for each account are converted into percentages of total assets for balance sheet and percentages of net operating revenue for income statement) are used to examine the fund utilization, asset allocation and operating performance of SMEs, so as to gain an overall understanding of SMEs' financial and business condition.

1. Asset Allocation Analysis

(1) Current liabilities rose more than current assets while fixed assets investment increased sharply

As can be seen from Table 3-1-1, for SMEs in 2012, the shares of total assets accounted for by current assets and current liabilities rose sharply by 6.62 and 8.63 percentage points respectively. Fixed assets share of total assets also increased sharply by 7.64 percentage points while share of fund and long-term investment dropped significantly by 14.93 percentage points, showing long term commitment to growth while facing headwinds of weak domestic demands, economic structural adjustments in Mainland China and ensuing faltering European recovery after its debt crisis.

For SMEs, cash share of total assets increased by 2.14 percentage points but inventory share was up more by 4.69 percentage points in 2012, likely reflecting slower turnover due to macroeconomic challenges and tepid demand recovery.

(2) Long-term investment dropped significantly

Long-term investments are investments undertaken by an enterprise for financial or operational reasons, where the investments are held over the long term in forms of stocks, bonds, and so on, that

the enterprise does not intend to convert into cash within one year. As can be seen from Table 3-1-1, for large enterprises, the long-term investments share of total assets declined by 19.23 percentage points in 2012 to mere 0.98 percent. For SMEs, the long-term investments share of total assets declined by 14.93 percentage points in 2012 to mere 1.56 percent, combined with substantial increased investment in fixed assets and rise of cash and inventory, indicating guarded optimism in growth and conservatism in liquidity facing challenging environment.

Table 3-1-1 Consolidated Financial Data for Taiwanese Enterprises, 2010-2012

Unit: %

Enterprise size / Year / Item	SMEs			Large enterprises		
	2010	2011	2012	2010	2011	2012
Current assets	48.43	55.80	62.42	58.57	66.50	62.49
Cash	17.64	20.77	22.91	23.66	22.44	14.51
Accounts receivable	11.83	15.74	14.71	26.09	34.38	17.64
Inventories	15.49	16.19	20.80	7.21	8.21	26.48
Advance payments	1.46	1.36	2.26	0.47	0.52	1.65
Other current assets	2.02	1.74	1.73	1.14	0.95	2.22
Funds and long-term investments	27.59	16.49	1.56	23.24	20.21	0.98
Fixed assets	20.75	25.10	32.74	13.91	10.76	32.44
Land and buildings	13.83	16.61	18.04	5.99	5.40	20.21
Machinery	5.69	7.22	12.72	6.82	4.70	10.89
Other fixed assets	1.23	1.28	1.98	1.10	0.67	1.34
Intangible and other assets	3.23	2.61	3.29	4.28	2.53	4.08
Total assets = Liabilities + Net worth	100.00	100.00	100.00	100.00	100.00	100.00
Liabilities	56.47	55.09	63.89	73.83	73.34	72.94
Current liabilities	47.54	47.34	55.97	53.01	64.72	58.53
Short-term loans	12.29	12.66	13.36	35.32	46.03	16.95
Accounts payable	13.44	14.09	15.57	8.48	9.76	21.70
Income received in advance	3.84	4.31	2.40	3.92	4.31	7.11
Other current liabilities	17.96	16.28	24.64	5.29	4.62	12.77
Long-term liabilities	7.39	6.46	6.19	13.04	5.14	10.34
Long-term loans repayable	5.61	6.02	5.28	5.90	3.20	9.71
Other long-term liabilities	1.79	0.45	0.91	7.15	1.95	0.62
Other liabilities	1.54	1.29	1.73	7.77	3.47	4.08
Net worth	43.53	44.91	36.11	26.17	26.66	27.06

Source: Fiscal Information Agency, Ministry of Finance, Business Income Tax Return Data for 2010-2012.

2. Analysis of SME Financial Structure

Examination of the asset allocation of SMEs showed the increased shares in current and fixed assets but significant drop in long-term investment. Looking at the SMEs' debt structure as well can give a more comprehensive picture of the SMEs' overall financial status. In 2012, SMEs' current liabilities ratio and current assets ratio rose sharply to 55.97 percent and 63.89 percent respectively, showing

increased short-term financing burden as current liabilities rose 2 percentage points more than current assets.

(1) Higher share of current liabilities showed short-term financing pressure

As can be seen from Table 3-1-1, in 2012 the SMEs current liability ratio rose sharply by 8.63 percentage points to 55.97 percent, while the large enterprises current liability ratio declined by 6.19 percentage points to 58.53 percent. SMEs was likely to take advantage of current record low short-term financing cost during the period of global monetary easing after financial crisis (as of the end of 2012, one year CD rate in Taiwan was at 1.38 percent) and expect stronger recovery in the future, though high current liability ratio could increase the short-term financing pressure on SMEs.

(2) A slight decline in the long-term liabilities ratio

In 2012, SMEs long-term liabilities ratio declined slightly by 0.27 percentage points to 6.19 percent, while large enterprises long-term liabilities ratio rose sharply by 5.20 percentage points to 10.34 percent. Long-term liabilities represent debt that does not have to be repaid within one year, such as bonds payable and long-term bills payable. Most SMEs are family businesses that lack scale, financial transparency, and management skills. Financial institutions are often reluctant to lend to SMEs, hence low long-term liabilities ratio, reflecting inadequate capitalization. A noticeable change was the sharp increase of long-term liabilities ratio in large enterprises that suggested a much optimistic stance to take advantage of low cost funding (Table 3-1-1).

3. Analysis of SMEs' Profit and Loss

(1) Declining gross margin due to slight rise of operating cost

As regards operating costs share of net revenue, operating costs of both large enterprises and SMEs declined continuously from 2010 to 2011. In 2012 large enterprises' operating cost ratio fell by 1.49 percentage points to 85.99 percent, while SMEs' operating cost ratio rose by 0.39 percentage points to 78.80 percent. As a result, SMEs showed declining gross margin. This disparity suggested that large enterprises had many ways to control operating cost, such as outsourcing and economy of scale (Table 3-1-2).

(2) Rising operating expense ratio

The term "operating expenses" is used to refer to expenditure derived from an enterprise's selling, general & administrative (SG&A) activities, including sales, management, and R&D expenses, and so on. Regardless of size, firms need to constantly think of ways to cut costs and reduce operating expenses.

In 2012, SMEs' operating expenses ratio rose by 3.77 percentage points to 20.57 percent; large enterprises' operating expenses ratio rose by 3.98 percentage points to 11.32 percent. The pronounced disparity between the operating expenses ratio of SMEs and that of large enterprises is mainly due to SMEs' limited scale to reduce average cost and limited bargaining power to lower input cost as well as funding cost. Therefore, SMEs operation results often are highly sensitive to variable costs (Table 3-1-2).

(3) Sharply rising operating expense ratio led to low profitability

In 2012, SMEs' sharply rising operating expense ratio led to significantly lower net operating margin to mere 0.62 percent, down 4.17 percentage points. Large enterprises also suffered elevated operating expense ratio in 2012 (up 3.98 percentage points) and lower net operating margin of 2.69 percent (down 2.50 percentage points) (Table 3-1-2).

Table 3-1-2 Profit and Loss of Taiwanese Enterprises, 2010–2012

Unit: %

Item \ Enterprise size / Year	SMEs			Large enterprises		
	2010	2011	2012	2010	2011	2012
Net operating revenue	100.00	100.00	100.00	100.00	100.00	100.00
Less: Operating costs	80.88	78.41	78.80	89.71	87.48	85.99
Gross operating profit	19.12	21.59	21.20	10.29	12.52	14.01
Less: Operating expenses	16.97	16.80	20.57	6.40	7.34	11.32
Net operating profit	2.14	4.79	0.62	3.89	5.19	2.69
Plus: Non-operating profit	2.51	1.48	0.80	2.10	1.99	0.56
Less: Interest expenses	0.83	0.37	0.41	1.34	1.43	0.27
Less: Other non-operating expenses	0.45	0.37	0.33	0.29	0.23	0.26
Current term profit (loss)	3.37	5.52	0.68	4.35	5.51	2.71

Source: Fiscal Information Agency, Ministry of Finance, Business Income Tax Return Data for 2010-2012.

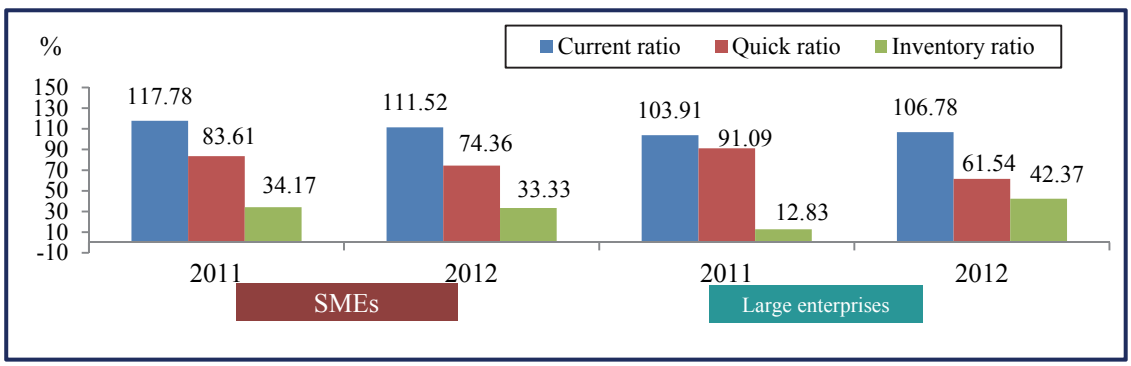
II Analysis of SMEs' Financial Ratios

1. Short-Term Debt Servicing Ability Declined

The current ratio is a measure of enterprises' short-term repayment ability; ideally, a company that is in good financial health should have a current ratio of around 200 percent, indicating that the enterprise has NT$2 of current assets available to repay every NT$1 in current liabilities (exception: companies with superior cash generation capability and / or fast turnover ratios could maintain much lower current ratio, hence superior financial efficiency). The reference value for the quick ratio is 100 percent, indicating that the enterprise has NT$1 of current assets that can be quickly converted to cash at close to their book values to repay every NT$1 in current liabilities.

In 2012, the current ratio, quick ratio, and inventory ratio of SMEs all declined; they stood at 115.52 percent, 74.36 percent, and 33.33 percent respectively. These ratios showed that SMEs short-term repayment ability deteriorated. On the other hand, the current ratio of large enterprises increased 103.91 percent to 106.78 percent with sharp drop of quick ratio offset by sharp rise of inventory ratio (Figure 3-2-1).

Figure 3-2-1 Short-Term Liquidity of Taiwanese Enterprises, 2011 and 2012



Notes:
1. Current ratio = current assets ÷ current liabilities × 100 percent (reference value = 200; ideally, the ratio should be higher than the reference value).
2. Quick ratio = (current assets – inventories) ÷ current liabilities × 100 percent (reference value = 100; ideally, the ratio should be higher than the reference value).
3. Inventory ratio = inventories ÷ current liabilities × 100 percent (reference value = 100; ideally, the ratio should be higher than the reference value).
Source: Fiscal Information Agency, Ministry of Finance, Business Income Tax Return Data for 2011, 2012.

2. SMEs: Declining Long-Term Stability with Rising Debt-to-Net-Worth Ratio

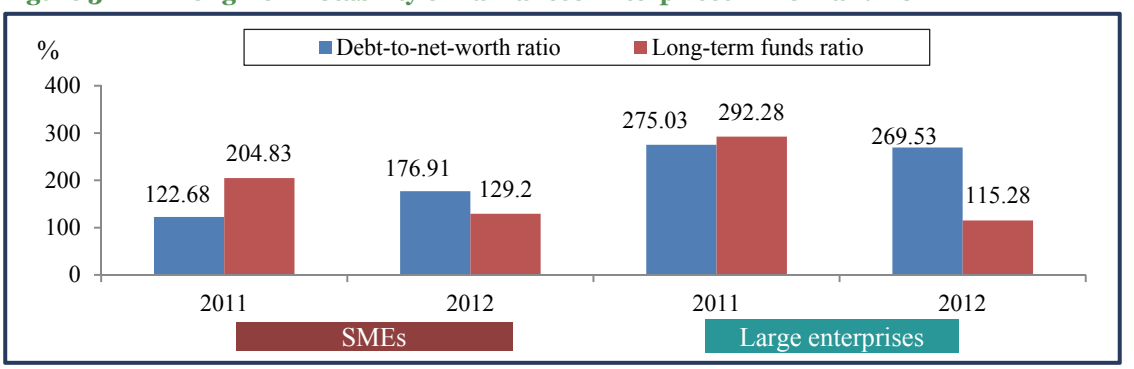
For the debt-to-net-worth ratio, a reference value of 100 percent is normally used, indicating that the enterprise has NT$1 of capital available for every NT$1 of debt. The higher the debt-to-net-worth ratio, the more heavily leveraged the enterprise is.

In 2011, the average debt-to-net-worth ratio of SMEs was 122.68 percent; in 2012 it rose significantly by 54.23 percentage points to 176.91 percent. For large enterprises, the debt-to-net-worth ratio in 2012 fell by 5.50 percentage points to 269.53 percent (Figure 3-2-2).

The fact that the SMEs' debt-to-net-worth ratio was elevated compared to the reference value meant higher credit risk, and potentially declining long-term financial stability. The debt-to-net-worth ratio of large enterprises is far higher than the reference value, indicating that large enterprises are resorting to a high level of financial leverage. In an era of low interest rates, when the economy is starting to pick up again, taking on a reasonable level of leverage through low-interest borrowing can help firms to achieve higher earnings; however, enterprises must be careful not to become over-leveraged, otherwise the firm's financial health may be threatened.

The long-term funds ratio is mainly used to gauge whether a firm's long-term funding operations are appropriate. Ideally, enterprises should rely mainly on long-term funds for their funding of fixed asset purchases. In 2012, the long-term funds ratios of both SMEs and large enterprises fell substantially to 129.2 percent (down 75.63 percentage points) and 115.28 percent (down 117.00 percentage points) respectively. They were much closer to the reference value of 100 percent, which showed declining long-term stability and higher credit risk (Figure 3-2-2).

Figure 3-2-2 Long-Term Stability of Taiwanese Enterprises in 2011 and 2012



Notes: 1. Debt-to-net-worth ratio = debt ÷ net worth × 100% (reference value = 100; ideally, the ratio should be below the reference value).
2. Long-term funds ratio = (equity + long-term debt) ÷ fixed assets × 100% (reference value = 100; ideally, the ratio should be above the reference value).
Source: Fiscal Information Agency, Ministry of Finance, Business Income Tax Return Data for 2011, 2012.

3. SMEs' Operational Efficiency: A Mixed Picture

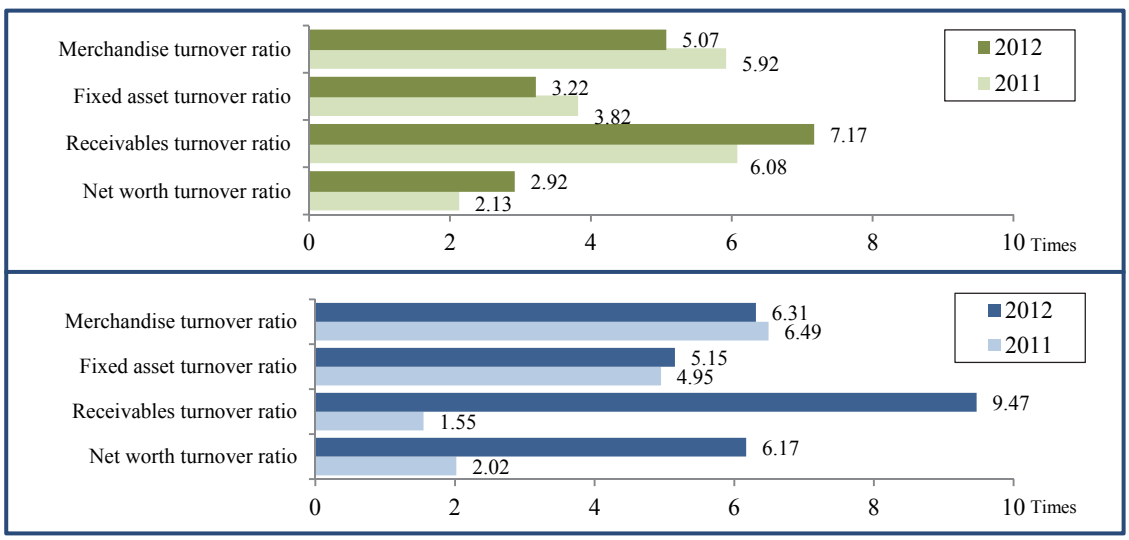
An enterprise's operational efficiency can be gauged by examining its efficient utilization of merchandise, fixed asset, and capital, as well as efficiency of collections. Merchandise turnover is an indicator that can be used to determine whether an enterprise is managing to achieve a reasonable balance between inventory and sales; fixed asset turnover is used to measure the efficiency of utilization of a firm's buildings, machinery, land and other fixed assets; receivables turnover measures the efficiency of a company's collection activities. Net worth turnover denotes the ratio of net sales to net worth; if this figure is too high, it could imply that the enterprise has insufficient capital and is too aggressive; if it is too low, it may indicate that the firm has too much capital, or that its sales revenue is too low. Other things being equal, a company with a high net worth turnover rate is earning a greater rate of income on its net worth than a company with a low turnover rate.

Examination of the data for 2012 shows that receivables turnover for SMEs rose slightly to 7.17 from 6.08 in 2011, while merchandise turnover decreased from 5.92 to 5.07; Receivables turnover for large enterprises rose sharply to 9.47 from 1.55 in 2010, while merchandise turnover also fell slightly from 6.49 to 6.31, suggesting that the SMEs' operating efficiency a mixed picture while that of the large enterprises improved in 2012 (Figure 3-2-3).

Examination of the net worth turnover and fixed asset turnover indicators shows that, for SMEs, fixed asset turnover declined from 3.82 in 2011 to 3.22 in 2012, while net worth turnover rose from 2.13 to 2.92. For large enterprises, fixed asset turnover rose from 4.95 in 2011 to 5.15 in 2012, while net worth turnover rose sharply from 2.02 to 6.17. Both the SMEs' and the large enterprises' fixed asset turnover improved in 2011. It is clear that SMEs performed relatively worse in net worth efficiency (Figure 3-2-3).

To summarize, in face of sluggish recovery of global economy in 2012, the operating abilities of large enterprises improved while SMEs posted a mixed picture. Overall, SMEs performed worse than the large enterprises.

Figure 3-2-3 Operating Capability of Taiwanese Enterprises in 2011 and 2012



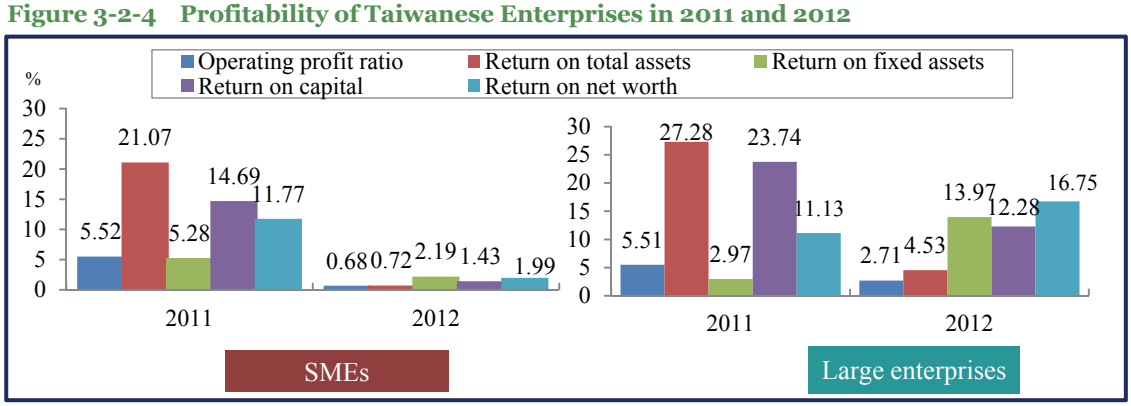
Notes: 1. Net worth turnover ratio = net sales / net worth; 2. Receivables turnover ratio = net sales / receivables.
3. Fixed asset turnover ratio = net sales / fixed assets; 4. Merchandise turnover ratio = net sales / inventories.
Source: Fiscal Information Agency, Ministry of Finance, Business Income Tax Return Data for 2011, 2012.

4. SMEs Showed Worsening Profitability

2012 saw an obvious worsening of SMEs' profitability, reflected in all profitability indicators – including operating profits, the return on total assets, return on fixed assets, return on capital, and return on net worth. Large enterprises didn't perform well but better than SMEs in all indicators, reflecting that slowing down of Mainland China and sharp depreciation of Japanese Yen were still impactful but less so for large enterprises.

Examination of the data for 2012 shows that operating profit margin for SMEs dropped sharply to 0.68 from 5.52 in 2011; return on total assets decreased from 21.07 to 0.72; return on fixed assets decreased from 5.28 to 2.19; return on capital decreased from 14.69 to 1.43; return on net worth decreased from 11.77 to 1.99 (Figure 3-2-4).

Figure 3-2-4 Profitability of Taiwanese Enterprises in 2011 and 2012



Notes: 1. Operating profit ratio = current profit / net operating income; 2.Return on total assets = current profit / total assets; 3. Return on fixed assets = current profit / fixed assets; 4. Return on capital = current profit / net worth; 5. Return on net worth = current profit / net worth.
Source: Fiscal Information Agency, Ministry of Finance, Business Income Tax Return Data for 2011, 2012.

III Financial Institutions and SME Financing

Funding is the lifeline of an enterprise, and this is particularly true for SMEs that typically lack adequate funds. Ready access to funds and efficient fund management are among the keys to the successful operation of SMEs.

The sources of SME finance are from internal organic growth and/or external funding such as private lending, commercial loans, bond or equity financing, and government programs; the channels of finance are direct lending through financial markets (stock and bond) and indirect lending through financial intermediaries, such as banks and finance companies.

1. Diversification of Corporate Funding Sources

The trend towards diversification in financial services has been accompanied by a similar broadening of the funding channels available to business enterprises. However, SMEs and their owners tend to have insufficient knowledge of the range of financing tools that are now available, and in many cases they are unable to provide the comprehensive financial statements needed to secure direct financing. As a result, indirect financing has been growing for SMEs with the help from the government policy measures, while direct financing currently accounts for only a very small percentage of overall SME financing, partly attributable to elevated stock market volatility in global financial crisis and the ensuing European debt crisis.

According to the report *"Survey of the Financial Conditions of Private and Public Enterprises, R.O.C."* compiled by Taiwan's Central Bank, in terms of the structure of their liabilities, large, medium-sized and small enterprises in Taiwan are all heavily reliant on borrowings from financial institutions and commercial credit (such as trading liabilities, mainly accounts payable and unearned receipts), accounting for 87.34 percent and 98.00 percent of the total debt in 2013 for large enterprises and SMEs respectively. Given the increasingly wide range of both direct financing and indirect financing tools that are now available, SMEs need to become more flexible and knowledgeable in their use of funding channels (Table 3-3-1).

2. Continuous Increase in Total Bank Loans to SMEs in 2013

As of the end of 2013, the total outstanding loans of SMEs from ordinary commercial banks in Taiwan (including the Taiwan branches of foreign banks, but excluding overseas loans) came to NT$4,776.74 billion, representing an increase of NT$311.28 billion, up 6.97 percent compared to the end of 2012, significantly higher than the 2.99 percent overall growth rate of outstanding loans to all enterprises from ordinary commercial banks in Taiwan. The share of total loans going to SMEs rose slightly, to 23.00 percent in 2012 from 22.13 percent in 2011 (Figure 3-3-1).

Table 3-3-1 Corporate Liability Structure as of the End of 2013

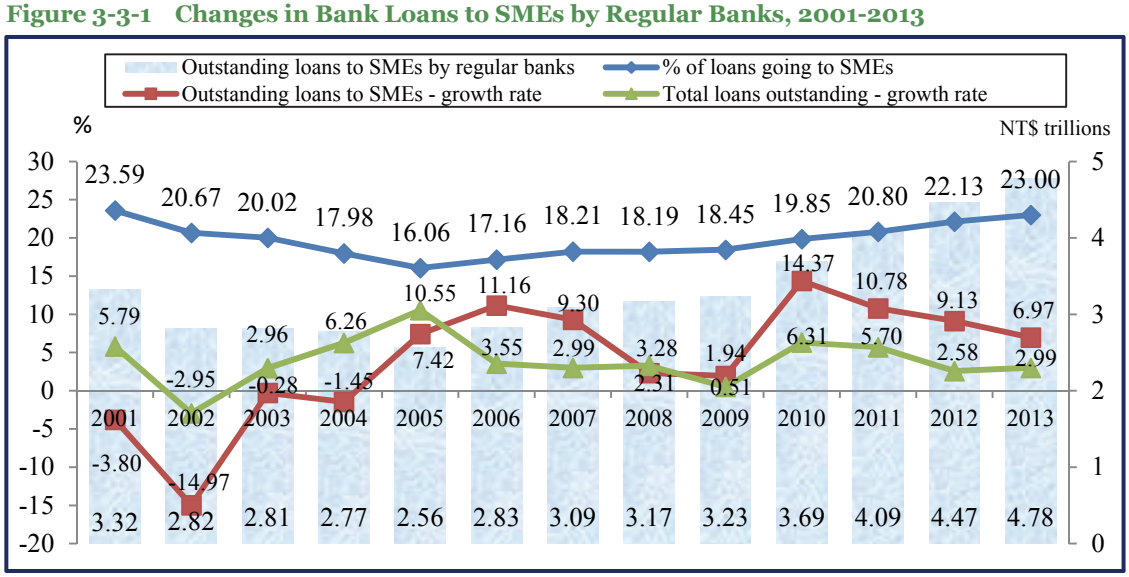
Units: NT$ billions; %

Item	Large enterprises		Medium-sized enterprises		Small-sized enterprises	
	Amount	Share	Amount	Share	Amount	Share
Total liabilities	17,837.7	100.00	3,933.1	100.00	846.5	100.00
Borrowings from financial institutions	7,287.1	40.85	1,902.8	48.38	425.4	50.25
Government loans	6.7	0.04	5.3	0.13	3.9	0.46
Borrowings from firms and individuals	274.7	1.54	32.9	0.84	10.6	1.25
Overseas borrowings	87.5	0.49	8.2	0.21	0.1	0.01
Transactions with repurchase clause	-	-	-	-	-	-
Short-term bills	473.2	2.65	5.9	0.15	1.0	0.12
Domestic corporate bonds	813.1	4.56	-	-	-	-
Overseas securities	134.6	0.75	-	-	-	-
Commercial credit (trading liabilities)	8,292.4	46.49	1,959.8	49.83	404.2	47.75
Provisions and other liabilities	468.4	2.63	18.1	0.46	1.4	0.17

Notes:
1. "-" denotes no data available or data uncertain; "0" is used to denote any figure of less than NT$50 million.
2. Data may not sum to total due to rounding.
3. An enterprise with total asset more than NT$300 million is classified as a large enterprise; a medium-sized enterprise: between NT$25 million and NT$300 million; a small enterprises: less than NT$25 million.

Source: Central Bank, *Survey of the Financial Conditions of Private and Public Enterprises, R.O.C.* (Jan. 2014).

Figure 3-3-1 Changes in Bank Loans to SMEs by Regular Banks, 2001-2013



Note: "Total loans oustanding" was calculated using the following formula: regular banks' outstanding loans to SMEs (including overdue loans) divided by loans to SMEs as a percentage of total loans.

Source: Banking Bureau, Financial Supervisory Commission, Executive Yuan, *Statistics of Banking Business* for consecutive years.

3. State-Run Banks Accounted for the Most of the Loans to SMEs

The top 10 banks with loans outstanding to SMEs are mostly state-run banks, with the market share up to 73.27 percent. The reasons behind the phenomenon are that most state-run banks coordinated with the government policies and the structure for net interest margin adjustments.

In terms of the percentage of total loans going to SMEs in 2013, First Commercial Bank ranked first with 45.23 percent (NT$545.9 billion), up 3.31 percentage points from 2012, followed by Taiwan Cooperative Bank with 29.35 percent (NT$511.2 billion). (Table 3-3-2).

Table 3-3-2 Top 10 Banks by Amount of Loans to SMEs in 2013

Units: NT$ millions; %

Bank	Loans outstanding	Market share	Loans to SMEs as percent of total loans
Total	3,499,478	73.27	-
First Commercial Bank	545,859	11.43	45.23
Taiwan Cooperative Bank	511,218	10.70	29.35
Taiwan Business Bank	391,603	8.20	43.56
Hua Nan Commercial Bank	379,259	7.94	30.29
Mega International Commercial Bank	333,713	6.99	16.01
Bank of Taiwan	330,945	6.93	29.84
Land Bank of Taiwan	324,973	6.80	19.07
Chang Hwa Commercial Bank	310,322	6.50	30.92
E. Sun Commercial Bank	219,041	4.59	29.95
Shanghai Commercial & Savings Bank	152,545	3.19	37.82

Source: Banking Bureau, Financial Supervisory Commission, Executive Yuan, *Statistics of Banking Business* (2014).

4. Private Banks Active in Lending to SMEs

Along with a wave of global monetary easing and the introduction of various government measures of providing preferential loans to SMEs, private banks' SME loans increased substantially in 2013 as showed in Financial Supervisory Commission data. In terms of annual growth rate from 2012 to 2013, the top ten private banks saw SME loans growth between 16.04 percent and 129.48 percent, with loan balances between NT$0.6 billion and NT$219.0 billion (Table 3-3-3).

5. Cost of New Loans Steady in 2013

From June 2010 to July 2011, the Central Bank increases its benchmark discount rate five times from 1.250 percent to 1.875 percent in order to avoid economic overheating and counter rising inflation expectation. It has held the discount rate steady since then. The Central Bank data show that the average interest rate on new loans (weighted averages for the month of December in each year) extended by Taiwan's five largest banks had fallen steadily from 8.26 percent in 1998 to 2.24 percent in 2004. In 2005, the rate rose to 2.31 percent, and in 2008 it climbed further to 2.80 percent. The average interest rate on new loans then fell back to 1.50 percent in 2009 and due to aggressive easing

of the Central Bank amid global financial crisis and recession. The average interest rate on new loans remained steady in 2013 and 2012 at 1.70 percent and 1.62 respectively (Figure 3-3-2).

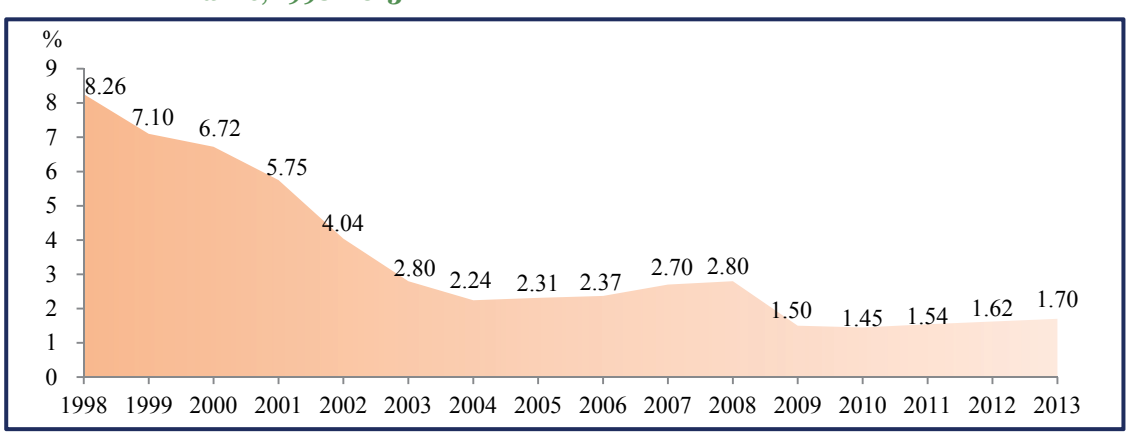
Table 3-3-3 Outstanding Loans to SMEs and Annual Growth Rate by the Private Banks in 2013

Units: NT$ millions; %

Bank	Outstanding loans in 2013	Outstanding loans in 2012	Annual growth rate
China Development Industrial Bank	615	268	129.48
Ta Chong Bank	29,361	16,742	75.37
Industrial Bank of Taiwan	2,886	1,826	58.05
Bank of Taipei	4,497	3,388	32.73
Bank of Panhsin	27,381	21,019	30.27
CTBC Bank	111,758	89,386	25.03
The Export-Import Bank of the R.O.C.	7,361	6,270	17.40
Sunny Bank	62,692	53,604	16.95
King's Town Bank	28,136	24,241	16.07
E. Sun Bank	219,041	188,767	16.04

Source: Banking Bureau, Financial Supervisory Commission, Executive Yuan, the Statistics of Outstanding Loans to SMEs by Domestic Bank.

Figure 3-3-2 The Average Interest Rate on New Loans Extended by Taiwan's Five Largest Banks, 1998–2013



Notes: 1. The interest rates given in the figure are weighted averages for the month of December in each year.
2. Up until October 2008, the five largest banks in Taiwan were the Bank of Taiwan, Taiwan Cooperative Bank, First Commercial Bank, Hua Nan Commercial Bank and Chang Hwa Commercial Bank; from November 2008 onwards the five largest banks were the Bank of Taiwan, Taiwan Cooperative Bank, First Commercial Bank, Hua Nan Commercial Bank and Land Bank of Taiwan.

Source: Central Bank, accessed May 2014, http://www.cbc.gov.tw/ct.asp?xItem=1079&CtNode=528&mp=1.

CHAPTER 4

SME Human Resources

This chapter examines (1) SME human resources utilization, (2) working conditions, and (3) talent development in 2013. An SME is defined as an enterprise with less than 200 paid employees in Mining and Quarrying, Manufacturing, and Construction industries, or an enterprise with less than 100 paid employees in other industries.

I Labor Utilization by SMEs

In 2013, Taiwan GDP grew 2.09 percent. The workforce in Taiwan totaled 11,445,000 people, including 10,967,000 employed persons (including employers, own-account workers, paid employees and unpaid family workers) and 478,000 unemployed persons; the labor participation rate was 58.43 percent, and the unemployment rate averaged 4.18 percent over the course of the year. Due to the recovery of the global economy, the workforce increased by 104,000 and the number of employed persons rose by 107,000. The following section examines SME labor utilization in 2013.

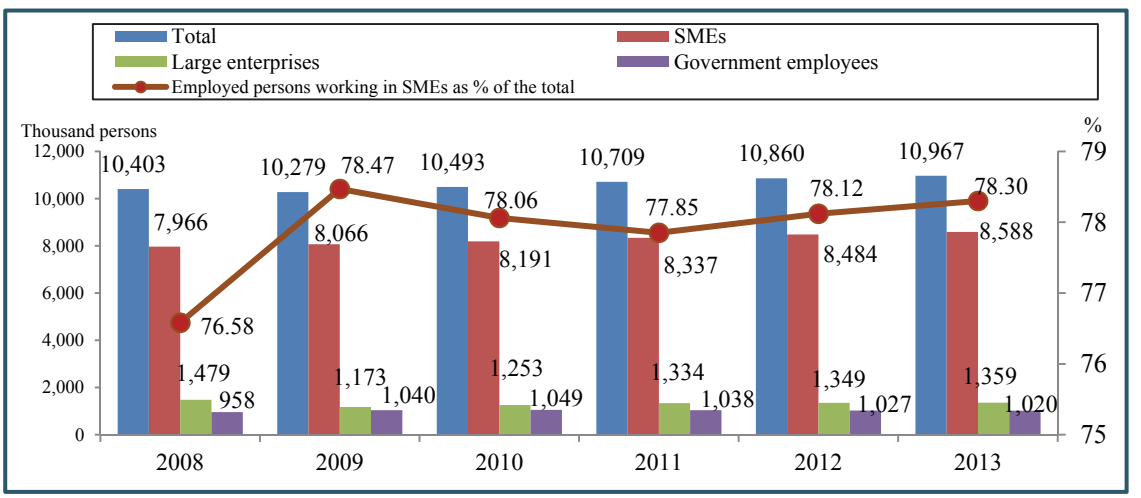
1. The SME Sector Provided Labor Market Stability

In 2013 the number of employed persons working in SMEs in Taiwan totaled 8,588,000, which was 104,000 higher from 2012, up 1.22 percent and accounted for 78.30 percent of all employed persons in Taiwan; large enterprises employed 1,359,000 persons and accounted for 12.39 percent, up 0.76 percent and the government employed 1,020,000 persons and accounted for 9.30 percent, down 0.65 percent (Figure 4-1-1).

SMEs have functioned as a stabilizing force in labor market. In 2009, the total number of employed persons in Taiwan decreased by 1.19 percent after the global financial crisis; while number of employed persons in large enterprises fell 20.69 percent, SMEs still managed to hire 1.26 percent more persons. From 2010 to 2013 SMEs continued to hire more amid multiple challenges from tough business environment, showing consistent growth at 1.55 percent (or 125,000 in 2010), 1.78 percent (or 146,000 in 2011), 1.76 percent (147,000 in 2012), and 1.22 percent (or 104,000 in 2013) (Figure 4-1-1).

In terms of industries, the number of employed persons working in SMEs in the Manufacturing sector in 2013 stood at 2,195,000, accounting for 25.56 percent of all SME employees. The Wholesale and Retail Trade industry had the second largest number of employed persons working in SMEs, or 1,745,000 (20.32 percent), followed by the Construction industry, with 843,000 employees (9.82 percent) (Figure 4-1-2).

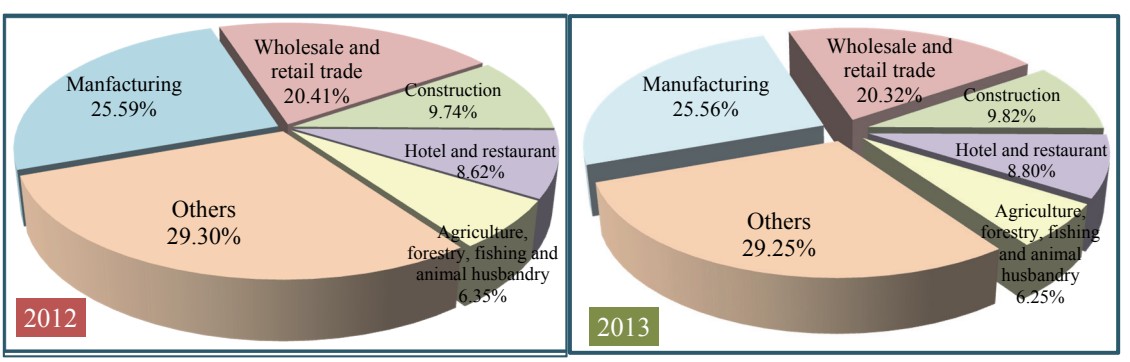
Figure 4-1-1 No. of Employed Persons in Taiwan, 2008-2013



Note: An SME is defined as an enterprise with less than 200 paid employees in Mining and Quarrying, Manufacturing, and Construction industries, or an enterprise with less than 100 paid employees in other industries.

Source: DGBAS, Raw Data from *Monthly Bulletin of Manpower Statistics*.

Figure 4-1-2 Top Five Industry Shares of Employed Persons Working in SMEs, 2012 and 2013

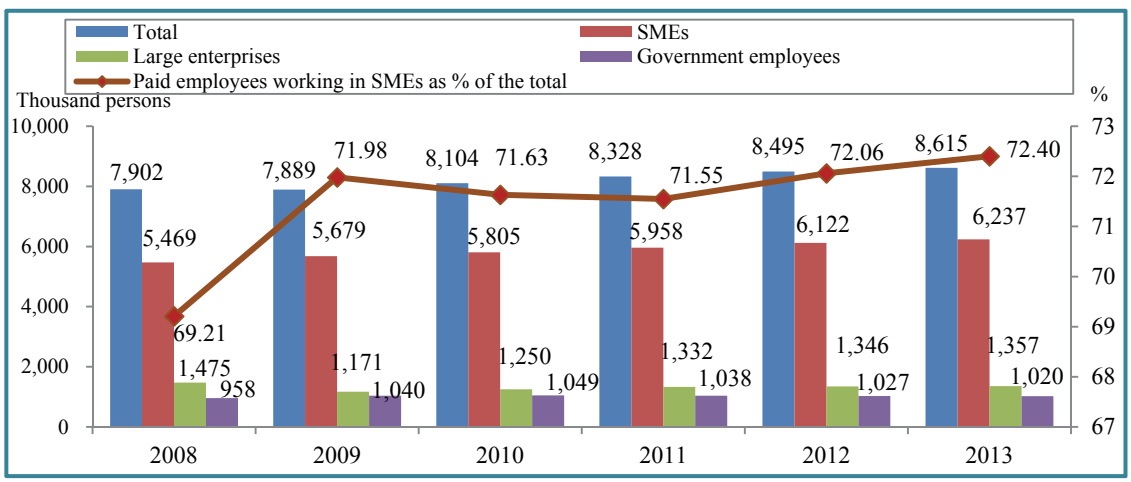


Notes and Source: See Figure 4-1-1.

2. A Total of 6,237,000 Paid Employees Working for SMEs in 2013

The total number of paid employees in Taiwan averaged 8,615,000 in 2013 (including government employees and private company employees), representing an increase of 1.41 percent compared to 2012; of the total paid employees, 6,237,000 or 72.40 percent were working in SMEs, up 1.89 percent compared to 2012; paid employees working in government was down 0.70 percent (Figure 4-1-3).

Figure 4-1-3 Number of Paid Employees in Taiwan, 2008-2013

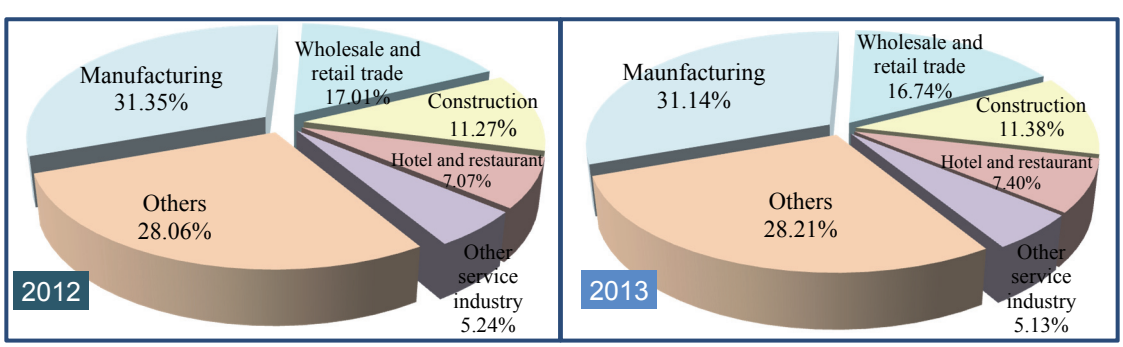


Notes and Source: See Figure 4-1-1.

From 2010, paid employees working in SMEs or large enterprises grew consistently while paid employees working in government continued to decline. From 2011, share of paid employees working in SMEs also showed an upward trend.

In terms of industry distribution, paid employees showed the same pattern as employed persons. The number of paid employees working in SMEs in the Manufacturing sector in 2013 stood at 1,942,000, accounting for 31.14 percent of all SME paid employees. The Wholesale and Retail Trade industry had the second largest number of employed persons working in SMEs, or 1,044,000 (16.74 percent), followed by the Construction industry, with 710,000 employees (11.38 percent) (Figure 4-1-4).

Figure 4-1-4 Top Five Industry Shares of Paid Employees Working in SMEs, 2012 and 2013

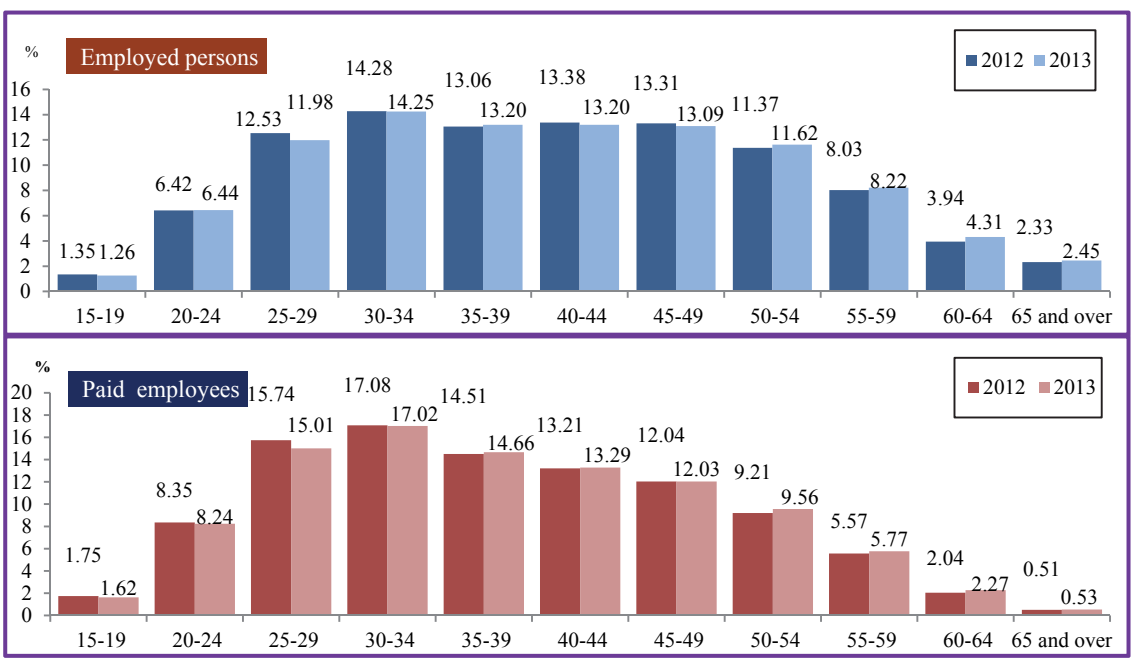


Notes and Source: See Figure 4-1-1.

3. The Share of SMEs' Manpower with College Education Increased Gradually

In 2013, the proportion of employed persons working in SMEs was highest at 14.25 percent in between the ages of 30 and 34, followed by those between 35 and 39 and those between 40 and 44; the proportion of paid employees working in SMEs was highest at 17.02 percent between the ages of 30 and 34, followed by those between 25 and 29, those between 35 and 39, and afterwards; the more aged group, the lower the proportion (Figure 4-1-5).

Figure 4-1-5 Age Structure of Employed Persons and Paid Employees Working in SMEs in 2012 and 2013

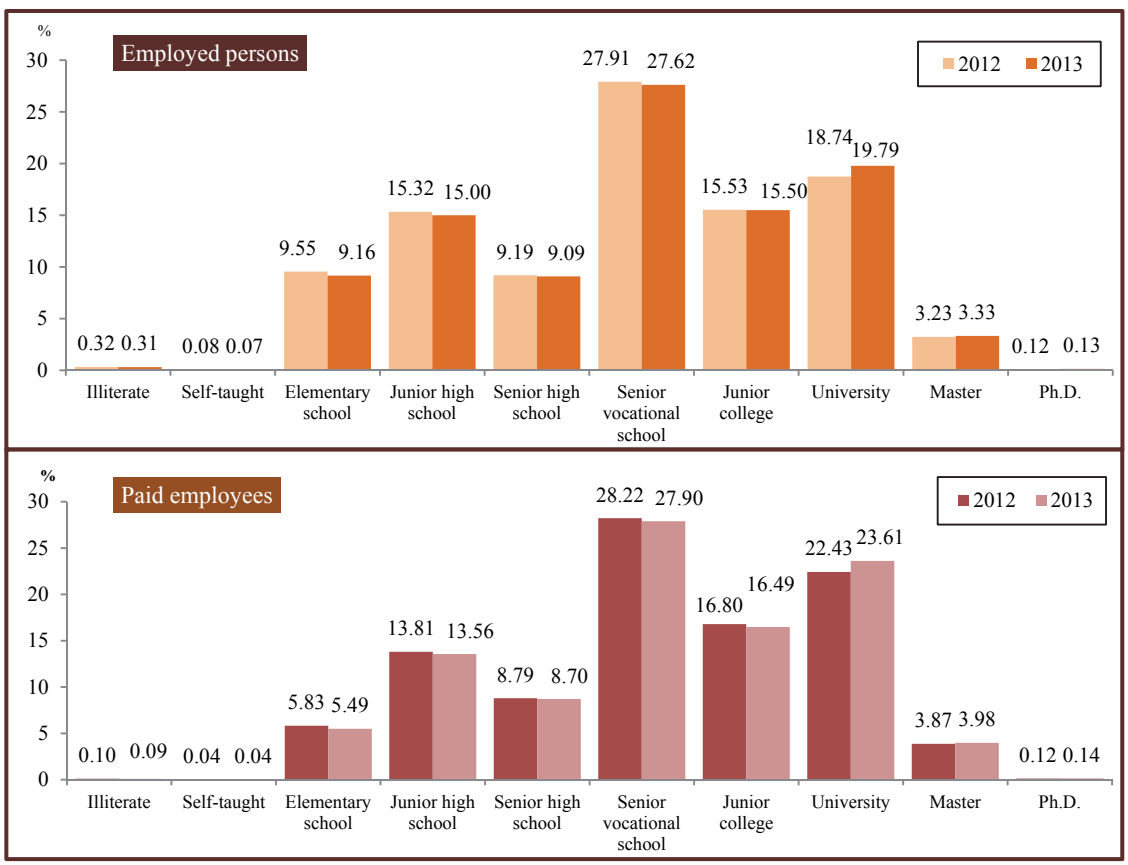


Notes and Source: See Figure 4-1-1.

The male/female ratio of employed persons (57 percent) or paid employees (54 percent) in SMEs was greater than one, which shows that employment continues to be male-oriented.

As can be seen from the educational structure, the highest proportion of employed persons (or paid persons) working in SMEs consisted of those with a vocational education in 2013 at 27.62 percent (or 27.90 percent of paid persons). The share of those with a college education gradually increased and was consistent with Taiwan's higher education expansion policy. The share of employed (paid) employees working in SMEs with a university education in 2013 was 19.79 percent (or 23.61 percent of paid persons) (Figures 4-1-6).

Figure 4-1-6 Educational Structure of Employed Persons and Paid Employees Working in SMEs in 2012 and 2013



Notes and Source: See Figure 4-1-1.

4. The Number of SME Employers Down by over 7 Thousand in 2013

There were around 467,000 SME employers in Taiwan in 2013, and approximately 1,500 large enterprise employers. The number of SME employers declined by 7,000 or 1.57 percent in 2013 while the number of large enterprise employers decreased by 300 or 16.39 percent. The age structures of SME employers showed that they were younger than large enterprise employers, and the educational structure distribution was broader, with only 22 percent having university or higher education vs. over 52 percent of large enterprise employers (Table 4-1-1).

Table 4-1-1 Characteristics of Employers in 2012 and 2013

Units: Thousand persons; %

Item \ Year	2012		2013	
	SMEs	Large enterprises	SMEs	Large enterprises
No. of persons	474.03	1.83	466.60	1.53
Share	99.61	0.39	99.67	0.33
Age	100.00	100.00	100.00	100.00
15 – 19	0.03	-	-	-
20 – 24	0.32	-	0.22	-
25 – 29	2.05	-	1.91	-
30 – 34	5.87	4.38	5.54	-
35 – 39	9.73	1.92	10.38	3.94
40 – 44	16.44	19.20	15.05	23.67
45 – 49	19.52	17.05	18.29	11.70
50 – 54	19.92	25.36	20.13	22.27
55 – 59	15.24	4.98	15.44	5.05
60 – 64	7.39	12.55	8.94	16.14
65 and over	3.50	14.57	4.11	17.23
Sex	100.00	100.00	100.00	100.00
Male	80.70	74.92	80.57	73.27
Female	19.30	25.08	19.43	26.73
Education	100.00	100.00	100.00	100.00
Illiterate	0.05	-	0.02	-
Self-taught	0.02	-	0.02	-
Elementary school	7.68	-	8.24	-
Junior high school	14.60	15.97	14.60	7.40
Senior high school	9.81	7.75	10.02	5.25
Senior vocational school	27.16	-	26.45	0.89
Junior college	19.44	25.79	18.97	34.21
University	16.83	29.42	16.85	31.88
Master	4.05	16.42	4.38	20.37
Ph.D.	0.36	4.66	0.44	-

Note: "-" denotes no available data.

Other Notes and Source: See Figure 4-1-1.

5. A Decline in the Number of Self-Employed Persons

The self-employed either work alone or as part of a partnership, but they do not have any paid employees. Self-employed persons can thus all be classed as SMEs. The number of self-employed persons in Taiwan peaked in 1991-1992 at around 1,572,000, and then declined consistently, dropping to 1,317,000 in 2012. As can be seen from the age structure, the shares of self-employed in the 50-54 age group was about 17.34 percent in 2013, followed by the 45-49 age group (16.13 percent) and the 55-59 age group (15.89 percent) (Table 4-1-2).

Table 4-1-2 Characteristics of Self-Employed Persons in 2012 and 2013

Units: Thousand persons; %

Item \ Year	2011	2012
No. of persons	1,319	1,317
Age	100.00	100.00
15 – 19	0.06	0.04
20 – 24	0.55	0.82
25 – 29	2.86	2.48
30 – 34	5.61	5.48
35 – 39	8.26	8.09
40 – 44	13.37	12.57
45 – 49	16.46	16.13
50 – 54	17.56	17.34
55 – 59	15.48	15.89
60 – 64	10.67	11.44
65 and over	9.13	9.71
Sex	100.00	100.00
Male	74.59	74.81
Female	25.41	25.19
Education	100.00	100.00
Illiterate	1.03	0.98
Self-taught	0.24	0.19
Elementary school	23.97	23.63
Junior high school	21.87	21.65
Senior high school	10.33	10.17
Senior vocational school	24.94	24.68
Junior college	10.16	11.02
University	6.39	6.63
Master	1.01	0.99
Ph.D.	0.05	0.05

Source: DGBAS, 2012-2013 Raw Data from *Monthly Bulletin of Manpower Statistics*.

6. Number of Unemployed Persons Previously Working for SMEs Fell in 2013

In 2013, the number of unemployed persons in Taiwan fell by approximately 2,600 and the unemployment rate fell to 4.18 percent from 4.24 percent in 2012. Apart from the first time job-seekers, the number of unemployed persons who had previously been working for SMEs fell 1.18 percent to 314,000 in 2013 from 318,000 in 2012; the number of unemployed who had previously been working for large enterprises declined 0.14 percent while the number of unemployed who had previously been working for government declined 24.11 percent, likely related to government reform and reorganization (Table 4-1-3).

Table 4-1-3 Characteristics of the Unemployed in 2012 and 2013

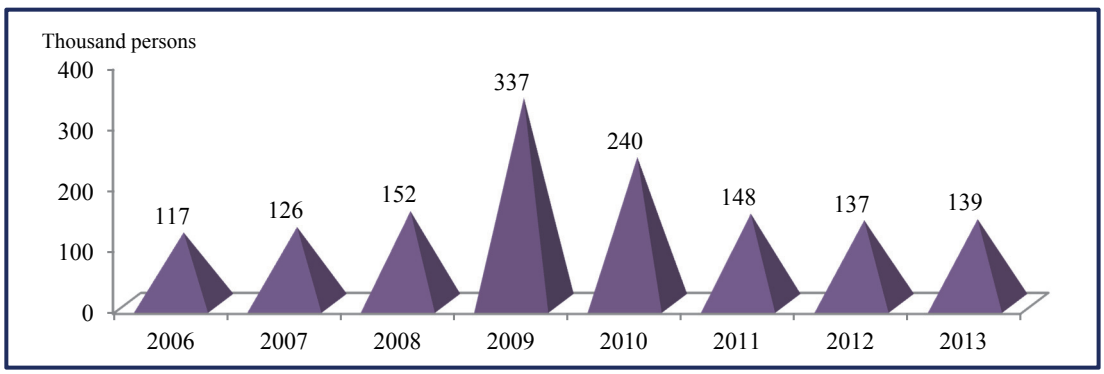
Units: Thousand persons; %

Item \ Year	2011				2012			
	SMEs	Large enterprises	Government employees	First time job-seekers	SMEs	Large enterprises	Government employees	First time job-seekers
No. of persons	318.04	35.19	22.02	105.35	314.29	35.14	16.71	111.87
Share	66.18	7.32	4.58	21.92	65.75	7.35	3.50	23.40
Age	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
15 – 19	2.01	0.43	0.20	6.34	1.53	1.08	0.45	6.34
20 – 24	11.18	13.28	5.73	55.33	12.13	11.68	10.35	55.67
25 – 29	18.92	28.13	26.80	30.17	19.14	23.10	21.93	29.42
30 – 34	18.16	20.65	15.48	5.76	17.58	22.15	17.41	5.81
35 – 39	13.76	11.74	8.84	1.71	13.85	14.34	12.82	1.83
40 – 44	11.11	10.84	11.16	0.40	10.42	8.53	10.29	0.46
45 – 49	10.32	6.80	9.66	0.20	10.39	10.72	8.18	0.19
50 – 54	7.76	5.14	10.38	0.03	7.97	5.33	7.80	0.17
55 – 59	4.93	1.95	7.71	0.05	5.45	1.18	7.07	0.04
60 – 64	1.75	0.99	3.78	-	1.46	1.70	3.65	0.06
65 and over	0.09	0.04	0.26	-	0.08	0.19	0.04	0.00
Sex	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Male	62.39	58.44	49.52	53.07	62.97	62.57	44.83	52.52
Female	37.61	41.56	50.48	46.93	37.03	37.43	55.17	47.48
Education	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Illiterate	0.03	-	-	0.01	0.02	-	-	-
Self-taught	0.01	0.02	-	-	0.01	-	-	-
Elementary school	5.82	1.24	7.95	0.17	5.79	1.76	6.68	-
Junior high school	16.97	4.75	9.44	3.86	17.63	4.37	6.14	3.10
Senior high school	10.10	5.50	6.37	6.53	10.07	5.20	5.30	5.37
Senior vocational school	29.43	25.87	18.65	12.25	28.52	26.01	18.7	13.15
Junior college	13.68	19.81	11.55	6.16	13.35	17.21	17.69	6.34
University	21.69	33.41	36.28	59.24	22.44	35.43	36.80	60.24
Master	2.23	8.98	9.51	11.69	2.13	9.88	8.68	11.63
Ph.D.	0.05	0.42	0.25	0.09	0.04	0.14	0.01	0.18

Note: The enterprise size in the table is the size of last company the unemployed worked in.Other Notes and Source: See Figure 4-1-1.

In terms of age distribution of unemployed persons, most were in age 25-34 group (except first time job-seekers, most unemployed were in age 20-24 group), showing serious youth unemployment problem. In terms of the reasons for leaving the previous jobs, “The Dissatisfaction with Previous Jobs” was the No. 1 reason for leaving SMEs (43.97 percent) or large enterprises (54.42 percent). However, the No. 1 reason for leaving government was “End of Seasonal or Temporary Jobs” (56.83 percent). The number of unemployed due to the layoffs or employers going out of business rose slightly to 139,000, from 137,000 in 2012 (Figure 4-1-7).

Figure 4-1-7 Number of Paid Employees Becoming Unemployed Because of Layoffs or Factory Closures, 2006-2013



Source: DGBAS, Raw Data from *Monthly Bulletin of Manpower Statistics*.

7. 60 Percent Foreign Laborers Worked in SMEs

2013 saw a continuous increase in both the number of applications to employ foreign laborers and the number of foreign laborers actually working in Taiwan. The number of approvals rose to 307,278, up 46,970 from 2012, while the number of foreign laborers actually working in Taiwan increased to 269,131, up 35,559.

Regardless of the size of enterprises that employ foreign laborers, both the number of applications to employ foreign laborers and the number of foreign laborers actually working in Taiwan rose in 2013. The number of foreign laborer approvals rose 17.04 percent for SMEs and 19.58 percent for large enterprises. Similarly, the number of foreign laborers actually in Taiwan and working for SMEs rose 20,158 (up 14.48 percent) in 2013, while the number of foreign laborers in Taiwan and working for large enterprises rose by 15,401 (up 16.31 percent). About 60 percent of all foreign labors working in Taiwan worked for SMEs. The result might be due to the adjustment of the domestic allowance allocation policy starting in 2009 which enabled SMEs to hire foreign laborers more easily (Table 4-1-4).

8. Temporary and Contract Workers Increased in SMEs

According to the data presented in the 2013 *The Manpower Utilization Survey*, there was an increase of 67,000 full-time workers in SMEs, and an increase of 29,000 in large enterprises. The part-time workers in SMEs also rose sharply by 21,000 to 374,000, while in large enterprises the part-time manpower declined by 8,000. Overall, the share of part-time workers was at around 5 percent in SMEs but only around 1 percent in large enterprises or government.

The utilization of part-time workers is most common in the SMEs in service sector, especially in the Wholesale and Retail Trade industry, followed by the Hotel and Restaurant industry.

9. A Slight Increase in the Number of SME Employees Changing Jobs

In 2013, a total of 509,000 SME employees changed jobs; this figure was up about 2,000 from 2012. The rate of those taking up a position with another SME was the highest at 89 percent. Only 11

percent took a job in the government or a large enterprise. The figure suggests that it is not easy for former SME employees to find jobs in large enterprises or public sector (Table 4-1-5).

Table 4-1-4 Number of Foreign Workers Introduced by Enterprises, 2006-2013

Unit: Persons; %

Size / Year	Valid approved number			Number in Taiwan		
	Total	SMEs	Large enterprises	Total	SMEs	Large enterprises
2006	206,385	93,507(45.31)	112,878(54.69)	181,648	79,388(43.70)	102,260(56.30)
2007	211,821	100,064(47.24)	111,757(52.76)	191,923	90,632(47.22)	101,291(52.78)
2008	220,696	113,530(51.44)	107,166(48.56)	191,768	100,496(52.40)	91,272(47.60)
2009	188,185	104,502(55.53)	83,683(44.47)	169,621	95,623(56.37)	73,998(43.63)
2010	208,600	114,959(55.11)	93,641(44.89)	185,800	102,605(55.22)	83,195(44.78)
2011	250,498	142,639(56.94)	107,859(43.06)	219,136	123,412(56.32)	95,724(43.68)
2012	260,308	157,221(60.40)	103,087(39.60)	233,572	139,176(59.59)	94,396(40,41)
2013	307,278	184,008(59.88)	123,270(40.12)	269,131	159,334(59.20)	109,797(40.80)

Note: An SME is defined as an enterprise with less than 200 paid employees in Mining and Quarrying, Manufacturing, and Construction industries, or an enterprise with less than 100 paid employees in other industries.

Source: Workforce Development Agency, Ministry of Labor.

Table 4-1-5 Choice of New Employer by Former SME Employees, 2006-2013

Units: Thousand persons; %

Year	Total	Going to work for another SME		Going to work for a large enterprise		Going to work for a government agency	
		No. of persons	Share	No. of persons	Share	No. of persons	Share
2006	428	367	85.79	48	11.27	13	2.95
2007	439	390	88.65	38	8.62	12	2.73
2008	474	413	87.13	46	9.70	15	3.16
2009	518	472	91.14	24	4.69	22	4.17
2010	536	471	87.80	42	7.82	23	4.38
2011	532	461	86.75	48	9.03	22	4.22
2012	507	444	87.60	46	8.98	17	3.42
2013	509	453	88.99	38	7.38	18	3.63

Note: Enterprises in industries other than Mining and Quarrying, Manufacturing and Construction that have less than 200 paid employees are classified as SMEs.

Source: DGBAS, *The Manpower Utilization Survey*.

II Labor Conditions in SMEs

1. SMEs in Hotel and Restaurant Industry Had the Longest Average Working Hours

In 2013, for SMEs, the Hotel and Restaurant industry had the longest average working hours at 46.76 hours per week (and employed 752,000 persons , accounting for 8.80 percent of all employed persons in SMEs), followed by Other Service industries at 46.69 hours per week (and employed 532,000 persons, accounting for 6.23 percent of all employed persons in SMEs), and Real Estate at 46.52 hours per week (and employed 88,000 persons, accounting for 1.03 percent of all employed persons in SMEs), the Education Service had the shortest average working hours at 39.29 hours per week (and employed 228,000 persons, accounting for 2.67 percent of all employed persons in SMEs) (Table 4-2-1).

Table 4-2-1 Working Hours per Week and the Number of Employed Worker in 2013 by Size of Enterprise

Unit: Thousand persons; hours per week

Item / Industry	No. of employed worker			Weekly working hours		
	SMEs	Large enterprises	Government employees	SMEs	Large enterprises	Government employees
Agriculture, Forestry, Fishing and Animal Husbandry	532.45	1.38	5.27	40.03	43.26	40.65
Mining and Quarrying	3.39	-	0.58	43.74	-	40.71
Manufacturing	2,185.75	764.42	24.62	42.94	43.70	40.85
Electricity and Gas Supply	3.41	2.81	22.67	44.97	41.83	41.36
Water Supply and Remediation Services	36.59	2.31	44.53	42.96	41.49	41.75
Construction	837.07	9.54	7.75	40.56	43.91	40.93
Wholesale and Retail Trade	1,739.59	63.16	8.30	46.03	43.67	40.87
Transportation and Storage	307.98	62.50	51.78	46.14	44.81	41.66
Hotel and Restaurant	751.81	18.89	0.51	46.76	44.83	40.93
Information and Communication	164.49	67.47	0.57	42.66	43.35	40.22
Finance and Insurance	318.74	85.49	16.29	42.29	43.08	41.72
Real Estate	87.92	2.18	1.20	46.52	43.41	41.73
Professional, Scientific and Technical Services	277.12	43.79	24.44	42.69	42.88	40.34
Supporting Services	240.38	20.83	0.57	45.23	48.48	40.80
Public Administration and Defense; Compulsory Social Security	0.88	0.07	380.81	40.32	48.00	43.01
Educational	228.48	62.90	292.98	39.29	38.03	38.60
Human Health and Social Work Services	221.39	126.99	76.78	43.67	45.35	43.36
Arts, Entertainment and Recreation	74.19	6.12	15.50	45.48	45.76	40.65
Other Services	532.48	5.31	2.36	46.69	44.18	41.64

Notes：1. Employed persons with non-zero main working hours are classified as employed workers. Hence the figure of the sum of employed workers in each industry is different from the number of employed persons in SMEs as noted in Figure 4-1-1. 2.”-“ denotes no available data.

Source: DGBAS, Raw Data from *Monthly Bulletin of Manpower Statistics*.

2. The Highest Average Salary Level for SME Employees Was in the Electricity and Gas Supply Industry

In 2013, most of the SME employees had a lower average salary or only slight increase from 2012. However the highest average salary level for SME employees was in the Electricity and Gas Supply industry at NT$49,000 per month (0.03 percent of all SMEs' paid persons), up about NT$5,000 per month from 2012, followed by Professional, Scientific and Technical Services at NT$47,000 per month (3.18 percent of all SMEs' paid persons), and Finance and Insurance at NT$44,000 per month (3.96 percent of all SMEs' paid persons). The lowest average salary level for SME employees was in the Agriculture, Forestry, Fishing and Animal Husbandry at NT$21,000 per month (5.16 percent of all SMEs' paid persons) (Table 4-2-2).

Table 4-2-2 Number of Paid Employed Persons and Average Wage of Main Work in 2013 by Size of Enterprise

Unit: Thousand persons; NT$; thousands per month

Item / Industry	No. of paid employed persons			Average wage of main work			
	SMEs	Large enterprises	Government employees	Total	SMEs	Large enterprises	Government employees
Agriculture, Forestry, Fishing and Animal Husbandry	413.32	0.73	2.98	21.47	21.37	17.41	37.23
Mining and Quarrying	3.53	-	0.59	37.56	33.83	-	60.01
Manufacturing	2,126.28	772.52	23.16	35.33	33.90	38.85	49.08
Electricity and Gas Supply	2.20	1.50	25.53	56.04	48.90	46.03	57.25
Water Supply and Remediation Services	35.38	4.74	43.04	34.56	31.09	31.55	37.74
Construction	810.67	7.65	7.97	36.07	35.69	68.46	43.57
Wholesale and Retail Trade	1,566.63	59.27	7.68	34.13	33.81	41.18	45.57
Transportation and Storage	303.77	60.73	48.51	40.00	36.20	55.20	44.77
Hotel and Restaurant	656.38	18.90	0.19	28.88	28.61	38.29	23.15
Information and Communication	159.49	70.07	0.53	45.94	41.86	55.31	35.75
Finance and Insurance	316.69	92.03	15.38	45.47	43.77	48.92	59.92
Real Estate	87.95	1.31	1.25	37.94	37.48	72.24	34.21
Professional, Scientific and Technical Services	254.24	54.01	25.58	48.95	46.59	54.40	60.94
Supporting Services	241.07	16.44	0.33	28.33	27.94	34.45	13.00
Public Administration and Defense; Compulsory Social Security	1.08	-	382.00	47.79	36.57	-	47.82
Educational	227.07	58.23	342.74	45.82	34.30	55.51	51.81
Human Health and Social Work Services	231.88	111.28	76.36	45.56	42.75	46.05	53.39
Arts, Entertainment and Recreation	72.02	6.78	13.27	33.76	32.33	42.70	37.01
Other Services	495.94	7.91	3.17	29.43	29.19	36.75	48.14

Note: 1. Employed persons with working hours 15 or over are classified as paid employed persons. Hence the figure of the sum of employed workers in each industry is different from the number of employed persons in SMEs as noted in Figure 4-1-1. 2."-" denotes no available data.

Source: DGBAS, *The Manpower Utilization Survey*.

III Manpower Cultivation in SMEs

1. Various Subsidized Programs for SMEs in Talent Cultivation

Various government agencies such as Ministry of Labor and SMEA of MOEA (SME Administration of Ministry of Economic Affairs) provides subsidies for individual enterprises and organizations to arrange training programs for their employees in line with operational needs ("individual training"), while also encouraging enterprises in related industries to join forces with one another to implement employee training on a joint basis ("joint training"). In 2012, a new job training subsidy was created by the Ministry of Labor for SMEs with below 50 employees providing professional and individual counseling and training, no long requiring lengthy and costly application and expense verification process. A few main programs and agencies are listed as followed covering main areas such as digital learning, incubation, professional training for various industries, R&D and technology management training, international trade, service, and executive training.

(1) SMEA of MOEA: business and management training; incubation service; cultivation of international SME talent.

(2) Industrial Development Bureau, MOEA: professional training by industries.

(3) Department of Industrial Technology, MOEA: R&D and management cultivation.

(4) Bureau of Foreign Trade, MOEA: international business management training

(5) Department of Commerce: service talent training.

(6) Ministry of Labor: talent enhance and entrepreneurship incubation

(7) Ministry of Education: Industrial Master Degree Program.

Industry-specific Masters Degree courses are tailored to meet the needs of industry. The business enterprise(s) and university concerned submit a joint curriculum proposal to the Ministry of Education. If the proposal is approved, the university in question can then launch an industry-specific Masters Degree program, to help cultivate the Masters-level human talent that firms need. The range of industry sectors for which industry-specific Masters Degree courses are available or planned covers: (A) Electromechanical Engineering; (B) Optoelectronics; (C) ICT; (D) Cultural and Creative industries; (E) Biomedicine (including Biotechnology and Pharmaceuticals Manufacturing); (F) Finance (including Wealth Management); (G) Food, Textiles and Other Manufacturing industries; (H) Service industries; (I) other. Students need to sign the training contract that requires the students serve at least two years in sponsored enterprises when they enroll in the industry-specific Masters Degree program (http://imaster-moe.iiiedu.org.tw).

2. Subsidized Training Programs

In 2013, the number of individual training and the number of joint training plans reached 1,687 and 174 respectively. The number of enterprises taking part, number of classes organized and number of employees undergoing training employees all increased (Table 4-3-1).

Table 4-3-1 Provision of Assistance to Enhance Manpower Cultivation by Business Enterprises, 2006-2013

Units: Enterprises; classes; persons

Item / Year	Individual training plans			Joint training plans			
	No. of firms receiving subsidies	No. of training classes	No. of training participants	No. of project	No. of firms taking part	No. of training classes	No. of training participants
2006	1,551	22,486	424,311	87	668	2,814	102,867
2007	1,307	26,953	547,805	102	1,891	2,692	108,389
2008	1,415	38,282	733,638	112	2,088	4,583	131,971
2009	1,240	40,544	864,001	119	1,342	5,163	140,487
2010	1,793	40,902	869,520	126	775	3,617	130,244
2011	1,779	41,173	863,296	101	625	2,688	112,213
2012	1,204	27,269	600,480	127	463	1,730	58,624
2013	1,687	33,554	757,812	174	863	1,840	93,266

Source: Workforce Development Agency, Ministry of Labor.

3. The Number of SME Trainees Was Around 4.8 Million in 2012

According to data compiled by the Workforce Development Agency, Ministry of Labor, in 2012, the number of SME trainees per annum was around 4,789,437, or 22.5 percent of all trainees, costing NT$6,668 million, or 30.6 percent of total training expenditure (Table 4-3-2).

Table 4-3-2 Enterprises, Persons and Expenditure of Joint Vocational Training, 2012

Unit: Enterprises; persons; NT$ millions; %

Item	Total	SMEs	Large enterprises
Number of joint enterprise	127,417	122,924(96.5)	4,493(3.5)
Number of person	21,313,103	4,789,437 (22.5)	16,523,666 (77.5)
Expenditure	21,762	6,668(30.6)	15,094(69.4)

Note: Percentage in parentheses.

Source: Workforce Development Agency, Ministry of Labor, *Report on Vocational Training Survey* (2012).

4. Manpower Demand Rose Slightly

According to the results from the 2014 Manpower Requirements Survey (conducted over the period April - May by the Ministry of Labor, targeting enterprises with 30 or more employees; a total of 3,011 SMEs answered the survey), enterprises showed improved expectation over increasing hiring amid global recovery (Table 4-3-3).

It is anticipated that net manpower demand will rise by 59,500 jobs from the end of April to the end of July 2013. For the same period, 63.72 percent of enterprises will not add net manpower; 25.12 percent of enterprises will add net manpower of 65,300; only 2.25 percent of enterprises will reduce net manpower of 5,800.

The most increase in demand will be in the Manufacturing sector, with a net increase of 30,300 (of which 4,100 in the metal work, 8,500 in electronic components, 14,700 in services and sales, etc.),

followed by 7,200 in Wholesale and Retail, and 6,800 in Hotel and Restaurant industry. Most of the increased demand by skills sets will be for craftsmen, machinery operators and assembly line workers (21,600), followed by services and sales (14,700). The top two factors account for new hiring are market expansion and pent-up openings (Table 4-3-3).

Table 4-3-3 Anticipated Increase in the Number of Personnel Employed by Business Enterprises during the Period from April 30, 2014 to July 31, 2014

Unit: Persons

Item / Industry	Net increase in No. of employees	Change in manpower requirements		Net increase in no. of employees			
		New positions	Positions eliminate	Craftsmen, machinery operators and assembly line workers	Service and sales personnel	Basic-level skilled workers and laborers	Technicians and assistant specialists
Total	59,483	65,308	5,825	21,551	14,689	6,200	8,488
Manufacturing	30,336	32,462	2,126	19,265	173	2,579	4,240
Remediation Services	128	158	30	64	-	-	31
Constructing	1,072	1,540	468	754	-	21	315
Wholesale and Retail Trade	7,214	7,796	582	508	3,653	491	1,328
Transportation and Storage	366	407	41	77	57	-	61
Hotel and Restaurant	6,838	7,358	520	-26	5,886	-	70
Information and Communications	2,097	2,167	70	30	448	642	539
Finance and Insurance	702	949	247	2	29	1	593
Real Estate	261	261	-	-	-	27	189
Professional, Scientific and Technical Services	955	1,200	245	20	-	390	359
Support Services	3,781	5,194	1,413	490	2,214	15	252
Human Health and Social Work Services	2,303	2,303	-	-	139	2,034	87
Arts, Entertainment and Recreation	2,623	2,623	-	248	1,542	-	361
Other Service	807	890	83	119	548	-	63

Source: Workforce Development Agency, Ministry of Labor.

Chapter 5

Policy Measures and Strategies for SMEs in Response to Changes in the Business Environment

Global economic recovery strengthened during the second half of 2013 and is expected to improve further in 2014-15. The impulse has come mainly from advanced economies, although their recoveries remain uneven. However, activity in many emerging market economies has disappointed in a less favorable external financial environment, such as the normalization of monetary policy - both conventional and unconventional, particularly U.S. QE tapering and expected exit in October. Emerging market economies will have to weather turbulence and maintain high medium-term growth. With supportive monetary conditions and a smaller drag from fiscal consolidation, annual growth is projected to rise above trend in the United States and to be close to trend in the core euro area economies. Going forward, the U.S. economy could again become the major driving force of the global economic growth.

Two main forces in 2014 and going forward that will greatly impact Taiwan's export oriented economy are the U.S. Reindustrialization and the marked global trend towards regional economic integration. The former force could present an opportunity for Taiwan's industrial upgrade while the latter one may decide the role Taiwan will play in regional economy and in the production and supply chain in Asia.

With respect to the regional economic integration, regional integration has been progressing particularly rapidly in Asia. Taiwan was largely excluded and needed to work actively in TPP (Trans-Pacific Partnership) and RCEP (Regional Comprehensive Economic Partnership) negotiations and complete the follow-up negotiations of ECFA (Cross-Strait Economic Cooperation Framework Agreement).

Two dominant ongoing trends of U.S. Reindustrialization policy toward re-shoring of advanced manufacturing and development of emerging industries pose significant opportunities and challenges to Taiwan SMEs. Taiwan should facilitate export transformation of its matured SMEs and gives birth to more proactive new ventures to deepen their connections to advanced economies in order to maintain the lead on emerging market countries in science, technology, and innovation.

This chapter is divided into two sections. Section I reviews a series of policy measures in response to changes in the global environment; section II examines opportunities and challenges for SMEs and the corresponding strategies.

I Government Measures in Response to the Changes in the Business Environment

China's wages and benefits have been growing 15-20 percent annually, more than doubling over the past five years as shipping costs increase. At the same time, rising middle class in the ASEAN nations and their pronounced demographic dividend (as a labor force that is growing faster than the population dependent on it during the initial stages of the transition from an agrarian to an industrial economy) have made them increasingly important as export markets and off-shore export processing sites for Taiwan. However, besides the above mentioned two major forces that will present significant uncertainties to Taiwan's trade-dependent economy, other risks worth noting are: Japan's weak demand hit by sales tax hike and the dramatic depreciation of yen that weakens Taiwan's export competitiveness; Mainland China's slowing growth and loosely regulated part of the shadow-banking business (including alarming distortions and speculative activity in property and wealth-management products); political and economic turmoil in some ASEAN nations; potential tighter financial conditions and capital outflow facing emerging economies induced by normalization of monetary policy in the United States.

These dynamics imply a changing environment for emerging market and developing economies. Stronger growth in advanced economies, the U.S. in particular, implies increased demand for their exports. Two main themes of the U.S. Reindustrialization policy are the re-shoring of advanced manufacturing and technology and competitiveness upgrade of the U.S. enterprises, especially in emerging industries. North America (the U.S., Canada and Mexico) could become a leading global manufacturing center. Taiwan must reposition the strategic role of North American production and supply chain, and seriously commit to industrial upgrade and business model transformation in order to strengthen its link to the advanced manufacturing of North American.

The significant implication of the regional economic integration cannot be ignored. Taiwan has 75 percent foreign trade and investment concentrated in Asia-Pacific region. 35 percent of Taiwan's trade was with TPP members and 57 percent was with RCEP ones in 2012. It is vital for Taiwan to join TPP and/or RCEP as these two regions, RCEP in particular, have a decisive influence on Taiwan's export, especially when the major competitor South Korea has been so active in FTA and regional economic integration; or else Taiwan could face the threat of being marginalized. Taiwan's efforts to secure greater participation in the process of regional economic integration are often hampered by non-economic factors. Nevertheless, Taiwan should be working actively to forge partnerships with other countries and secure the reduction of barriers to trade, so as to maintain the competitiveness of Taiwanese exports. The period 2014-2015 will be the key for Taiwan in TPP and RCEP negotiations.

Facing significant uncertainties and challenges to its economy, the government is taking a series of policy measures spanning short-, mid- and long-term to mitigate the risks and revive the economy, such as "Three Industries, Four Reforms," "Industrial Upgrade and Transformation Action Plan (Draft)," "Free Economic Zone Plan," and so on.

1. "Three Industries, Four Reforms" Action Plan to Foster Growth of Taiwan's Manufacturing, Service, and Traditional Industries

Taiwan's economic development has become increasingly dependent on a handful of individual industries such as chemical industry and the IT and electronics sector. As a result, IT and electronics products now account for an excessively large share of Taiwan's overall exports. However, for many years, Taiwanese manufacturers relied mainly on an OEM contract manufacturing business model. The main focus in contract manufacturing was on raising the efficiency of production processes, rather than on developing core technology or end-user market. Lacking key technology, and without their own brands and distribution channels, most Taiwanese manufacturers have had to resort to competing on price; as a result, the Taiwanese manufacturing sector as a whole has failed to achieve significant enhancement of its value-added. Even the IT and electronics industry – which has been the main focus of the government's industrial policy and guidance efforts – has largely failed to move beyond the contract manufacturing model. Besides, the service sector now accounts for over 70 percent of Taiwan's GDP, but so far it has had relatively little success in developing export markets

To adjust the domestic industrial structure and create momentum for the next wave of economic growth, the government launched "Three Industries, Four Reforms" (timeframe: 2012 to 2020), adopting the theme of a service-oriented manufacturing industry, an internationalized and high-tech services industry, as well as a specialty-oriented traditional industry to promote the improvement/transformation of Taiwan's industrial structure and replace the past emphasis on "cost down" with a new focus on "value up." Based on this theme, the MOEA has selected demonstrative industries, such as smart living, machine tools, logistics, information services, innovative fashion textiles, and so on. The goals are to facilitate Taiwan's economic development, increase employment opportunities, and improve income distribute. The Plan's main work items include:

(1) "Service-oriented manufacturing industry:" addresses value-added activities such as customization and integrating manufacturing with services; provision of value-added services for recurring revenue, customer satisfaction with lower resource requirement and less environmental concerns.

(2) "High-tech services industry:" raises service quality, lower cost, and add customer value through dependable ICT tools;

(3) "Internationalized services industry:" the service sector accounts for over 70 percent of Taiwan's GDP, but so far it has had relatively little success in developing export markets. It is vital for service sector to drive innovation and expansion through value-added consumer-relevant services in target niche markets to meet the demand of the surging emerging middle class as well as the developed markets.

(4) "Specialty-oriented traditional industry:" focuses on creating value-added features to products that reflect the Taiwan's cultural characteristics, thereby tapping into the spirit of the modern aesthetic economy.

2. Industrial Upgrade and Transformation Action Plan (Draft)

(1) Background

To facilitate the "Three Industries, Four Reforms" Plan and optimize Taiwan's industrial structure, the Ministry of Economic Affairs (MOEA) launched "Industrial Upgrade and Transformation Action Plan (Draft)," focusing on three main themes: "revitalize the traditional industries," "solidify the main industries." and "incubate emerging industries."

(2) Vision

High Quality, Proactive Industries (timeframe: 2013 to 2020)

(3) Goals

Main goals include: (A) manufacturing industry output value of NT$ 19.46 trillion in 2020 (from NT$ 13.93 trillion in 2013); (B) high quality industry (the cultural and creative industries, alternative energy, etc.) output value of NT$ 11.69 trillion in 2020 (from NT$ 5.93 trillion in 2013) and share of output value reaching 60.40 percent in 2020 (from 42.61 percent in 2013); (C) high quality industry export value of NT$ 7.21 trillion in 2020 (from NT$ 3.15 trillion in 2013) and share of export value reaching 63.12 percent in 2020 (from 47.20 in 2013).

(4) Implementation: Four strategies

A. Enhancing products / services quality and value-added;

B. Constructing a complete industrial supply chain system;

C. Establishing systematic solution capability;

D. Facilitating development of emerging industries.

(5) Policy measures as listed in Table 5-1-1

Table 5-1-1 Policy Measures of Industrial Upgrade and Transformation Action Plan (Draft)

Main Tools	Contents
Tax treatment	• Tax incentives to retain talent for technology transfer, stock compensation, etc.
Securing financing / Funding	The National Development Fund • Plan to offer NT$100 billion loans for industrial upgrade and transformation
Venture investment	The National Development Fund • NT$10 billion investment in upgrade and transformation of strategic manufacturing industries • NT$20 billion investment in industrial revitalization
R&D budget	• Additional NT$10 billion budget for R&D subsidy in industrial upgrade and transformation
Infrastructure	• Building trial production/ testing infrastructure
Land acquisition	• Efficient use of existing land • Plan to set up new industrial parks
Talent cultivation	• Establishing industrial talent center: certification, training, cross-industry leadership cultivation, etc.

Source：Ministry of Economic Affairs (MOEA), 2014.

3. Promote and Revitalize the Traditional Industries

In 2012, traditional industries had an output value of NT$ 8.98 trillion (64.9 percent of the overall manufacturing), with over 70,000 companies and 1.6 million employees. They are very important in industrial development. The Executive Yuan continue promoting the Plan on Reviving Traditional Industries to reinforce the revival and guidance of traditional industries, to facilitate economic development, and to provide proper assistance to struggling industries. The MOEA continue giving assistance to traditional industries to elevate their competitiveness, job opportunities and value-added, investments, Taiwanese products' global image as well as market share. In the future, the goal is to increase traditional industries' output from NT$ 8.98 trillion in 2012 to NT$13.99 trillion in 2020. The key measures include:

(1) Promoting the upgrade of traditional industries

Between September 1, 2012 and August 31, 2019, fifty local, demonstrative industries will be selected to be assisted in, so as to increase traditional industries' competitiveness, and facilitate a new form of traditional industries toward the objective of high value-added, safety, and sustainability.

(2) Establishing the Industrial Assistance Center

The MOEA Industrial Assistance Center was established to provide a one-stop window for business consulting services and operation solutions.

(3) Instant Technical Assistance Program of SMEs

The IDB promotes the Instant Technical Assistance Program of SMEs to assist SMEs in eliminating technical difficulties immediately. We aim to provide instant, short-term, and comprehensive technical assistance, such as R&D, production, design, logistics, patent commercialization, automation, and e-commerce, to accelerate SMEs' upgrade and transformation.

4. Turning SMEs into Mittelstand Enterprises

In response to reduced exports, global market share, and the loss of oversea orders, it is necessary to assist SMEs in developing into Mittelstand enterprises (enterprises as backbones of industries), which are committed to innovative R&D and are globally competitive, via policy guidance and assistance. As a result, the MOEA followed the experience and characteristics of Germany's "Hidden Champions" and drafted the Mittelstand Enterprises Leaping Promotion Program to assist Taiwan's Mittelstand enterprises, enhancing their competitiveness in the global market.

SMEs with potential will be selected, and assistance to these enterprises will be reinforced mainly by taking root in technical aspects as well as on possible issues such as human resources, technology, intellectual property, and brand marketing when entering the global market. Customized service will also be provided to assist such SMEs in developing into Mittelstand enterprises quickly.

5. Promotion Investment in Taiwan by Overseas Taiwanese Businesses

Changes in Mainland China investment environment have caused overall production costs to rise

closer and closer to the level of advanced countries. The Boston Consulting Group argued that China's manufacturing cost advantage over the U.S., given total costs including shipping, has eroded to a mere 5 percent. This and additional factors such as the high employee turnover rate and the bad social climate have made more and more Mainland China-invested Taiwanese businesses consider returning to invest in Taiwan. A trend of manufacturing repatriation has already appeared in U.S. and South Korea. The Executive Yuan unveiled the "Project to Strengthen Promotion of Investment in Taiwan by Overseas Taiwanese" in November 2012. Expected main benefits are (1) inducing overseas Taiwanese businesses to invest a total of around NT$100 billion annually back in Taiwan; (2) creating additional production output amounting to NT$303.7billion, including exports worth NT$227.8 billion; (3) increasing Taiwan's direct and indirect employment by a total of approximately 82,000.

6. Free Economic Pilot Zones by Executive Yuan

The core concept of the free economic pilot zones is to loosen regulations and introduce innovative systems within the zones. If the zones are successful, they can be duplicated across the country. The policy also serves as preparation for Taiwan's bid to join the Trans-Pacific Partnership and the Regional Comprehensive Economic Partnership, but the success of the zones depends on the government's ability to implement the policy promptly.

Through liberalization regulations concerning manpower, goods and cross-border capital movements, the policy aims to attract a large number of local and foreign companies to promote industrial development within the zones. In addition, the zones are intended to promote five potential sectors: intelligent logistics, international healthcare services, value-added agricultural processing, financial services and education innovation. The free economic zones will cover areas near the ports of Taipei, Keelung, Suao, Taichung, Kaohsiung and Anping, as well as Taiwan Taoyuan International Airport. Under the project, restrictions on manpower, capital and merchandise flows in the targeted areas will be eased significantly to enhance business efficiency and attract domestic and foreign investment.

The first-phase free economic demonstration zone plan is expected to increase private sector investment by NT$20 billion (US$670 million), raise national domestic product by NT$30 billion and create 13,000 jobs by 2014. The second phase of the project will involve tax incentives. The industries included are intelligent logistics, international medical services, value-added agriculture and industrial cooperation.

7. Promote Regional Economic Integration

(1) Background

The period 2014-2015 will be especially important for Taiwan's regional economic integration. RCEP has a particularly ambitious timeframe and is planned to be completed by 2015 and TPP is expected to start the second round of negotiations soon.

There is a marked global trend towards regional economic integration, with countries throughout the world rushing to negotiate free trade agreements (FTAs) with one another. The East

Asia region is the one among the regions in the world that has signed the greatest number of ECAs. In addition of singing ECAs with others, competitors of Taiwan such as South Korea, Japan, and the ASEAN have been actively promoting the signing of ECAs amongst themselves. For instance, South Korea has formally launched FTA negotiations with China, whereas China, Japan, and South Korea have jointly announced the launch of FTA negotiations. As the FTAs being signed in the Asia region re-make the regional division of labor, Taiwan's position within the international manufacturing division of labor is coming under increasingly serious threat. The key factor here is the Trans-Pacific Partnership (TPP), which is currently the most significant regional trade arrangement in the Asia Pacific region. The TPP already has 12 member nations (the U.S.A., Japan, Canada, Mexico, Canada, Vietnam, Malaysia, Brunei, Australia, New Zealand, Chile and Peru), and has been advocating a strengthening of the intra-regional supply chain. What is clear is that it is substantial in scope, including 'behind the border' measures such as technical barriers to trade and regulatory harmonization, and in depth, as it builds on a dense network of existing trade agreements. This means that, in the future, the TPP can be expected to implement strict rules of origin provisions, which will promote the development of the intra-regional division of labor, and could have a severe negative impact on Taiwan if it is excluded from the TPP.

The government needs to accelerate the implementation of relevant laws and regulations in line with the needed adjustments to facilitate the TPP and RCEP negotiations. In 2014 the government continued to accelerate and complete the follow-up negotiations of ECFA (Cross-Strait Economic Cooperation Framework Agreement).

(2) Policy priorities

A. Actively negotiating FTA/ECA;

B. Participating in international organizations; expanding foreign trade and economic relations;

C. Accelerating and completing the follow-up negotiations of ECFA;

D. Promoting Free Economic Pilot Zones;

E. Strengthening international financial, taxation and customs cooperation; and

F. Assisting Taiwan enterprises in global expansion.

(3) Results of implementation

A. ECFA

(i) By the end of March 2014, Taiwan and Mainland China has signed 21 agreements, reached two consensus, including the completion of the signing of ECFA.

(ii) The first milestone of ECFA was the "Early Harvest" program in 2011. It aims mainly to reduce trade tariffs on goods, with some market access allowance in banking and other service industries, between the two sides of the Strait. Early Harvest involves 539 Taiwanese goods, covering 16 percent of Taiwan's exports to the mainland China and estimated to be close to US$14 billion. The PRC will, in turn, receive tariff cuts on 267 Chinese products, which make up 11 percent of China's exports to Taiwan worth approximately US$3 billion. As Taiwan already enjoys a large trade surplus with the

PRC, the Early Harvest provisions appear to further enhance Taiwan's trading edge with China, at least before additional liberalization agreements in services and merchandise are built into the program as part of a completed ECFA.

The Chung-Hua Institution of Economic Research (CIER) projected that ECFA, enacted in January 2011, would serve to increase Taiwan's gross domestic product (GDP) growth by 1.65 to 1.72 percentage points, to raise its export growth by 5 percent, and to create approximately 263,000 new jobs. Based on data from the International Monetary Fund, Taiwan's real annual GDP growth reached 10.8 percent in 2010, the year when ECFA was signed and before its implementation, declining in 2011 to 4.2 percent. The sharp increase in 2010 was partly due to the heightened expectation of ECFA's effect during negotiation, as well as the low GDP base figure from the preceding year due to the global financial crisis.

When the Early Harvest program was put in place in 2011, Taiwan's exports to mainland China grew 9.1 percent according to Taiwan's Customs Bureau. This figure then dropped to a negative growth of 3.9 percent in 2012, the year of Taiwan's highly contested Presidential election, before recovering back to 1.3 percent in 2013. The annual growth rate of those Early Harvest exports in particular peaked in its first year of implementation at 18 percent, dipped to 3.3 percent in 2012, then rose close to 11 percent in 2013.

As mandated by ECFA, several items are to be negotiated following the Early Harvest program. These include investment protection, services trade, merchandise trade, and dispute settlement. This is an effort to provide a concrete legal framework to foster trade and investment activities between Taiwan and China. There have been more than 20 cross-Strait agreements signed or already in effect since the Early Harvest period. In particular, the Cross-Strait Investment Protection Agreement (CSIPA) became effective in February 2013. CSIPA addresses the need to institutionalize an investment security mechanism and to build investors' confidence, rather than try to eliminate all risks for Taiwanese investment. CSIPA provides several types of resolution mechanism, both in official settlement and private arbitration, for investment-related disputes. CSIPA also has a notification mechanism to ensure personal safety, where the PRC officials are committed to notify the investor's family or company within 24 hours in case of non-national security related detention. According to Taiwan's Ministry of Economic Affairs, there have been 131 CSIPA-related cases reported and subsequently resolved to date.

B. The Taiwan-US Trade and Investment Framework Agreement (TIFA)

Both sides agreed to hold the Taiwan-US TIFA meeting in Taipei on 10 March 2013. This is the 7th Taiwan-US TIFA Council Meeting, which marks an end to a six-year interruption since the last TIFA meeting that was held in 2007. Several specific promotion plans were achieved in this meeting, including the Joint Statement on Principles for International Investment, the Joint Statement on Information and Communication Technology (ICT) Services, and the establishment of the working groups on investment and on technical barriers to trade (TBT). Both sides reaffirmed to engage each other in further cooperate on expanded negotiations on the Information Technology Agreement (ITA) and the International Services Agreement. Both sides held follow-up technical-level meetings on 11 and 12 of March to discuss issues such as intellectual property rights (IPR), food safety, agricultural products, investment, and the working groups on investment and on TBT, and drafted a plan for

future works. The MOEA will put the specific promotion plans achieved in this meeting to good use, re-establish mutual trust with the US under the TIFA framework, and ensure via discussions at working-level meetings that specific achievements can be attained when the next TIFA meeting is held in Washington, D.C. next year (2014).

C. Launch of ECAs (Economic Cooperation Agreement) with important trading partners

(i) Taiwan and Singapore opened formal negotiations in May 2011. The Agreement between Singapore and the Separate Customs Territory of Taiwan, Penghu, Kinmen and Matsu on Economic Partnership (ASTEP) was signed on Nov. 7, 2013 and was entered into force on Apr. 19, 2014.

(ii) Taiwan and New Zealand stated in a joint statement issued in October 2011 that both sides agree to conduct feasibility studies on the launching of an ECA. The Agreement between New Zealand and the Separate Customs Territory of Taiwan, Penghu, Kinmen, and Matsu on Economic Cooperation (ANZTEC) was signed on Jul. 10, 2013 and was entered into force on Dec. 1, 2013.

(iii) India and Indonesia: Taiwan has signed the Memorandum of Cooperation with India and Indonesia and research reports were expected be furnished by the private think tanks from both sides.

(iv) Appropriate application of the "block-building" strategy.

The "block-building" strategy refers to signing of bilateral agreements with a target country in respect of the content of some chapters in an ECA, such as: investment, technical barriers to trade, electronic commerce, competition policies, trade facilitation, thus laying a foundation for both sides to launch and sign a comprehensive ECA in the future. The strategy has the advantage of allowing both sides to realize early on some of the benefits of an ECA and to strengthen the bilateral relations with the target country. For instance, the United States, the European Union, and Japan are all primary trading partners of Taiwan, but given the difficulty of launching FTAs/ECAs with these countries, "block-building" can be regarded as a feasible means for promotion.

With active promotion, Taiwan has attained the following achievements from "block-building": the Taiwan-Japan Investment Arrangement was entered into force on 20 Jan. 20, 2012; the Taiwan-Japan E-commerce Cooperation Agreement was entered into force on Jan. 20, 2014.

D. The Cross-Strait Services Trade Agreement (CSSTA)

CSSTA was signed in June 2013 as part of ECFA to liberalize trade in services. This agreement stipulates in writing the various matters related to gradually reducing or eliminating restrictions on trade in services across the Taiwan Strait. It is expected to help Taiwan service firms expand their market share in mainland China, lessen the competitive pressure on Taiwan's SMEs in service industry, and give Taiwanese providers access to preferential treatment that exceed the conditions for entering the Chinese services market under its WTO commitments.

Under the pact, which includes four chapters and 24 articles, 64 Taiwanese industries will be opened to Chinese investment, including transportation, tourism and traditional Chinese medicine,

while China will open up 80 industries to Taiwan, including finance, retail, electronics, publishing and travel sectors. Of the 64 Taiwanese industries opened to Chinese investment, 23 are below WTO commitment, 22 are WTO equivalent, and 19 exceed WTO commitment; of the 80 Chinese industries opened to Taiwanese investment, 12 are below Hong Kong CEPA commitment, 46 are CEPA equivalent, and 23 exceed CEPA commitment.

However, CSSTA has raised great public concern because of its scope and implications, culminating in a 24-day, student-led, sit-in protest inside Taiwan's Legislative Yuan (LY) and one of the biggest rallies in Taiwan's history this March. It is currently pending in the LY, and is expected to be subjected to additional legislative scrutiny.

II SMEs: Adapt and Thrive in Navigating the Challenging Business Environment

Stronger growth in advanced economies led by the U.S. implies increased demand for their exports. The potential normalization of monetary policy, however, implies tighter financial conditions for emerging market economies in particular. Taiwan's economy is expected to perform better in near future. Based on the changing dynamics and a brief review of 2013 performance of SMEs as followed, we will discuss how Taiwanese government and SMEs can adapt and thrive in navigating the challenging environment, in facing more intensified global competition and multiples new challenges from regional economic integration and the U.S. Reindustrialization.

1. Continuous Decline in SMEs' Export-Orientedness and Share of Exports Calling for Integrated Measures for Overseas Expansion

In 2013, Taiwan SMEs accounted for 98 percent of all enterprises and 78.3 percent of all employed persons; number of SMEs and their employed persons reached record high. SMEs have functioned as a stabilizing force in labor market. In 2009, the total number of employed persons in Taiwan decreased by 1.19 percent after the global financial crisis; while number of employed persons in large enterprises fell 20.69 percent, SMEs still managed to hire 1.26 percent more persons. From 2010 to 2013 SMEs continued to hire more amid multiple challenges from tough business environment, showing consistent growth at 1.55 percent, 1.78 percent, 1.76 percent, and 1.22 percent respectively.

However, with record number of SMEs and their employed persons, SMEs' export contribution rate was 14.48 percent (of total exports), down 3.26 percentage points in 2013 from 2012, the lowest in 6 years; SMEs' export-orientedness (SME export sales' share of the SMEs' total sales) also hit bottom at 12.58 percent in 2013, down 2.78 percentage points, the lowest in 6 years. Looking back, SMEs were going strong and making their greatest contributions to Taiwan's domestic economic growth through the mid-1980s. However, after that time, as the government relaxed its grip on the New Taiwan dollar, the rising value of the currency and increasing labor costs, along with growing environmental awareness, caused some SMEs to move their operations to Mainland China and Southeast Asian countries in search of cheaper labor and new business opportunities. Those who

stayed were forced to become more innovative, upgrade their operations and partner with other enterprises through strategic alliance or industrial clusters to cope with the increasingly adverse conditions. SMEs have to become more technology and service-oriented and focus more on technology, innovation and quality for overseas expansion.

The government has been actively assisting high quality SMEs through various counseling, subsidies and measures in promoting industrial clusters, international marketing, and networking. The government needs to further integrate trade associations, embassies, related government agencies as well as the existing incubation resources to form systematic servicing mechanism to accelerate SMEs' overseas expansion. In addition, Taiwan should work hard and proactively in regional economic integration (TPP and RCEP in particular) to forge partnerships with other countries to lower the barriers to trade, and maintain the competitiveness of exports.

2. SMEs' Cost of New Loans Rose Slightly; Diverse Funding Sources Could Help during Period of Higher Interest Rates

From June 2010 to July 2011, the Central Bank increases its benchmark discount rate five times from 1.250 percent to 1.875 percent in order to avoid economic overheating and counter rising inflation expectation. It has held the discount rate steady since then. The Central Bank data show that the average interest rate on new loans (weighted averages for the month of December in each year) extended by Taiwan's five largest banks had fallen steadily from 7.58 percent in 1998 to 2.16 percent in 2004. In 2006, the rate rose to 2.37 percent, and in 2007 it climbed further to 2.85 percent. The average interest rate on new loans then fell back to 2.35 percent in 2008 and in 2009 it fell even further, to 1.34 percent due to aggressive easing of the Central Bank amid global financial crisis and recession. The average interest rate on new loans rose slightly in 2013 at 1.70 percent, from 1.62 percent in 2012. According to the report "Results of the Survey of Business Funding in the R.O.C." compiled by Taiwan's Central Bank, in terms of the structure of their liabilities, SMEs are heavily reliant on borrowings from financial institutions and commercial credit (such as trading liabilities, mainly accounts payable and unearned receipts), accounting for 98.00 percent of the total debt in 2013.

Given the increasingly wide range of both direct financing and indirect financing tools that are now available, the government policy measures should provide more counseling to help SMEs become more flexible and knowledgeable in their use of funding channels. This will greatly reduce the financing burden and liquidity risk during period of high interest rates and credit tightening.

3. Sharply Rising Operating Expense (SG&A) Eroding SME Profitability in 2012

In 2012, SMEs' operating expenses ratio rose by 3.77 percentage points to 20.57 percent; large enterprises' operating expenses ratio rose by 3.98 percentage points to 11.32 percent. The pronounced disparity between the operating expenses ratio of SMEs and that of large enterprises is mainly due to SMEs' limited scale to reduce average cost and limited bargaining power to lower

input cost as well as funding cost. Therefore, SMEs operation results often are highly sensitive to variable costs. In 2012, SMEs' sharply rising operating expense ratio led to significantly falling net operating margin to mere 0.62 percent, down 4.17 percentage points. Large enterprises also suffered elevated operating expense ratio in 2012 (up 3.98 percentage points) and lower net operating margin of 2.69 percent (down 2.50 percentage points). It is vital for SMEs to focus on operating efficiency and value added features to their products and services.

4. 60 Percent Foreign Laborers Worked in SMEs

2013 saw a continuous increase in both the number of applications to employ foreign laborers and the number of foreign laborers actually working in Taiwan. The number of foreign laborers actually in Taiwan and working for SMEs rose 14.5 percent in 2013. About 60 percent of all foreign labors working in Taiwan worked for SMEs. The result might be due to the adjustment of the domestic allowance allocation policy starting in 2009 which enabled SMEs to hire foreign laborers more easily. In 2013, a total of 509,000 SME employees changed jobs; the rate of those taking up a position with another SME was the highest at 89 percent. Only 11 percent took a job in the government or a large enterprise. The figure could suggest that it is not easy for former SME employees to find jobs in large enterprises or public sector, or could imply an improving working environment of SMEs.

5. Assisting SMEs in Developing Own Brands or Core Technology, and Becoming Niche Markets Leaders

Firms own core technologies and/or brands can enjoy higher profitability through their pricing power than many OEMs who produce low margin products and specialize in only one type of arrangement in a supply chain. However, SMEs normally lack the capital, technology, information, and human resources of many large businesses to commit resources to technology upgrade, branding and R&D. To succeed in overseas markets, SMEs often need to leverage complementary external resources to develop own brand and core technology, and become niche markets leaders. Because SMEs can be more flexible in their operations, adaption and decision making, they can let their creativity run wild and develop branded specialty products rooted in culture. To encourage SMEs with potential to find right niche markets in line with their technology development, policy measures should reinforce the efforts in human resources, technology, intellectual property, and brand marketing, so as to develop these SMEs into niche market leaders quickly.

6. SMEs' Export Transformation: Strengthen Linkage to Developed Markets Riding the Re-shoring of the U.S. Reindustrialization

The two dominant themes of the U.S. Reindustrialization policy that pose both opportunities and significant challenges to Taiwan SMEs' export transformation are re-shoring (the trend to move manufacturing back to the U.S.) and the U.S. technology and competitiveness upgrade, particularly in emerging industries.

Based on the concept of modularity and cost reduction, the U.S. manufacturing sector's offshore outsourcing had escalated all throughout the 1990s, causing lack of domestic manufacturing talent. As U.S. manufacturing and job repatriation look to regain momentum, partly encouraged by re-industrialization policy, many U.S. manufacturers will likely face a significant gap between the talent they need to keep growing their businesses and what they can actually find domestically. Therefore, highly intelligent automation via process sensors, controllers and robotic is indispensable for the U.S. based advanced manufacturing.

Taiwan SMEs have gained extensive experience in customized manufacturing through decades of export development in advanced economies. They should use the experience and know-how to actively participate in the supply chain of advanced manufacturing to enhance their own technology, innovation and quality for further linkage to developed markets. Many measures under the U.S. Reindustrialization policy promoting technology upgrade and export for U.S. SMEs also pose challenge and risk to Taiwan SMEs as U.S. market has been extremely important for both export and maintaining high standard of quality and production. Though the Mainland China (and ASEAN) has evolved to be Taiwan's main export markets as well as part of the typical OEM contract manufacturing triangle model "Made in China by Taiwan," Taiwan should facilitate export transformation of its high quality SMEs and gives birth to more proactive new ventures to deepen their connections to the global supply chain of the advanced economies in order to maintain the lead on emerging market countries in technology, innovation, and "Made in Taiwan by Taiwan." Further discussion could be found in Chapter 6: "SME Export Strategy in Response to the U.S. Reindustrialization."

7. Development Strategy for Taiwan New Ventures in the Era of U.S. Manufacturing Renaissance

A dominant theme of the U.S. Reindustrialization policy is to upgrade U.S. manufacturing and promote emerging industries. The U.S. government proposed many strategies to establish new emerging industries. Among them, clean energy, medical and health, biological engineering, nanotechnology, advanced vehicle, and aviation industries were listed in the ARRA (American Recovery and Reinvestment Act) as the high-priority industries in the future 20 years. The AMP (Advanced Manufacturing Partnership) chose information, biotechnology, and nanotechnology industries to invest. Faced with the U.S. manufacturing renaissance, Japan, Mainland China, South Korea, and Germany all worked hard to take advantage from these huge investments by establishing new production lines in U.S. or by building related industries in their own countries. To remain a key player in global manufacturing supply chain, Taiwan should rethink what to do with this ongoing trend. In addition, Taiwan should learn from the U.S. experience to reinforce the already strong ICT and machinery industries and to accelerate the development of new ventures in emerging industries. Further discussion could be found in Chapter 7: "Development Strategy for New Ventures in the Era of U.S. Manufacturing Renaissance."

Part Two Special Topics on SMEs

The recovery starting to take hold in advanced economies in 2013 is becoming broader. Global activity has broadly strengthened and is expected to improve further in 2014, with much of the impetus coming from advanced economies, especially from the U.S. With accommodative monetary policy and a smaller fiscal drag, economic growth is projected to rise above trend in the U.S. and to be close to trend in the core euro area economies. Going forward, the U.S. economy could again become the major driving force of the global economic growth.

Two dominant ongoing trends of U.S. Reindustrialization policy toward re-shoring of advanced manufacturing and development of emerging industries pose significant opportunities and challenges to Taiwan's SMEs. Part Two provides in-depth discussion on how Taiwan should facilitate export transformation of its well-established SMEs and gives birth to more proactive new ventures to fill in the significant talent gap in the U.S. through value-added products and services to meet the rising demand of highly intelligent automation products and systems, deepen their connections to advanced economies, maintain the lead on emerging market countries in science, technology, and innovation, and adopt differentiation strategies by adding value through design, own brand development, and integrating manufacturing with services.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CHAPTER 6

SME Export Strategy in Response to the U.S. Reindustrialization

The U.S. economic recovery gradually gained steam as evidenced by a surge of GDP at a seasonally adjusted annual rate of 4.6% in the second quarter rebounding from the first quarter's 2.1% weather-driven drop in 2014. The recovery starting to take hold in advanced economies is becoming broader in 2014 with smaller fiscal drag, improving debt sustainability and stronger banking system. These dynamics imply a changing environment where emerging economies' high growth has slowed down while advanced economies have shown sign of stronger growth. Swiss Bank, The Economist, and OECD all predict that advanced countries will have better growth in 2014 and thereafter.

In U.S., the Institute for Supply Management (ISM) said its index of national factory activity rose to 57.1 in July 2014, the highest since April 2011, from 55.3 in June. The reading topped expectations of 56, according to a Reuters' poll of economists. A reading above 50 indicates expansion in the manufacturing sector. The employment component jumped to 58.2 in July from 52.8 the previous month, hitting its highest since June 2011 and handily beating the expected 53 mark. New orders rose to 63.4 from 58.9. The Fed's "beige book," which is a survey of businesses, is showing broad-based improvement. Evidence is mounting that the U.S. economy is in the midst of a broad-based acceleration.

There are positive macro- and micro-economic factors underlying trends and dramatic changes may support a robust long-term growth in the U.S. One potential key to America's long-term growth lies in so called "The U.S. Manufacturing Renaissance." Main reasons why the U.S. manufacturing sector seems likely to gain global market share are wages and productivity, energy costs, and policy measures promoting reindustrialization, including unit labor costs among the lowest in the industrialized world, lowest energy costs outside of the Middle East due to the gas bonanza and the hydraulic fracturing revolution, very low cost of capital given the Fed's ultra-accommodative monetary policy even after the expected QE (Quantitative Easing) exit in the October, and the rebounding housing market.

Based on the concept of modularity and cost reduction, the U.S. manufacturing sector's offshore outsourcing had escalated all throughout the 1990s, causing lack of domestic manufacturing talent. As U.S. manufacturing and job repatriation look to regain momentum, partly encouraged by re-industrialization policy, many U.S. manufacturers will likely face a significant gap between the talent they need to keep growing their businesses and what they can actually find domestically. Therefore, highly intelligent automation via process sensors, controllers and robotic is indispensable for the U.S. based advanced manufacturing.

Taiwan SMEs have gained extensive experience in customized manufacturing through decades of export development in advanced economies. They should use the experience and know-how to actively participate in the supply chain of advanced manufacturing to enhance their own technology, innovation and quality for further opportunities in developed markets. Many measures under the U.S. Reindustrialization policy promoting technology upgrade and export for U.S. small- and medium-sized enterprises also pose challenge and risk to Taiwan SMEs as U.S. market has been extremely important for both export and maintaining high standard of quality and production, though the Mainland China and ASEAN has evolved to be Taiwan's main export markets.

It is an important topic for Taiwan and its SMEs in crafting the export transformation strategy to understand the opportunity for further linkage to U.S. market and the potential risk of intensified competition from the U.S. enterprises under the framework of the U.S. Reindustrialization policy.

This chapter is divided into four sections. Section I presents an overview of the practice and theory in internationalization of SMEs; section II examines major policy measures, trends, and impact of the U.S. Reindustrialization; section III offers SME case studies on their export transformation and expansion into developed markets with focus on the U.S.; section IV presents SME export transformation strategy in response to the U.S. Reindustrialization.

I SMEs – Internationalization and Export Development

SMEs normally lack the capital, technology, information, and human resources of many large businesses with which they regularly compete. To develop international market, SMEs often start with obtaining B2B (Business to Business) export orders fulfilled through domestic factories, which could gradually be extended to neighboring countries for lower cost and expansion. Therefore, SMEs must accumulate domestic resources to sustain competitive advantage through differentiation to secure long-term overseas orders.

The following sections cover literature review, practice of firm internationalization, and offer an overview of Taiwan SMEs' progress in internationalization as a base for crafting export transformation strategy.

1. Firm Internationalization Process

Empirical evidence can be found in numerous recent studies that exporters are more productive than non-exporters through learning from foreign customers, increasing productivity under the pressure of international competition, and benefiting from economies of scale.

When firms internationalize, they move along in a series of incremental steps focusing on market knowledge and commitment decisions that would affect the firm's opportunities and risks. The path that followed by firms based on the stage model (Johanson & Wiedersheim-Paul, 1975; Dunning, 1993; Touhara, 2012) is typically a process of five stages:

(1) Stage one and two: stage one is via domestic trader to international agent and / or dealer, and stage two is via international agent / dealer. Both are indirect export approach with low operating cost but difficult for firms to accumulate foreign market experience. Firms with no exporting activity will start by exporting via an agent.

(2) Stage three involves wholly owned overseas sales subsidiaries, a direct export approach that enables firms to quickly grasp the foreign market trends, understand customer needs, improve product quality and enhance market competitiveness.

(3) Stage four is overseas production model, driven by foreign market expansion, tariff and non-tariff barriers to trade, import substitution, local investment policies and labor cost considerations.

(4) Stage five is globalization. At this stage, firms move offshore not only production but also part of high value-added activities such as R&D and design to seek strategic synergy and move upward along the value chain.

While large enterprises may step into stage four and five, SMEs typically evolves from stage one to three due to limited resources. Therefore, the key for Taiwan SME internationalization is to secure long-term overseas orders in order to maintain and enhance domestic production scale as well as improve profitability.

2. SME Trade Relationship in International Development

To secure long-term overseas orders, SMEs must focus on building lasting trade relationship. Limited domestic market scale and differential technologies and products often are the main incentives for SMEs to seek long-term overseas orders (Westhead, Wright and Ucbasaran, 2001).

Satoshi Yamamoto (2012) analyzed Japanese SME cases and pointed out that most Japanese SMEs' seek overseas orders to reduce the risk of domestic operation and limited scale because most of their orders are from intermediate goods market with limited size. As mentioned above, SMEs normally lack the capital, technology and other resources. To develop international market, SMEs often choose a B2B trading mode focused on intermediate goods (or producer goods) market. The key success factors of SME internationalization, particularly of B2B trading relationship are as follows: (1) proprietary technical capability that is hard-to-imitate; (2) CEO and key employees must have international working experiences and industry specific know-how to overcome the language barrier, adjust to business customs of foreign countries, and establish long term business relationships with B2B trading partners; (3) effective marketing of its proprietary technical capability to gain visibility and efficient transmission of information to enhance "Buyer-Seller Interdependency," as featured in intermediate goods trade; (4) information collection and business intelligence; (5) overseas dealer and / or agent relationship; (6) learning by doing.

3. Taiwan's SME Export Development: Historical Perspective and Challenge

As the key driving force of Taiwan's economic development, export-oriented SMEs have powered the country through economic take-off and decades of rapid expansion, an envy of the world economic miracle.

In the 1950s, the government adopted an import substitution strategy in an effort to use limited state resources to speed up economic growth. The strategy focused on developing less high-tech, more labor-intensive light industries, such as textiles, plastic processing, shoemaking and tools and hardware. Cheap labor and government loans to small private businesses established the foundation for the development of SMEs to make inroads into the international arena.

Taiwan's SMEs continued to grow into the 1960s and 1970s, as the global economy gradually recovered after World War II. When advanced economies such as Japan, European countries and the U.S. were looking for a world factory with cheaper labor, Taiwan was among their top choices.

Thanks to the government, which had built a firm economic foundation by improving infrastructure and implementing nine-year compulsory education in 1968, many SMEs were able to transition quickly from producers of daily necessities to industrial original equipment manufacturers (OEM) supplying electric parts and other intermediate goods to developed countries, especially the U.S. market. 1958-1969 saw rapid expansion of export. After 1965, the government established export zones in Kaohsiung, Nanzih and Taichung, and through import and export tax incentives to encourage local companies to obtain overseas orders and form industry clusters that attracted foreign direct investment. While large enterprises focused on domestic market, SMEs were more active in building distribution, marketing and service network through foreign agents and dealers. To bolster the increasingly export-focused economy, the government controlled exchange rates and provided tax incentives to boost exports, benefitting local SMEs at the same time.

Taiwan's SMEs were going strong and making their greatest contributions to Taiwan's domestic economic growth through the mid-1980s. However, after that time, as the government relaxed its grip on the New Taiwan dollar, the rising value of the currency and increasing labor costs, along with growing environmental awareness, caused some SMEs to move their operations to mainland China and Southeast Asian countries in search of cheaper labor and new business opportunities. Those who stayed were forced to become more innovative, upgrade their operations and partner with companies from developed economies to cope with the increasingly adverse conditions.

After mid-1990s, part of the R&D activities have begun to migrate to Mainland China where components supply chain was gradually formed beyond low level contract manufacturing or export processing, causing worries of "Hollowing out in Taiwan manufacturing."

Based on statistics from the Ministry of Finance, total direct exports to the U.S. in 2013 amounted to $32.5 billion, down slightly from $35.5 billion in 2000. However, total direct exports to Mainland China and Hong Kong in 2013 amounted to $81.6 billion, surging from $4.4 billion from 2000, representing 26.9% of total exports, almost ten times of 2.9% in 2000.

According to Statistics Department, Ministry of Economic Affairs (MOEA), total export orders from the U.S. in 2013 amounted to $110.6 billion, up significantly from $48.2 billion in 2003, representing 25.0% of total amount of export orders, down slightly from 28.4% in 2003. Total export orders from Mainland China and Hong Kong in 2013 amounted to $113.0 billion, rising sharply from $38.4 billion in 2003, representing 25.4% of total amount of export orders, up from 22.6% in 2003.

According to the survey of export orders fulfilled by overseas production in 2012 from the Statistics Department, MOEA, 50.9% of Taiwan's export orders were fulfilled by overseas production in 2012, up consistently from 12.2% in 1999, of which Mainland China contributed the most, a 47.4% fulfillment of Taiwan's total export orders.

As seen from above, the United States is still the main export market for Taiwan. Since 2000, however, the mainstream trend has clearly picked up pace to fulfill Taiwan's U.S. orders through Mainland China's production ("Made in China by Taiwan"). This will have significant impact on Taiwan's manufacturing capability, technology, and domestic employment. It is vital for Taiwan economy to link the vast U.S. market as the perfect place for incubating and strengthening its manufacturing and SMEs through more high value added "Made in Taiwan" in response to the U.S. Reindustrialization.

II U.S. Reindustrialization: Opportunities and Challenges

Facing bleak economic situation and high unemployment rate after global financial crisis in 2008, the Obama administration has initiated several major policies and strategies to encourage the reindustrialization of the largely service-based U.S. economy. Two main themes under the U.S. Reindustrialization policy are to promote re-shoring and enhance technology upgrade and core competency of U.S. manufacturers, in particular, SMEs. This presents both opportunities and significant challenges to Taiwan's SME export transformation.

1. U.S. Reindustrialization Policy: Implementation and Effects

The U.S. manufacturing sector's offshore outsourcing picked up pace throughout the 1980s and 1990s, from ICT products and components (PC, LCD TV, smart phones, semiconductor, etc.) to automobile assembly plants. Data from U.S. Bureau of Labor Statistics show that the proportion of manufacturing output in U.S. GDP decreases to 11.9% in 2009 from 25.0% in 1960. About eight million American manufacturing sector jobs were lost from 19.4 million employees in 1979 to 11.5 million employees in 2010; over the same period, the proportion of manufacturing jobs in total employment decreases to 8.5% from 21.6%.

To create jobs and help the US economy recover from the recession, the American Recovery and Reinvestment Act (ARRA) was passed. With over $787 billion in funding, this Act became one of the single largest investments in the US economy in the nation's history. The Act's design was three-fold: rescue a rapidly deteriorating economy; place the country on a path to recovery by putting Americans back to work quickly; and reinvest in the country's long-term economic future by building

a foundation for a new, more robust, and competitive American economy. The Act supported measures to modernize transportation, emphasizing investments into advanced vehicle technology and high-speed rail; promote clean and renewable energy; construct a platform for private innovation in broadband and smart grid and health information technology; and foster groundbreaking medical research.

In December 2009, President Obama of the U.S. presented "A Framework for Revitalizing American Manufacturing" for what he called "Manufacturing Renaissance." Specific policy proposals in each of the following seven key areas will be implemented:

(1) Provide workers with the opportunity to obtain the skills necessary to be highly productive;

(2) Invest in the creation of new technologies and business practices;

(3) Develop stable and efficient capital markets for business investment;

(4) Help communities and workers transition to a better future;

(5) Invest in an advanced transportation infrastructure;

(6) Ensure market access and a level playing field;

(7) Improve the business climate, especially for manufacturing.

Other main policy measures by U.S. government focused on enhancing manufacturing core competency and promoting manufacturing re-shoring include:

(1) National Export Initiative (2010) is to help meet the Administration's goal of doubling exports over the next 5 years by working to remove trade barriers abroad, by helping firms - especially small businesses - overcome the hurdles to entering new export markets, by assisting with financing, and in general by pursuing a government-wide approach to export advocacy abroad, among other steps;

(2) Select USA (2011) is a U.S. government-wide effort to encourage, facilitate, and accelerate business investment in the United States by both domestic and foreign firms;

(3) Skills for America's Future (2010) is an industry-led initiative to dramatically improve industry partnerships with community colleges and build a nation-wide network to maximize workforce development strategies, job training programs, and job placement;

(4) Advance Manufacturing Partnership (2011) is a national effort bringing together industry, universities, and the federal government to invest in the emerging technologies that will create high quality manufacturing jobs and enhance our global competitiveness;

(5) In-sourcing American Jobs (2012); American Supplier Initiative (2012); National Network for Manufacturing Innovation (2012); Science, Technology, Engineering and Mathematics (2012); Manufacturing Technology Acceleration Centers (2013).

The initial results were promising as discussed in President Obama's State of the Union address in Feb. 2013: "Our first priority is making America a magnet for new jobs and manufacturing. After shedding jobs for more than 10 years, our manufacturers have added about 500,000 jobs over the past three. Caterpillar is bringing jobs back from Japan. Ford is bringing jobs back from Mexico.

And this year, Apple will start making Macs in America again."

Statistics from Bureau of Economic Analysis, U.S. Department of Commerce shows that the proportion of manufacturing output in U.S. GDP increases from 11.9% in 2009 to 12.5% in 2012. 420,000 jobs in manufacturing were added from 11.5 million employees in 2010 to 11.9 million employees in 2012; over the same period, the proportion of manufacturing jobs in total employment increases to 8.55% from 8.49%. Unemployment rate dropped to 6.7% in December 2012 from 9.9% in December 2009.

2. Re-shoring Trend under the U.S. Reindustrialization Policy

One of the major goals under the U.S. Reindustrialization policy is re-shoring, as the trend to move manufacturing back to the U.S. is called. A growing number of U.S. companies are repatriating their manufacturing capabilities - moving some production operations back from overseas.

In August 2010, Ford announced plans to bring back approximately 2,200 parts production jobs. Another example is Caterpillar, which is investing $120 million in a new Victoria, TX, plant to make excavator machines - devices formerly made at a Caterpillar plant in Japan. Similarly, GE has announced 15 new manufacturing plants or existing facility expansions in the U.S., from a new locomotive manufacturing plant in Texas and an aircraft engine composites factory in Mississippi to appliance and lighting facilities in Kentucky, Alabama and Ohio. And on December 6, 2012, Apple's CEO, Tim Cook announced a plan to invest $100M in manufacturing a line of Mac Computers in the U.S. While cynics may say that this is only assembly, will create only 200 jobs and is partly motivated by public relations, there may still be practical considerations for the move and it may ultimately have significantly positive implication for U.S. manufacturing. The next day, Foxconn, the largest contract manufacturer in the world and manufacturer of Apple's iPhone, indicated that it wants to expand operations in North America due to increased demand for products with "Made in America" labels.

Based on the "U.S. Re-shoring" survey by Massachusetts Institute of Technology (MIT) in September 2012, out of the 156 manufacturing-only U.S. companies, 33.6% of respondents stated that they are "considering" bringing manufacturing back to the U.S. while 15.3% of U.S. companies stated that they are "definitively" planning to re-shore activities to the U.S. Interestingly, one-third of the respondents did not answer this question, possibly indicating a reluctance to discuss the topic due to its sensitive nature.

The top six decision drivers for companies to re-shore are: Time-to-Market (73.7%), Cost Reductions (63.9%), Product Quality (62.2%), More Control (56.8%), Hidden Supply Chain Management Costs (51.4%), and Protect IP (48.5%).

The top five actions, in order of importance, the U.S. government can take to incent re-shoring for U.S. companies are: Corporate Tax Reduction (68.3%), Tax Credits (65.9%), R&D Incentives (60.0%), Provide better education/Training for Required Skills (43.8%), and Provide Better Infrastructure (38.0%).

This re-shoring trend has picked up pace in the last few years partly because the economics that made off-shoring attractive in the first place have changed for the following reasons:

(1) Oil price: The move to low cost manufacturing in the 1990s was driven in part by the cheap oil price. However, oil price has tripled in the last decade and as a result, logistics costs have increased significantly. Most recently, with the U.S. production of cheap natural gas, thus allowing certain industries to reduce manufacturing costs (crude oil price per barrel in US is about $15-18 lower than that in EU and Asian countries; natural gas price in US is about 1/4 to 1/3 of that in EU and Asian countries). The combination of high transportation costs to ship from overseas and low manufacturing costs to produce in the U.S. can financially motivate re-shoring.

(2) Labor costs: In the last few years, labor cost in China has increased, year-over year by almost 20% while labor cost in the U.S. has increased year-over-year by 3% and in Mexico by 5%. If a U.S. company made production sourcing decisions five, seven or ten years ago, it may need to revisit these decisions today as unit labor costs of U.S. manufacturing sector is among the lowest in the industrialized world.

(3) Automation: Cheap sensors, fast computing and new technologies have led to new user friendly manufacturing automation that increases productivity. This improvement in productivity changes the economics and reduces the importance of low labor costs. As a result, the focus of manufacturing companies is more on skillful workers rather than low cost countries.

(4) Risk: Global companies have realized in the last few years that strategies such as outsourcing and off shoring have significantly increased risk because their supply chain is geographically more diverse and as a result exposed to all sorts of potential problems. This drives companies to reevaluate their supplier and manufacturing base in order to increase flexibility and reduce risk.

Manufacturing is now going through a genuine transformational period from a global manufacturing strategy, where the focus is on low cost countries, to a more regional strategy, driven particularly by the changes described earlier. Therefore, there exists a huge opportunity and a significant challenge for Taiwan SMEs in transformation of their export strategy.

3. U.S. Reindustrialization Policy: Impact on U.S. SMEs

Another major goal under the U.S. Reindustrialization policy is to enhance SMEs' competitiveness in the U.S. Three key policy measures that have direct and material impact on U.S. SMEs are American Supplier Initiative, Manufacturing Technology Acceleration Centers (M-TACs), and National Export Initiative (NEI).

Part of the American Supplier Initiative is Supplier Connection, led by the U.S. Small Business Administration (SBA) and created by the IBM Foundation, designed to help bridge the gap between small, nimble businesses looking for new opportunities and large corporations looking for innovative new ideas and diversity in their supply chains. Supplier Connection is a free, online portal that allows small businesses to send information about their products and services to 15 large private sector companies. The 15 companies participating in Supplier Connection are: AMD, AT&T, Bank of America, Caterpillar, Citi Group, Dell, Facebook, IBM, JP Morgan Chase, John Deere, Kellogg's,

Office Depot, Pfizer, UPS and Wells Fargo. Together, these 15 companies have a combined purchasing power of $300 billion and now they will have full access to the profiles of small businesses that have registered for Supplier Connection. SMEs also have full access to the SBA database of $70 billion government purchase.

The M-TACs will focus on addressing the technical and business challenges encountered by small and mid-sized U.S. manufacturers as they attempt to integrate, adopt, transition, and commercialize both existing and emerging product and process technologies into their operations to help them grow and compete within manufacturing supply chains as innovative, value-adding components of our nation's economy. M-TACs will amplify the effectiveness of the current Manufacturing Extension Partnership (MEP) network, establishing teams of experts in specific technology/supply chains, offering multiple services and deep expertise through the national MEP network. The President's 2014 Budget proposes a $25 million increase for MEP to launch a series of Manufacturing Technology Acceleration Centers. M-TACs will be industry-specific centers that can serve as coordination points within key supply chains to assist SMEs in technology transition and commercialization efforts that are critical to their success within these supply chains

The NEI is a strategy created by the Obama administration to double U.S. exports between 2010 and the end of 2014 and support 2 million domestic jobs through increased intergovernmental cooperation in export promotion. The Export Promotion Cabinet, established to develop and coordinate the implementation of the NEI, consists of representatives of Treasury, Agriculture, Commerce, SBA, etc. NEI particularly aims to help U.S. SMEs overcome the hurdles to entering new export markets by removing trade barriers abroad and assisting with financing. Multiple measures addressing financing needs of SMEs who often have difficult to access loans from traditional commercial banks include: Export-Import Bank's Global Credit Express Product designed to deliver short-term working capital loans directly to creditworthy small business exporters, SBA's International Trade Loan expansion providing small businesses with capital to finance their fixed assets, including real estate, and working capital needs, with 90 percent guarantee on loans up to $5 million as an incentive to encourage lending to growing small businesses, and SBA's CAPLines program recently revamped to help small businesses meet their short-term and cyclical working capital needs.

4. U.S. Reindustrialization Policy: Impact on Taiwan SMEs

As discussed earlier, the two dominant themes of the U.S. Reindustrialization policy that pose both opportunities and significant challenges to Taiwan's SME export transformation remain re-shoring of advanced manufacturing and U.S. technology and competitiveness upgrade. Based on research articles of MIT's U.S. Re-shoring, the decision drivers for companies to re-shore can be further divided into three main categories: time-to-market, cost reductions, and new technology development. Opportunities and challenges to Taiwan SMEs are summarized in Table 6-2-1.

Table 6-2-1 U.S. Reindustrialization Policy: Impact on Taiwan SMEs

Re-shoring drivers	Opportunity	Challenge
Time-to-market	• Opportunities for industries: Automation Equipment / Components, Manufacturing Systems, Mechatronics Technology, Customized Manufacturing and New Product Design Services	• Potential reduced overseas OEM orders / more demanding on quality and delivery schedule for overseas OEM orders.
Cost reductions	• Extend manufacturing and service talents overseas to help customers in design, production, and service, and fill in the significant talent gap in U.S. supply chain of advanced manufacturing.	• Re-shoring other than U.S. - U.S. manufacturers could move their production to ASEAN or other lower cost countries.
New technology development	• Leverage Taiwan experience in industry-university-government cooperation for new technologies, emerging industries and R&D partnership opportunity.	• U.S. SMEs form industry clusters and become more competitive in U.S. supply chain of advanced manufacturing.
U.S. technology and competitiveness upgrade	Opportunity	Challenge
	• More demand for Automation Equipment / Components and Manufacturing Systems Design. • Highly Intelligent Automation via process sensors, controllers and robotics is indispensable for the U.S. based on Advanced Manufacturing.	• U.S. SMEs become more competitive in U.S. as well as in emerging markets where Taiwan SMEs compete for export orders.

Source: Wei, Wu and Huang (2014).

III Case Studies: SME Export Transformation and U.S. Market Development

In recent years, many outstanding SME Awards winners in Taiwan have accumulated successful experience in U.S. market development and export transformation, which provide valuable source of case studies.

1. New Deantronics Taiwan, Ltd

(1) Introduction

Known as the "Hidden Champion of Electrocautery," New Deantronics has slowly grown from an industry outsider, since its 1987 founding, into a world-class medical device maker, and from a small startup with fewer than 10 workers into a medium-sized enterprise with more than 470 employees.

(2) Business and strategy

New Deantronics' long-term strategy focused on U.S. market deserves particular attention. Its core competency lies in manufacturing and developing high quality RF (radiofrequency) and high energy based medical devices and accessories. With an uncompromising insistence on product quality, New Deantronics has successfully gained a foothold in global medical devices market as the major

supplier of ESU-Electro Surgical Unit and electro medical consumables and as a partner to world-renowned healthcare companies, including Johnson & Johnson, Philips Medical Systems, Covidien, and Tyco Healthcare. The company is already widely acclaimed for its excellence within the field of electrocautery. Over the last few years, it has received the 11th Rising Star Award, the 18th National Award of Outstanding SMEs, the 16th R&D Innovation Award, and the 22nd National Quality Award (SME Award).

New Deantronics has committed to the U.S. market for 30 years. Jane Liu, founder and Chairman of the Board of the Director, began manufacturing wiring for medical instruments. She then gradually moved into manufacturing components with the help and guidance of larger firms. Because the Taiwan market was too small, Liu further ventured into the electro surgical instruments (such as electrosurgical pencil, vessel sealing, pencils and accessories, and Automated External Defibrillator accessories) in U.S. – a high value-added market with high entry barriers. In 1994, New Deantronics received Excellent Quality Supplier Award from Valleylab (then Global #1 Electro-Surgical Devices under Pfizer; currently part of Covidien) and qualified as a "ship-to-stock" supplier.

The Medical Device Market is highly regulated worldwide. Importation and sales to the major markets requires an extensive application, testing and review process. New Deantronics has the required certification by major agencies: FDA (Food & Drug Administration) GMP certification, approved products with FDA 510K, European ISO 13485 certified and CE Marked, ROC government GMP certified facility, product registration and an "in-house" TAF approved Micro Biology Lab. All products are "Made in Taiwan."

Electro-cautery pens are invasive devices that must be sterile. In its early days, New Deantronics had its customers handle the testing, packaging and sterilization of its products after delivery. Liu later decided to increase her company's value-added by moving these functions in house. The company built an ISO Class 7 compliant clean room in 2011 so that it could inject and mold its plastics in a sterile environment. It has also built a microbiology laboratory specifically to monitor the bacteria in its production environment. Now certified by the company's large partners, New Dean-tron-ics' products no longer need to be inspected and sterilized on delivery, and can go straight into inventory.

In spite of having already achieved success - it is partnered with Covidien, the world's top electro-cautery brand with 76% of the global market - New Deantronics has no plans to rest on its laurels. In fact, the company has devoted considerable effort to automation, quality, R&D, patents and brand loyalty. It introduced its own brand - E Surgical - just a few years ago and now distributes it in Australia, New Zealand, Japan, South Korea and France. It also significantly upgraded its designing and re-designing capability through incremental innovation while exercising cost discipline. Over the course of this transformation, it adopted TQM (Total Quality Management) system and expanded the value-added production lines into more niche markets by, for example, manufacturing electrocautery tip of different lengths and shapes required by minimally invasive orthopedic surgeries and reusable cardiological devices such as Automated External Defibrillator. New Deantronics has successfully moved upward along the value chain of its U.S. partners from OEM (Original Equipment Manufacturer) toward ODM (Original Design Manufacturer) and OBM (Original Brand Manufacturer).

Liu acknowledged the challenge from U.S. Reindustrialization policy and Re-shoring, especially from intensified competition from U.S. SMEs. However, she also pointed out the opportunity for Taiwan's SMEs to fill in the significant "blue collar" talent gap formed by decades of outsourcing in U.S. supply chain of advanced manufacturing. Further, due to special restrictions imposed by the U.S. government based on intellectual property right concerns, U.S. companies are more willing to partner with Taiwan manufacturers than those of Mainland China for key components and products of special safety features. Liu isn't content with having created a company that is merely the "hidden champion" of the electrocautery pens industry. She hopes to bring other small medical device makers together under her company's umbrella, creating a Taiwanese network of device manufacturers that can market its products to the world. New Deantronics' OEM and ODM products have already entered the local medical device markets in China through the distribution networks of its U.S. partners. It shows the opportunity and possibility of Taiwan-US cooperation to enter the emerging market.

2. Falcon Machine Tools Co., Ltd

(1) Introduction

Falcon Machine Tools Co., Ltd (Falcon), established in 1978, is a Taiwan manufacturing firm specialized in producing precision surface grinders. In less than three years it became the first grinding manufacturer in Taiwan to be awarded the "Grade A Manufacturer" certificate. It has since garnered numerous national awards and certificates such as Winner of the Excellent Product Design Contest in 1987 by the Taiwan External Trade Development Council, Best Original Brand at the Taipei International Metalworking Show in 1989, the FSG-818CNC model - one of the Top 20 Outstanding Products in the 1993 National Award of Excellence, the SMART-H/B818 model honored as Taiwan's Outstanding Product in the National Award of Excellence Competition in 1999, and the Sub-micron ULTRA high-precision CNC grinder ULTRA-H612 honored as Taiwan Outstanding Products in the National Award of Excellence Competition in 2001.

(2) Business and strategy

Falcon's 2013 sales data showed dominant export ratio of 88% and only 12% domestic revenue. Its largest export market is the U.S. which represented 23% of Falcon's total sales, followed by Mainland China (20%), America ex-U.S. (15% from Canada, Mexico, etc.), Europe (18%), and Asia Pacific (12%). The American market has become more important for Falcon as more U.S. manufacturers, the auto parts manufacturers in particular, set up factories in U.S. and Mexico to ride into the wave of re-industrialization of U.S.

Falcon positioned itself from beginning as a manufacturing firm specialized in producing mid- to high-end precision surface grinders with its own brand "Chevalier," which targeted U.S. market partly due to lack of mid- to high-end demand in Asia. In 1982, a branch office was established in Los Angeles to serve the U.S. manufacturing market through direct sale, post-sale service, and state agent – dealer networks.

Maintenance and repair service is vital to machine tool market. Therefore, Falcon pays special attention to long term customer relation, advanced technology, and customized R&D and technical

improvement, to remain viable and competitive in lead markets, especially in the U.S. where UL (Underwriters Laboratories) - a U.S. safety standard must be met for machine tools on top of the international standard "IEC"(International Electrotechnical Commission) for machine tool electronic components.

Falcon has gradually moved upward in U.S. supply chain of advanced manufacturing. It is now a leading manufacturer of grinding, turning and milling machines, and components. Its machines are assembled in 9001-certified facilities with R&D, machining, sheet metal production and electronic departments. The company has expanded product lines and services that provide solutions for the gas & oil, energy, aerospace, medical, automobile, semiconductor, telecommunications industries and job shops, such as manual, automatic and CNC profile and surface grinders; vertical grinding centers; cylindrical grinders; double column bridge grinders; vertical lathes, horizontal slant- and flat-bed lathes; multi-axis turning/milling lathes; teach-in type CNC lathes; 5-face CNC bridge mills; horizontal boring machine and vertical machining centers. Growth opportunity and demand in key components of gas & oil (fracking), electric vehicles and aerospace industry could be significant in near future.

In recent years, Falcon has been very active in developing automated production systems to provide customers one-stop solution service. For example, it developed the first smart automated production line of aluminum wheels in Taiwan in 2013. The production line is 55 meters long, including four vertical lathes, four machining centers and intelligent mechanical arms, and can produce a large forged aluminum wheels every three minutes. The aluminum wheel has gradually replaced the traditional steel wheel for its lightweight, fuel-efficient, and fast heat dissipation. Falcon has secured aluminum wheel orders from major manufacturers in Mainland China and expects more from U.S. and Mexico as more U.S. auto parts manufacturers set up factories there but facing significant talent gap.

Besides the opportunity mentioned above, Falcon also faces significant challenge such as heighten competition from U.S. machine tool manufacturers, higher U.S. safety standard, and increasing threat from South Korean machine tool manufacturers who have access to auto makers' direct channels within typical South Korean chaebol (business conglomerate) and become more competitive, particularly in pricing, after U.S. - Korea Free Trade Agreement entered into force in March 2012. A potential FTA (Free Trade Agreement) between Taiwan and the United States or the TPP (Trans-Pacific Strategic Economic Partnership Agreement) will certainly help Taiwan machine tool manufacturers and Falcon to compete in U.S.

Falcon, like many other Taiwan machine tool manufacturers, has competitive advantage in customized design and service capabilities. It has enhanced its R&D and customized capability (SMART PC Based control system), production / quality control / R&D coordination, marketing and customer service (working tirelessly with local agents and customers to get abreast of market trends and make timely adjustments), and quality (ISO 9001, ISO 14001 and CE certified; will soon get UL certified in U.S.). To secure long-term orders and trust from U.S. customers, Falcon must keep commitment to continue delivering technical excellence and high quality services to customers globally with value-added design and engineering, innovative product solutions, and customization.

3. Aeon Motor Co., Ltd

(1) Introduction

Aeon Motor Co., Ltd (Aeon) is a leading exporter and manufacturer of ATV (All Terrain Vehicle), UTV (Utility Vehicle), scooters and mini-bikes in Taiwan and is based in Tainan City. The company has been deeply committed to U.S. ATV and UTV markets for decades, thanks to the vision and commitment of its founder and Chairman – Chung Chieh-Lin.

Aeon was established in 1998, and so was the brand AEON. It started producing scooters and mini-bikes at low profit margin, and gradually moved towards heavy-duty, diversified, leisure, lifestyle, and creative product lines. Aeon has successfully developed and produced a variety of scooters, ATVs, UTVs, motorcycles, and electric vehicles, and become the only global OEM/ODM for Polaris Industry, a U.S. leading manufacturer of ATVs, snowmobiles, motorcycles, and small vehicles. It also has gained access to the supply chain of Tomberlin Automotive Group.

(2) Business and strategy

Aeon has built up its own brand, proprietary designs of engines and vehicles, and customization capability. Recognized for its surging profit and rapid export growth, Aeon won the Golden Trade Award and the Rising Star Award from the Ministry of Economic Affairs in 2005. In 2012 Aeon developed its own COBRA 400 and CROSSLAND 400, and next year ATV & QUAD Magazine named the COBRA 400 as the number one in the 300-500 cc QUAD class; CROSSLAND 400 became the third in the 300-550 cc ATV class.

Aeon entered the U.S. market through international exhibitions and succeeded in introducing its Cobra 50/90 cc ATVs in the USA market and started OEM/ODM for Polaris Industry. With the still faltering recovery and weak demand in Europe five years after the global financial crisis, the U.S. has become Aeon's main export market.

Aeon has successfully moved upward along the value chain of its U.S. partners from OEM toward ODM, a horizontal product development model, in which Aeon develops vehicles with its own proprietary design and technology.

Aeon has continued building on the policy of "Quality, Excellence, Customer Satisfaction, and Sustainable Business." In response to the changing business model and product strategy in U.S. market, Aeon must strengthen its internal ability and pay attention to the following areas:

A. Trade model: Moving upward along the value chain from OEM toward ODM with proprietary design and technology.

B. Product line: Expanding from scooters and mini-bikes to heavy-duty, diversified, leisure, lifestyle, and creative product lines

C. R&D: Maintaining advanced R&D in front suspension systems, operation and safety, which most competitors lack, is the key factor for Aeon's long-term stable growth in ATV / UTV market; R&D professionals' frequent exchanges with Taiwan artists or design / engineering companies to enhance multi-purpose vehicle aesthetic design capability; be creative and quick in response to market (for example: modifying leisure type ATV/UTV

and its parts and accessories to transport type SCOOTER after U.S. discrete consumer demand such as ATV/UT was severely hit after financial crisis).

D. Production-talent: Nurturing future technicians and engineers through cooperation with National Tainan Industrial High School and Engineering and Far East University.

E. Production-quality: Aeon's quality foundation is based on solid R&D coupled with professional production technology; it owns QS9000 and ISO9001 certified quality systems and multi-national certification.

F. Marketing and service: Regular visits and communication between Aeon and U.S. partners on marketing, quality, order, delivery, maintenance and repair.

Liu didn't expect direct impact on ATV/UTV market from U.S. Reindustrialization policy and re-shoring. However, he was optimistic on the potential rising demand for leisure vehicle driven by the robust U.S. economy and U.S. Reindustrialization. Key areas that the Taiwanese government can help Aeon and other SMEs include cultivating skilled workers and engineers, establishing talent database, and sponsoring SMEs' overseas marketing efforts, such as participating international exhibitions to promote SMEs' technology, innovation and products, and international recognition and visibility.

4. Leadwell CNC Machines Mfg., Corp

(1) Introduction

Leadwell CNC Machines Mfg., Corp (Leadwell) was incorporated in October 1980, with a total capital of mere NT$8 million. Leadwell had its first factory in Taiping County of Taichung, with only 7 employees in the beginning, producing traditional knee mills and CNC (computer numerical control) milling machines for US customer RAMCO. In 1982, Leadwell developed Taiwan's first CNC machining center and later horizontal machining center. New models of CNC HMC MCH-400 and CNC VMC-610CR were introduced to market in that year. In 1993, Leadwell won Best Achievement in First National Invention Award; in 1997 its CNC Lathe won the 8th National Quality Award of Taiwan, the most important quality award of ROC; in 2007 the new CNC Lathe T-6SMY won the Excellent Award at TIMTOS. Obviously the company has a leading position in the cutting edge CNC machine tool technology.

(2) Business and strategy

"LEADWELL" brand was first introduced in 1983 and the first OBM product was exhibited in IMTS, winning praise from all sectors for its promising quality and function; the series of machines were then sold to different countries. Today, Leadwell has over 150 agents worldwide, with sales over 70 countries in the world, and has sold over 40,000 machines with "LEADWELL" brand name for high-tech industrial production line worldwide. Leadwell has become a blue chip export enterprise in machine tool industry in Taiwan. It won The 16th Rising Star Award in 2013.

70% of Leadwell's revenue comes from North America. The U.S. has always been Leadwell's most important market for its world leading R&D and innovation. To secure long term orders from U.S. market is a must for Leadwell's sustainable business growth as well as constant upgrade of its

proprietary technology and innovation.

In response to the changing business model and product strategy in U.S. market, Leadwell has continued building on the vision to become the top three well-known Taiwan manufactories of CNC machinery and equipment. Leadwell must strengthen its internal ability and pay attention to the following areas:

A. Trade model: Leadwell has successfully moved upward along the value chain of its U.S. partners from OEM (for RAMCO 1980), ODM (such as DAGGER-400 for CINCINNATI MILACRON), toward OBM.

B. Product line: Expanding from single-function CNC machine to multi-function CNC machine, small customized production line, and turnkey project (high precision and high speed machines for 3C electronic components, medical instruments, etc.)

C. R&D: Focused on product upgrades and automation, maximization, composition, intelligentization of principle parts; actively learning and acquiring importing advanced technology and technique from competitors and research organizations all over the world; encouraging field engineers to expand their skill set from processing technology to design and R&D. LEADWELL owns 36 patents in Taiwan, 27 patents overseas and 11certificates.

D. Production / Quality-customization: R&D control room to help improve BOM and drawing quality; developing its own ERP (Enterprise Resource Planning) system to shorten typical long lead time and production cycle for customization through Order Pre-examination System, advance planning of module production and so on.

E. Talent-value personnel training: Annual training lessons by internal instructor and periodic status review of implementation.

F. Marketing and service: OBM internationalization through agents - establishing brand image worldwide by participating in international exhibitions like EMO, IMTS, TIMTOS, CIMT and local shows, holding agent meeting once every two years, and inviting Leadwell agents from all over the world to visit factories and know more about the Leadwell products. Leadwell has establish long-term trusted partnership with its major U.S. agent CAMPAT who has 25 years experience of promoting Leadwell brands, and is also capable of handling most of the technical sides of service as long as Leadwell offers back-end technical consultation and delivers repair parts on time. Leadwll needs to commit more effort in helping agents outside of U.S. (like Canadian agents) to know more technical sides of the products.

General Manager Zhang is well aware of the changing competitive landmark in U.S. machine tool market under the U.S. Reindustrialization policy and re-shoring partly due to increasing cost (wage, logistics, and RMB appreciation) in Mainland China and southeastern Asia. Over the past few years, Leadwell grew quickly from orders of large CNC machines for heavy industry. However, in recent years over the course of gradual U.S. Re-shoring, more orders were shifted to small to medium sized CNC machines and small customized production lines requiring high precision and high speed

(for 3C electronic components, medical instruments, etc.), which are the focus of current Leadwell's product line.

5. GeoVision Inc.

(1) Introduction

GeoVision Inc. is a leading digital video surveillance company. Founded in 1998 by George Tai and so was the brand "GeoVision," based in Neihu Technology Park, Tainan City, Taiwan.

GeoVision focuses on high-end video surveillance products and solutions based on core technology of image capture, analysis, compression, and processing. The company's GV-series DVRs (digital video recorder), hybrid DVRs, and IP network video products are all equipped with built-in video content analysis. GeoVision also specializes in network surveillance and remote monitoring. The company's video surveillance products can integrate with central monitoring stations, access control systems, point-of-sales, ATM, GIS, and license plate recognition systems. The built-in video analytics software performs different tasks such as face detection, tampering alarm, unattended object detection, missing object detection, smart search, single PTZ object tracking, people counting, and crowd detection. Users will also benefit from optional feature enhancements including panorama view, defog, video stabilization, and crowd detection. To meet the needs of its multi-regional customers around the world, GeoVision provides 28 language versions of products under the Geovision brand.

Geovision received the 9th R&D Innovation Award in 2002, the 11th Rising Star Award in 2008, the 18th National Award of Outstanding SMEs in 2009. GeoVision was selected among the "World's 200 Best Under a Billion" by Forbes Asia in 2013.

(2) Business and strategy

GeoVision's customers include distributors, system integrators, and installers based in over 70 countries. GeoVision has expanded into U.S. market through B2B transactions with distributors, system integrators, and installers because safety control systems and surveillance products are required to be installed for the end users through local service providers who offer planning and consultation. End users include banks, restaurants, shopping malls, laundry, parking lots, and so on.

GeoVision has 5 regional subsidiaries overseas, including Shanghai (China), Tokyo (Japan), California (U.S.; GeoVision is 100% owner), Prague (Czech Republic), and Sao Paulo (Brazil). The U.S., which dominates GeoVison's main export market - North America, contributes more (over 30% of its revenue) than European or Asian market. According to GeoVision's manager Chen, the appeal of U.S. market rests on four pillars: (1) English as single used language, (2) highly concentrated and increasing demand for security systems compared to emerging markets, (3) open, transparent, and fair bidding system / RFPs (requests for proposals) for both private and government purchases on technical, environmental, and safety standards, and (4) International visibility and brand image of advanced manufacturing.

In response to the changing business environment and products / services offering in U.S. market, GeoVision must strengthen its internal ability and pay attention to the following areas:

A. Trade model: OBM with GeoVision brand.

B. Product line: Expanding from DVR motherboard and peripheral hardware modules to IP camera + NVR (network video recorder) total solution with hardware / software package; further extended to central monitoring stations, access control systems, point-of-sales, ATM, GIS, license plate recognition systems, and a complete lineup of security accessories that help security professionals deliver customized services to users.

C. R&D: Among earliest developers of IP camera with years of digital surveillance system design experience; working tirelessly to build world-class R&D team and maintaining a top team for application, H/W, driver, image compression, image recognition and internet solution; actively recruiting and training internet-related software and hardware R&D professionals, as well as firmware engineering talent who can integrate hardware and software design; quick response to customization needs.

D. Marketing and service: Long-term close relationship with and constant feedback from system integrators is vital for GeoVision to lower servicing cost, respond swiftly to customization needs, improve existing products, and promote innovation; establishing mutual learning mechanism to induce and stimulate creative ideas, as well as help system integrators accumulate technical service skill so they can resolve most maintenance and repair (except major failures or defects).

Chen expects that more firms riding into the wave of the U.S. Reindustrialization policy and re-shoring will set up advanced manufacturing factories and R&D centers in the U.S., which will add to the demand for security control systems – a growing opportunity for GeoVision. He thinks that Taiwan SMEs should enhance their soft power, figure out the core value proposition of their products / services, and move upward along the value chain of advanced manufacturing, not to compete solely on cost or engage in price war. To grow export in the U.S. market, trade associations and SMEs who participate in overseas exhibitions must pay more close attention to site selection and image design to effectively attract overseas customers.

6. Hu Lane Associate Inc.

(1) Introduction

Hu Lane Associate Inc. (Hu Lane), founded in 1977 and headquartered in Hsichi, New Taipei City, Taiwan, is a professional connector manufacturer mainly focused on automobile and motorcycle terminal products, parts, and components. The company started from mold manufacturing and worked tirelessly over a decade to be officially accredited as a CSA manufacturer in 1989 and secured orders for U.S. auto parts manufacturers. It has become a renowned high-end automobile connector manufacturer in Asia, and provides a deserving case for its export transformation.

In 1982, Hu Lane successfully developed terminal crimping machines and officially put them into volume production and marketing. Its superior molding technology further enhanced the manufacturing quality of automobile electronic terminals. In 2000, the company developed auto terminal image sensors (LCD), and further expended its business scope in auto electronic connectors. Hu Lane won the Rising Star Award from the Ministry of Economic Affairs In 2002, and became

Taiwan's model export manufacturer in automobile component industry.

(2) Business and strategy

Though Hu Lane's main market is in Asian emerging markets, its experience of U.S. auto supply chain and securing orders from U.S. major auto components suppliers has been a significant advantage in high-end technology, quality and brand image for its success in Asia.

In the past, Hu Lane was a domestic 2nd tier auto components supplier, working with electrical wiring manufacturers in component integration for domestic automakers such as China Motor and Yulon Motor. Facing increasing threat from overseas new entrants in domestic market after Taiwan joined the WTO, Hu Lane had to develop overseas market for growth.

After 2000, Hu Lane began to explore the U.S. market. However, major global automakers' supply chain is highly selective and opened only to a few trusted suppliers with long-term relationship. It took enormous time and effort to get into the U.S. supply chain. For example, Delphi Corp., General Motor's largest electronic control system supplier, took 10 years to continuously observe Hu Lane's production equipment and quality control system. Over the course of the period, Hu Lane continued to improve its products, technology, and process yield. Hu Lane obtained CSA and UL certification, and eventually became Delphi's certified supplier in 2007 and moved into the supply chain of the North American automobile industry. Now, Hu Lane's main U.S. customers are Delphi and Lear Corp. (a global automobile supplier). Hu Lane provides automotive seating related circuit wires and terminals for Lear and other connectors for AM (after market).

To further explore the U.S. automakers' supply chain and respond to the changing product contents, Hu Lane must strengthen its internal ability and pay attention to the following areas:

A. Trade model: Moving from AM maintenance / repair parts to OEM of connectors / terminals for major U.S. suppliers (such as Delphi and Lear).

B. Product line: Expanding from AM maintenance / repair parts, to traditional OEM of connectors / terminals for major U.S. suppliers, and in the future to connectors for the entire electronic control systems / packages and technical services, as well as for medical instruments and electric cars.

C. R&D: Accumulating core-technology and developing the unique and diversified products are the keys for quick response to highly varied (particularly small scale) customization needs for precision molds and high-end products (thousands of terminals of vast diverse functions are needed for one car).

D. Production / Quality: Commitment to high quality through sound quality management system; adoption of the Information Management System known as MRP into the entire plant production lines early in 1989 and ERP (Enterprise Resource Planning) in 2003; official accreditations include QS 9000 (1998 version) in February 2002, ISO 9001 (2000 version) in April 2004, ISO/TS 16949 (2002 version) in July 2006, and ISO/IEC 17025 (2005 version) calibration laboratories certificate in 2007.

E. Marketing / Servicing: Consistently living up to the utmost satisfaction of customers; working with global first tier suppliers to jointly develop new business; sending Hu Lane's technicians and engineers regularly to U.S. seeking feedback on products and services and feel market pulse from first tier suppliers.

Zhang, VP of Hu Lane, thinks that U.S. automakers have regained their global competitiveness after 2009 and benefited from riding into the wave of the U.S. Reindustrialization policy and re-shoring, which will open up more business for Hu Lane as a certified supplier for major U.S. automakers' supply chain. One goal of strategic importance is to move up to be a First Source Supplier (currently Hu Lane is a Second Source Supplier) in U.S. market.

7. Green Source Technology

(1) Introduction

Green Source Technology (GST), founded in 2007, is a solar tracking system manufacturer, formerly known as Jaeger Industrial Ltd. It is a leading manufacturer of electromechanical actuators, electronic control units as well as complete actuation systems, formed by merge of Li Hui Electric Manufacturing and Jaeger Corp. Ltd in 2000. Li Hui was established to produce transmission components in Taiwan in 1977. Jaeger Industrial Ltd. won the 8th Rising Star Award from the Ministry of Economic Affairs and the 13th National Award of Outstanding SMEs in 2004, and became a Taiwan blue-chip exporter in electromechanical actuation systems and components.

(2) Business and strategy

GST has over 30 years of manufacturing experience in solar tracking systems and diverse transmission products with proprietary technology and advanced R&D capability. Its self-developed products include HCPV high precision dual axis solar tracker, horizontal single axis tracker (HSAT), horizontal tilted single axis tracker (HTSAT), and linear actuators. Its solar tracker systems can effectively raise the power generation capacity factor by 20% to 40%.

Early in 1999, Jaeger USA was established in Los Angeles, California to serve industrial and OEM customers in US market through direct sale and post sale service, and actively established networks of state agents / dealers to obtain in-depth knowledge and wide reach in the U.S. market. The company's main clients are local solar power plants after the launch of GST.

Eric Shou, Chairman of Jaeger Industrial and later GST, mentioned that although Mainland China is the largest solar power market in the world, there are too many non-economic risks and complexities such as difficulty in AR (accounts receivable) recovery which reduced the willingness of private firms to enter the market. On the other hand, the U.S. and Japanese solar markets provide more potential for investment due to sound electricity price system and / or tax incentives for solar power. Though price of electricity in U.S. is lower than that of Japanese market, U.S. solar power plants can get Solar Investment Tax Credit (ITC - the ITC is a 30 percent tax credit for solar systems on residential properties under Section 25D and commercial properties under Section 48) and have easy access to credit from private banks. Besides, solar radiation levels in the southwest of U.S. are some of the best in the world. Investment tax credits for solar energy projects, volatile oil prices, and

international concern about global warming have all contributed toward public and industry interest in utility-scale solar energy in U.S. Eric also indicated that to GST as well as other Taiwan SMEs, U.S. market is indispensable part of the sustainable growth strategy for keeping up advanced core technology and competitiveness in a business friendly environment with transparent policies and regulations.

To further explore the U.S. market and respond to the changing product contents, GST must strengthen its internal ability and pay attention to the following areas:

A. Trade model: Moving from Jaeger era's low margin, easy to copy components OEM to GST era's OEM / ODM of complete solar tracking systems and diverse transmission products with proprietary technology, advanced R&D capability, and patent protection.

B. Product line: Expanding from traditional components such as solar tracking rack structure and linear actuators to complete solar tracking systems with emphasis on quick installation, early failure warning, anti-shade design, anchor-type solar tracking frame and other characteristics, a major breakthrough achieved by many years of experience of engineering integration and customization.

C. R&D: Accumulating core-technology and closely following the technology trend and construction methods of U.S. market; driving and sponsoring R&D team members, most of whom have mechanical engineering background, to obtain cross field knowledge, particularly in electric power systems and construction engineering.

D. Production / Quality: Cost advantage achieved from steel frame production in Mainland China; other mechanical and electrical control components are made in Taiwan; all shipped to the United States for construction and assembly; GST is ISO9001 certified and has implemented a strict quality assurance system and management plan covering material processing procedures, finished products, and rigorous supervision for the packing and delivery process.

E. Marketing / Service: Designated executives and engineers dedicated to customization, construction and assembly advices and field support. GST is committed to long-term customer relationship and customer satisfaction through value added products to lower customers' cost and enhance their power generation capacity factor.

Eric is well aware of the appeal of U.S. solar market as well as the potential heightened competition under the U.S. Reindustrialization policy and re-shoring. Solar power and other green energy technologies are of strategic importance to the U.S. and the recent strong economic recovery in the U.S. will increase demand for solar power and solar tracking systems. However, due to varied and complex state laws and EIA regulations (Energy Information Administration), it often takes two years to complete a solar power plant project in the U.S. Therefore, to develop the U.S. solar market, GST must be fully committed to deep understanding of EIA regulations, state laws and technical specifications, as well as developing comprehensive servicing plan and software and hardware solutions.

IV SMEs' Export Transformation: Strategic Direction

From 2000, many Taiwan manufacturers including SMEs moved production to Mainland China to fulfill their overseas orders with low cost. This trend helped drive export growth with competitive price but also slow down the technology upgrades for advanced manufacturing. Based on the above case studies and analysis of the dominant themes of the U.S. Reindustrialization policy that pose both opportunities and significant challenges to Taiwanese SMEs' export growth and transformation, many SMEs may need further export transformation more oriented toward U.S. supply chain of advanced manufacturing, as the U.S. economy has again become the major driving force of the global economic growth. Followed are the strategic directions for SMEs' export transformation.

1. Accumulate U.S. Market Experience, Maintain High Quality Standard Linked to Advanced Manufacturing, and Enhance Image in Emerging Markets

U.S. market has long been Taiwanese SMEs' major market to expand overseas. However, over decades, particularly before global financial crisis, Mainland China and other emerging markets such as ASEAN countries had become primary target for companies all over the world for their relative higher growth and low cost. As the U.S. economy has again become the major driving force of the global economic growth, two main themes of the U.S. Reindustrialization policy are re-shoring of advanced manufacturing and technology and competitiveness upgrade in the U.S. This presents both opportunities and significant challenges to SMEs' export transformation in global positioning.

The U.S. led North American market typically assumes a "lead market" role for Taiwanese SMEs' overseas expansion while emerging market serves as "follow up market," where SMEs offer products and services developed by advanced manufacturing technology and experience they accumulate from the lead market. In fact, many SMEs also believes that maintaining trade relations with the U.S. customers while meeting tough quality sampling / testing and high standard of certification, will not only enhance SMEs' R&D ability but also help establish their international images of advanced manufacturing, high visibility, and word of mouth in emerging markets.

In addition U.S. companies are more willing to partner with Taiwan manufacturers than those of emerging markets for key components and products of special safety features due to potential violation of intellectual property right. This could promote a close Taiwan-U.S. cooperation mode for expansion strategy in emerging markets. Therefore, in crafting export transformation strategy in response to U.S. Reindustrialization, Taiwanese SMEs need to pay attention to accumulate the U.S. market experience, maintain high quality standard linked to advanced manufacturing, and enhance image in emerging markets.

2. Maintain Competitive Advantage in Overseas Niche Markets through Customized Design and Comprehensive Service

As the U.S. re-shoring trend encouraged by re-industrialization policy looks to regain momentum, many U.S. manufacturers will likely face a significant gap between the talent they need to keep growing their businesses and what they can actually find domestically after decades of U.S. manufacturing outsourcing. Therefore, highly intelligent automation via process sensors, controllers and robotic is indispensable for the U.S. based advanced manufacturing to fill in the gap. To grasp this opportunity, SMEs need to move up from traditional low-end components OEM to ODM and OBM models focusing on value added products and services such as customized design, automated production lines, system integration and differentiation strategy, thereby deepening relationships with U.S. customers and maintaining competitive advantage in overseas niche markets.

3. Improve Marketing and Service Quality by Working Seamlessly with U.S. Local Service Providers

SMEs should work tirelessly to develop long-term close relationship and constant feedback with U.S. local service providers to lower servicing cost, respond swiftly to customization needs, improve existing products, and maintain quality with local features. It is vital to establish mutual learning mechanism to induce and stimulate creative ideas, help local service providers accumulate technical service skill so they can resolve most maintenance and repair, and accumulate in-depth knowledge and innate understanding of the local cultures for wide reach in the U.S. market.

4. Strengthen R&D of Small-Scale Automation System in Response to the Demand for Advanced Manufacturing Driven by U.S. Re-industrialization Policy

SMEs often start with obtaining B2B export orders fulfilled through domestic factories, which could gradually be extended to neighboring countries for lower cost and expansion. Contrary to larger firms, SMEs can take small-size customized order with flexibility and speed, thus building their unique core competency that is hard to imitate. Therefore, SMEs must strengthen R&D of small-scale automation system to enhance customization capability to sustain competitive advantage through differentiation to secure long-term overseas orders in response to the demand for advanced manufacturing driven by U.S. Re-industrialization policy.

The government has been actively implementing several policy measures to subsidize R&D for SMEs, including "The Plan on Reviving Conventional Industries," "The Plan on Small Business Innovation and Research," and counseling plan for new product innovation and R&D.

5. Assist in Talent Cross-training to Bolster SMEs' R&D Depth and Scope

From above mentioned cases we can find that, over the course of trading transformation from simple components OEM to ODM and OBM, SMEs need to expand skill set in custom design, process design and intelligent automation, systems integration, software and hardware, and so on within the organization. Thus, CEO and key employees must have international working experiences and industry specific know-how to overcome the language barrier, adjust to business customs of foreign countries, establish long term business relationships with trading partners, and promote buyer-seller Interdependency. However, most SMEs' R&D personnel may start with narrow technical background such as mechanical engineering. Therefore, it is very important assist in talent cross-training to bolster SMEs' R&D depth and scope.

The government has been actively implementing policy measures for SME talent cultivating, including plans on industrial professional training, cross-industry technology management and international talent workshop, cross-sector innovation management training courses, international business personnel training, and international servicing personnel training. In the future, government may further link SMEs personnel training courses to the U.S. Re-industrialization trends to help SMEs continue to learn and grow, forming a "learning by doing virtuous mechanism."

6. Integrate Foreign Trade Associations and Think Tanks Resources to Help SMEs Understand the Technology Trend, Regulations, Certification and Business Environment of the U.S. Market to Reducing the Entry Barriers

Compared to emerging markets, the U.S. market demands high safety and quality standards for new products and imported components. Regulations and laws at Federal and states level could be complex and overwhelming for SMEs. To secure long-term orders from U.S. markets in ever changing business and legal environment, SMEs owners must broaden its international vision, enhance business acumen, challenge status quo, and never stop learning. SMEs typically lack capital and in-house professionals to handle the challenge by themselves. Therefore it is important for government agencies to integrate foreign trade associations and think tanks resources to help SMEs understand the technology trend, regulations, certification process and business environment of U.S. market to reducing the entry barriers

7. Help SMEs Make Inroads into the Supply Chain of the U.S. Advanced Manufacturing through Industry Clusters and International Cooperation

It is very difficult to compete with international brand manufacturers even if an SME has established its own brand in the U.S. market. Based on the cases above, SMEs as qualified suppliers often are only 2nd or 3rd source suppliers with limited order size. To help SMEs make inroads into the supply chain of the U.S. advanced manufacturing through international cooperation and industry clusters

formed on “trust-based relationship" and "complementary division of labor,” government agencies in Taiwan have been working actively to implement guidance and subsidiary programs, including SME cluster innovation integrated service project, plan on supply chain innovation and quality enhancement, plan on supply chain management and SME marketing.

8. Study the Experience and Impact of the U.S. Re-industrialization Policy, Match Trading Needs between Large Enterprises and SMEs, and Promote an Atmosphere of Cooperation, Technology Upgrades, and Advanced Market Development

In addition to promoting the U.S. re-shoring, another major goal under the U.S. Re-industrialization policy is to enhance U.S. SME competitiveness. Multiple measures has been introduced to help bridge the gap between small, nimble businesses looking for new opportunities and large corporations looking for innovative new ideas and diversity in their supply chains, address the technical and business challenges encountered by small and mid-sized U.S. manufacturers as they attempt to integrate, adopt, transition, and commercialize both existing and emerging products, and overcome the hurdles to entering new export markets by removing trade barriers abroad and assisting with financing.

As the U.S. SMEs form industry clusters and become more competitive in the U.S. supply chain of advanced manufacturing as well as in emerging market, they pose significant challenge to Taiwanese SMEs. An important topic is to encourage SMEs to continue cultivating core technologies with international competitive advantage, to seek opportunity to trade with large enterprises at home and abroad, and to reduce the negative impact of heightened competition from U.S. firms.

The government has been actively implementing policy measures to enhance quality and corporation matching for SMEs, including plans on Taiwan-Japan industrial cooperation matching program, SME innovation and quality transformation cultivation, and SME quality management enhancement. In the future, the government agencies could further study the experience and impact of the U.S. Re-industrialization policy, match trading needs between large enterprises and SMEs, and promote an atmosphere of cooperation, technology upgrades, and advanced market development.

Chapter 7

Development Strategy for New Ventures in the Era of U.S. Manufacturing Renaissance

The "Made in China by the U.S." trade model adopted by many industries in the past gave the U.S. a hard time to create jobs through export and production sectors in the past global financial crisis, during which the old industrial policy that focused more on the financial industry and less on the manufacturing counterpart was severely criticized again. Though this old industrial policy caused the manufacturing to move abroad, it helped local SMEs accelerate the development of automation technologies. Dramatic changes in manufacturing with the emerging technologies such as clean energy and 3D printing has fueled the so called "Manufacturing Renaissance" in U.S.

Faced with this trend, the U.S. government proposed policies to develop new industries. Among them, Clean Energy, Medical and Health, Biological Engineering, Nanotechnology, Advanced Vehicle, and Aviation were listed in the ARRA (American Recovery and Reinvestment Act) as the high-priority industries in the next 20 years. The AMP (Advanced Manufacturing Partnership) chose Information, Biotechnology, and Nanotechnology industries to invest. Faced with the U.S. manufacturing renaissance, Japan, Mainland China, South Korea, and Germany all worked hard to take advantage and maintain their competitiveness by establishing new production lines in U.S. or by building related industries in their own countries.

To maintain the key position in manufacturing in the world, Taiwan should learn from the U.S. experience to reinforce its strong ICT and machinery industries and to accelerate the development of new ventures in emerging industries so that Taiwan could move forward on a solid footing in the next industrial revolution. It is well known that Taiwan's manufacturing falls behind as evidenced by the decrease of output values. Pressed by the price wars initiated by Mainland China and Southeast Asian countries, Taiwan's manufacturing has suffered from the lack of growth momentum. Although the 2013 Global Manufacturing Competitiveness Index of Deloitte indicated that Taiwan was among the top of global manufacturing competitiveness, the innovation ability of Taiwan's manufacturing fell behind. Compared with the U.S., Germany, and Japan, Taiwan's manufacturing industries tended to focus mainly on expanding their production volume, with relatively little attention being paid to enhancing product value-added (e.g. by adopting a differentiation strategy, adding value through design, own brand development, and integrating manufacturing with services). In addition, the average size of new ventures in Taiwan's manufacturing has become smaller, meaning that entrepreneurs hesitate to commit in investment and technology upgrade. Lack of proactive new ventures in the manufacturing means that Taiwan's manufacturing industry is faced with bottleneck of restructuring.

As pointed out by Industrial Technology Research Institute of Taiwan, the most influential industries in the future are the Internet of Things, Mobile Technology, Automated Production, Advanced Robotics, Cloud Technology, Advanced Vehicle, Biotechnology, Advanced Material, 3D Printing, and Clean Energy. This list is overlapped with that proposed by ARRA. To overcome the problem of shrinking in sizes and profit margins of new ventures, the government should encourage new ventures to invest in the high-priority industries listed in ARRA. However, the capital needs and risks of new ventures in the high-priority industries are higher. Considering the intensified competition in U.S., the ending of QE, and the uncertainty of the Abenomics in Japan, one could say that new ventures in Taiwan have a tough road ahead. How to help them develop and succeed in U.S. and the world markets is an important issue for the government and the policy makers.

This chapter is divided into four sections. Section I presents an overview of the practice and theory in new ventures; section II examines the development of emerging technologies in the U.S. and trends of new ventures in Taiwan; section III offers case studies of selected SMEs with cutting edge technologies; section IV discusses strategies for Taiwan's new ventures in response to the U.S. Manufacturing Renaissance.

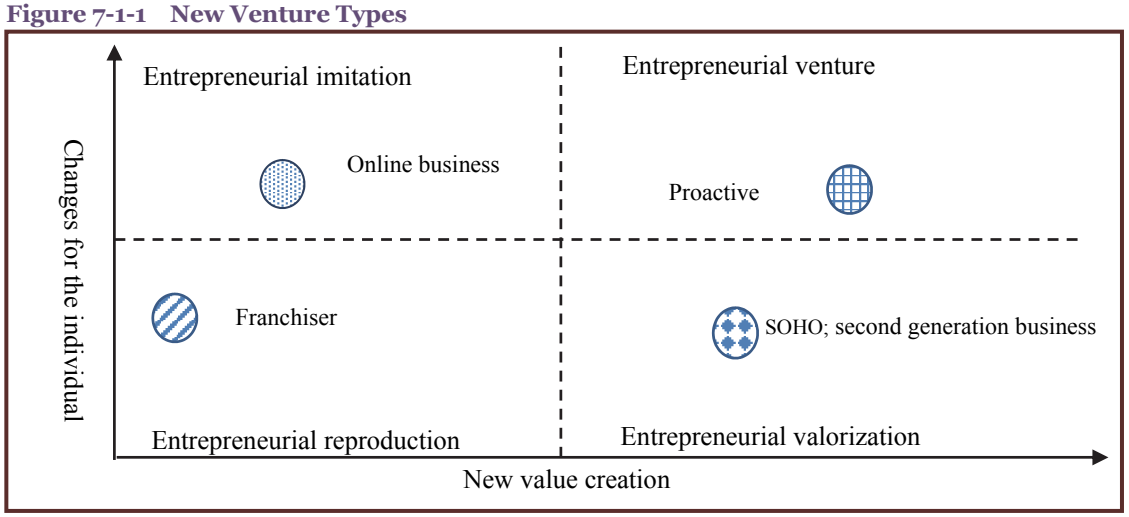
I Emerging and Growth of New Ventures

1. Types of New Ventures

A new venture is typically an enterprise that has been established and lacks stability. There are many discussions about the types of new ventures. Bruyat and Julien (2001) use "new value creation" and "change for the individual" as criteria to describe types of new ventures. The new value creation indicates the level of innovation and it brings changes to individuals. The authors identify 4 different types of new ventures listed in Figure 7-1-1. Entrepreneurial reproduction means that the new venture creates lower value to the individual and market. This usually occurs when the entrepreneur use his/her own professional experience to create a company in the existing industry. Entrepreneurial imitation indicates that the new venture creates lower value to the market but larger changes to the individual. This case occurs when the entrepreneur enters into an unfamiliar industry or an industry not in his professional. Entrepreneurial valorization and entrepreneurial venture both create higher values to the market. The latter would be faced with a highly uncertain market. New ventures in the high-priority industries belong to this category.

Entrepreneurial-venture style firms could enhance competition in the market, which in turn, would improve market mechanism and technologies, and contribute to the efficient use and allocation of resources. In addition, Entrepreneurial-venture style firms would help the industry upgrade and create more employment. Unlike regular SMEs, entrepreneurial-venture style firms are faced with higher risk. Table 7-1-1 compares these two style firms.

Figure 7-1-1 New Venture Types



Source：Bruyat and Julien (2001) .

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Table 7-1-1 Comparison between Entrepreneurial-Venture Style Firms and Regular SMEs

Composition factors	Entrepreneurial-venture style firms	Regular SMEs
Goal	Great incentive and passion; actively seeking breakthroughs; focusing on global market	Low incentive; focusing on domestic market
Challenges	Risk taker; seeking innovation and challenge	Risk averse; conservative operation
Realization	Unique product and service; new operation style	Regular product and service; traditional operation style
Social impact	Stock compensation; employment, environment protection	Focusing on own business

Source: Sakakibara, Maeda, and Ogura (2002).

2. Growth Theory for New Ventures

The book, *Enterprise Life Cycle* (Adizes, 1989) identifies the life cycle of an enterprise into 10 stages: courtship, infancy, go-go, adolescence, prime, stability, aristocracy, recrimination, bureaucracy, and death.

Adizes (1989) argues that if an enterprise grows following the theory, then it would live for tens or hundreds of years. However, there are always chaos or destructives in the life, so if an enterprise cannot make it, then it is dying, and this is why there is not many enterprises living that long. When a new venture is maturing into an organized one, there should be improvements in decision making,

human resource allocation, and financial management. In addition, according to Adizes (1989), at stability stage, the peak of the life cycle, the enterprise should enhance its adaptability. This could be achieved by innovation, on-the-job training, and team building to avoid the loss of efficiency and bureaucracy that would lead to the death of the enterprise (Hsu, 2007).

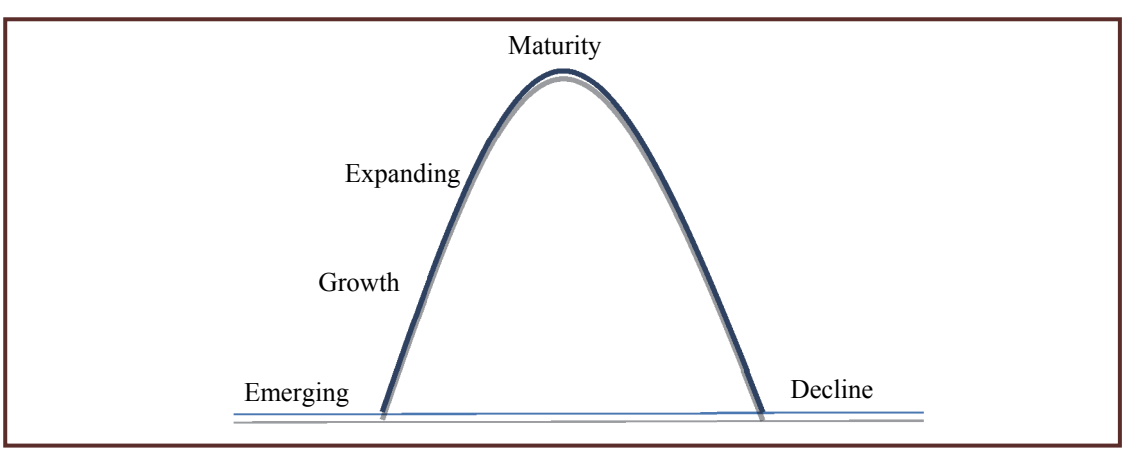
There are many arguments about the fitness of the theory to reality. Many new researches find that with the fast circulation of technology and information, the life cycles of some firms are shortened to several months or years.

(1) Growth theory of enterprises

Schumpeter (1911) believes that the success of an enterprise is to break and rebuild the existing relationship among production inputs. Through the process, the enterprise could enhance its technology and profit, which in turn, helps avoid the decreasing of marginal profit. If an enterprise stays in the stable status and neglects upgrade, then it would be replaced pretty soon. Based on the argument of Schumpeter (1911), Penrose (1959) proposes the theory of enterprise growth. The author indicates that the key to growth is the endowment (including funds and factory buildings) and human capital, and the latter is more important. In addition, the author emphasizes the importance of teamwork and management team. Through the teamwork, the firm could effectively reduce the cost of personnel training and efficiently allocate resources. The management team is the brain of the firm. Through the coordinating, communicating, cooperating, and planning of the management team, the firm could keep growing.

Combining the product and enterprise life cycle theories and the growth theory of enterprises, one could specify the life cycle of an industry into five phases: emerging, growth, expanding, maturity, and decline, as shown in Figure 7-1-2. An enterprise should clearly know its status and the goals of that phase so it could be well prepared for the next phase.

Figure 7-1-2 Life Cycle of Industries



Source: Cheng, Chen, and Huang (2014).

(2) The key to the success in the emerging phase

Satake (2003) believes that the key to the success in the emerging phase is the ability to obtain operational resources. According to Leonard-Barton (1992) and Belcourt et al. (1996), operational

resource includes invisible capital, i.e., the human capital and organizational capital, and the physical capital. The invisible capital is more valuable and is hard to be substituted and copied, so it helps build up the competitiveness of a firm.

Brush et al. (1997) introduce new venture's capital structure. Human capital in the management level contains experience, capability, reputation, and personal characteristics. Social capital is one's connections. Physical capital includes technology, factories, equipments, and all operation related physical capitals. Organizational capital consists of organizational relationship (the relationship among employees and with outside environment), organizational structure, technological innovation, business operation ability, commercialization ability, organizational culture encouraging innovation and cooperation, and the organizational memory and learning. Financial capital is the fund needed for the start of operation and future growth.

Bamey (1991) divides capital types into three. Physical capital indicates the machinery, equipments, factory buildings, location, and production materials. Human capital indicates trainings to the managers and employees, and the judgment, connections, and perception of the managers. Organizational capital includes the formal and informal plans and the control and coordinate system. Collis (1991) argues that the organizational resource is the formal and informal plans, including the core competency, organizational ability, and management tradition. Among them, the core competency indicates the specific technology, complimentary resources, or institutional regulations that are formed by the physical and invisible resources. The core competency is the unique advantage owned by the firm and not easy to be copied. The organizational ability indicates the management ability that could enhance the corporation efficiency and efficacy, for instance, the encouragement of innovation, organization learning, and information management. The management tradition indicates the inheritance of the physical capital (lands, factories, and equipments) and the invisible one (history, corporation culture, and leadership).

(3) Key to success in the growth phase

As mentioned above, when entering the growth phase, the firm is faced with totally different challenges. The keys to success in this phase suggested by Yuan (2004) and other researchers are:

A. Increasing human capital

Many studies find that human capital has a positive impact on the long-term (over five years) growth and the surviving rate of a firm. The reason is that human capital helps the firm own a variety of knowledge that would lead to cost advantage from growing and to prevent financial related bankrupt.

Recruiting is a way to increase human capital. However, according to Sarasvathy (2001), most of the time new ventures have to compromise with the best available choice, because the new ventures do not have either a well-developed human resource system or enough organizational resource to conduct internal training and career counseling (Katz et al., 2000). With these constraints, the new ventures could only directly recruit in the labor market. On the other hand, since the new ventures are faced with great uncertainty and lack reputation and resources, it is difficult to attract qualified personnel in the labor market. Sometimes the new ventures recruit through informal channel such as personal connection. This is an easier and less expensive way to hire people who often better understand the company and have a higher incentive to join the team.

B. Obtaining and creating knowledge

As pointed out by Eisenhardt and Santos (2002), knowledge is the most important resource to a company. Knowledge can be applied to organization operation to obtain scale economy that is difficult to be copied by competitors (Grant and Baden-Fuller, 2004). Naldi and Davidsson (2013) find that knowledge obtained from the international market could nourish growth. Penrose (1959 and 1995) and Pitelis (2007) argue that creating knowledge through learning encourages the firm to face challenges and to seize the chance to grow.

C. Entrepreneurship-oriented organizational culture

Entrepreneurship orientation was first proposed by Miller (1983) and followed and expanded by Covin and Slevin (1989 and1991). Entrepreneurship orientation means that behavior tendency, management philosophy, and decision making are all characterized by entrepreneurship. Covin et al. (2006) argue that entrepreneurship orientation influences every aspect of a firm's performance, especially in sales growth. However, this positive impact is only significant in new ventures, not in matured organizations. In addition, entrepreneurship orientation must be accompanied by sufficient organizational resources to achieve its influence. Anderson and Eshima (2013) believe that age and invisible capital of the firm are the intermediates between entrepreneurship orientation and company growth. Covin and Slevin (1991) find that a new venture with invisible resource grows faster than the one without.

D. Acquiring invisible assets

As discussed above, entrepreneurship orientation, accompanied by invisible assets, is critical to corporate growth. As pointed out by Wiklund et al. (2010), the scale of a new venture is usually small so it is difficult to acquire visible assets. If a new venture obtains more invisible assets, it could gain a much better competitive position.

E. Choosing appropriate target market

The scope and purchasing power of the target market could constrain the company's growth and its velocity. A blue-sea market with low competition and lack of development is advantageous to a new venture.

II Development of U.S. Cutting Edge Technologies and Trends of New Ventures in Taiwan

Policies of "The U.S. Manufacturing Renaissance" have substantial influences on the future development of global manufacturing industry and may reshape global economic landscape. Under this circumstance, it is vital for new ventures in Taiwan to be proactive in establishing their connections to advanced manufacturing in order to seize the chance to catch up with this trend and maintain the lead on emerging market countries in value added innovations.

1. Development of Cutting Edge Technologies in the Era of U.S. Manufacturing Renaissance

The U.S. economy was in stagnancy after the global financial crisis. With the declining share of manufacturing in GDP and in employment, the innovation in the manufacturing industry fell behind, which in turn, caused U.S. to lose the leading position in the medium and advanced technology areas. Because of this, U.S. realized that the previous industrial policy that focused more on the financial industry needed to be revised.

Although U.S. was heavily hit by the global financial crisis, its entire industrial environment has been friendly to the repatriation and growth of the manufacturing industry. The factors help improve the entire industrial environment include the reduced production cost due to the exploitation of the oil shale, the compromise of labor union, the raise of consumer awareness of made-in-U.S.A products, and the strengthen of technological innovation. Although the "Made in China by the U.S." model in the past decades caused many manufacturing firms to move abroad, the ones stayed continued on developing automation technologies and merging with each other. All these factors combined with the investment in education, the change in working style, the emerging of internet business, and the Fed's ultra-accommodative monetary policy, help "the U.S. Manufacturing Renaissance" gain steam. The Framework for Revitalizing American Manufacturing was proposed in 2009. It required the federal government to increase inputs in R&D, support the development of the existing advanced manufacturing sectors, encourage the growth of emerging industries, and repatriate the manufacturing. To enhance the strength of small businesses and to raise the competitiveness on exportation, the federal government continued proposing several bills, including the National Export Initiative (NEI), ARRA, Strategic Manufacturing & Job Repatriation Act, Select USA, Insourcing American Jobs, and AMP. Table 7-2-1 summarizes the high priority emerging industry list proposed in ARRA and AMP.

The ambition of the U.S. manufacturing renaissance was not only to repatriate the manufacturing, but to regain the leading position in the global manufacturing. To achieve this goal, the federal government spent lots of time and money on education and technology developments. Through the enhanced manpower and technology, the government could create an entire supply chain for the emerging industries. Through the new energy, new technology, and new materials, the government could direct global funds pooled into U.S., create new employment, and sustain economic growth.

There are enormous business opportunities for Taiwan in the emerging industries. For instance, the increased demand due to the economy recovery and the expanding of advanced manufacturing could be an opportunity for Taiwan's export of automation equipments and robots. Other examples include the increased demand for medical and health products due to the aging population, for clean energy due to the surging of oil price and environmental concerns, and for 3D printing due to the change of working style. Table 7-2-2 summarizes these business opportunities. Therefore, there is a chance for Taiwan's new ventures to use U.S. as an experimental lab and base to expand to the global market.

Table 7-2-1 Emerging Industries with U.S. Manufacturing Renaissance

Manufacturing Renaissance Policies	Emerging industries
ARRA	Clean Energy, Medical and Health, Bio-engineering, Nanotechnology, Advanced Vehicle, Aviation
AMP	Smart Manufacturing, Advanced Material, Nanotechnology Fabrication, Sustainable Manufacturing, Additive Manufacturing, Digital Manufacturing Technology, Flexible Manufacturing System in Electronics, Bio-manufacturing, Advanced Manufacturing and Inspection Equipment, Robotics, Advanced Molding and Binding Technique

Source: Cheng, Chen, and Huang (2014).

Table 7-2-2 Business Opportunities with U.S. Emerging Industries

Industry	Possible business opportunity
Automation Equipment, Robot, Advanced Manufacturing and Inspection Equipment	The economic recovery and the expanding of advanced manufacturing increase the demand for automation equipments and robots
Medical and Health, Bio-engineering	Aging population increases medical and health demand
Clean Energy, Advanced Vehicle	The surging of oil price and environmental concerns increase demand for clean energy
Additive Manufacturing	New working style increases demand for 3D printing
3D Printing	Increased demand for services related to the new working style caused by 3D printing
Emerging industries	More overseas order

Source: See Table 7-2-1.

There were some preliminary results from manufacturing renaissance related policies. As indicated in the BCG report, the manufacturing employment had increased by 480,000 since 2010. In the future, the repatriation of the manufacturing will reduce the unemployment rate by 1.5% to 2%. The increased competitiveness will increase exports by US$70 billion to US$115 billion. These are very significant impact of the U.S. manufacturing renaissance. The details of ARRA and AMP are:

(1) ARRA

ARRA was signed in February 2009. The primary purpose of this bill was to increase consumption by reducing personal and business income taxes. In addition, the government increased expenditures by more than US$500 billion in supporting education, training, health care, infrastructure, public investment, environmental and energy safety, and welfare for low-income households. ARRA provided more than US$100 billion investment in students, teachers, courses, trainings, and educational infrastructures to stimulate improvements in education. This opened an opportunity never seen before in educational policy reform and was the biggest grant of educational spending since World War II.

Table 7-2-3 ARRA

Item	Content
Personal and household tax deduction	• Provide personal and household wage tax exemption to stimulate consumption.
Encourage development of emerging industries	• Invest in renewable energy and energy-saving items, such as wind energy, biomass energy, geothermal energy, and micro-fluidics energy. Part of the funding is used as tax credit for firms using renewable energy in production. • Provide collateral loan to Clean Energy Plan. • Increase the production of renewable energy; invest in studies of energy efficiency and renewable energy, high-efficiency battery, geothermal and biomass energy.
Education, training, healthcare, and infrastructure	• Increase investment in infrastructure, science, public transportation, highway, and high-speed rail. • Increase coverage of high-speed internet and improve internet connection in rural areas. • Invest in healthcare IT industry. • Provide grants to educational construction, repair school buildings, and educational modernization.
Energy safety	• Remove abandoned nuclear weapons and energy research centers; apply energy efficiency plan in defense facilities. • Increase and modernize allocation efficiency of national power network.
Low-income household welfare	• Add emergency fund in public health and social service. Part of the fund is used in paying health insurance for the unemployed. • Invest in public housing project. • Enlarge the coverage of food stamp to help low-income families.

Source: See Table 7-2-1.

(2) AMP

The *Report of Ensuring American Leadership in Advanced Manufacturing*, proposed by President's Council of Advisors on Science and Technology (PCAST) in 2011, urged that the industry, government, and academia should work together to face challenges and transition opportunity by improving and enhancing production technology, process, and product quality in the manufacturing industry. In respond to the suggestion of PCAST, President Obama engaged the AMP and created AMP Steering Committee under PCAST to determine policy directions.

The AMP Steering Committee proposed the report of Capturing Competitive Advantage in Advanced Manufacturing on July 17, 2012. There were 16 policy suggestions in the report. The report suggested that the federal government should revive the manufacturing on the bases of retaining national competitiveness, innovation economy, and strengthening the foundation of domestic manufacturing. There are several suggestions regarding new ventures: specify advanced manufacturing strategies, give priority to the development of multidisciplinary technology, establish National Network for Manufacturing Innovation (NNMI), enhance the industry-academic cooperation in advanced manufacturing and R&D, provide favorable circumstance for commercialization of advanced manufacturing technology, and establish database for advanced manufacturing resource. Table 7-2-4 summarizes details in the report.

Table 7-2-4 Summary of the Report of Capturing Competitive Advantage in Advanced Manufacturing

Item	Content
Specify advanced manufacturing strategies	• Determine the strategies and goals for advanced manufacturing • Complete the priority technology list to meet the strategic demand
Give priority to the development of multidisciplinary technology	• Provide technologies in national defense, sustainable energy, energy efficiency, food security, national security, and healthcare • The technologies related to these categories are Smart Manufacturing, Advanced Material, Nanotechnology Fabrication, Sustainable Manufacturing, Additive Manufacturing, Digital Manufacturing Technology, Flexible Manufacturing System in Electronics, Bio-manufacturing, Advanced Manufacturing and Inspection Equipment, Robotics, Advanced Molding, and Binding Technique
Establish NNMI	• Reduce differences between basic research in universities and national labs and business technological innovation • Build regional innovation and manufacturing research institutes to help the emerging technologies with national economic advantage
Enhance the industry-academic cooperation in advanced manufacturing and R&D	• Intensify the industry-academic cooperation • Invest more on top ranked universities • Remove law and tax regulations obstructing this cooperation
Provide favorable circumstance for commercialization of advanced manufacturing technology	• Encourage establishment of university spin-offs; make financing easier for entrepreneurs • Help new ventures and support new technology through increasing government expenditures

Source: Industrial Economics and Knowledge Research Center (IEK), ITRI, *Report of Capturing Competitive Advantage in Advanced Manufacturing* (2013).

As to the establishment of NNMI, in March 2012, president Obama announced that the government would found 15 manufacturing innovation institutes focusing on technologies in Light Material, Additive Manufacturing (3D Printing), and Big Data. The primary purpose was to shorten the distance between academic research and technological development in industries. The federal government was expected to invest 1 billion dollars in 10 years and this project was expected to achieve financial autonomy in 7 years.

Since the budget of the NNMI project had not been approved by the congress, the White House utilized available resource to found the first experimental additive manufacturing innovation institute and chose the National Center for Defense Manufacturing and Machining (NCDMM) as the leader of an industrial liaison of 40 manufacturing firms, 9 research oriented universities, 5 community colleges, and 11 not-profit organizations. The national additive manufacturing innovation institute was funded 30 million dollars from the federal government and 40 million dollars from the successful tenders. After the institute matures, it will share technologies and assets with other local firms, especially small firms. In addition, the institute will create educational and training environments for employees in the additive manufacturing. The institute serves as an opportunity to test the concept for national innovation network. The U.S. Department of Commerce believes that with the cooperation and development of the members, the liaison can achieve the purposes listed in Table 7-2-5 and make itself a successful example. According to the operation and function suggested by the AMP Steering Committee, every participant of NNMI should contribute to the institute and the

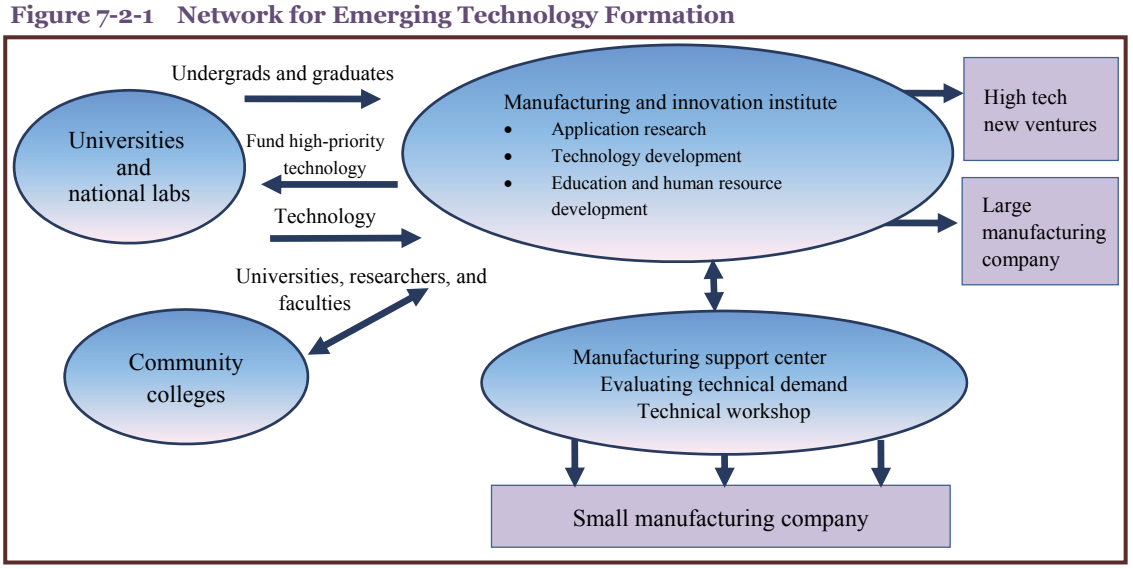
market. The federal government should aggregate all research resources from the industry, government, and academia; universities and national labs should offer human resources and technologies to NNMI, innovative technology to SMEs, and application techniques to the market, through enhanced healthy commercial environment. Table 7-2-1 and Figure 7-2-1 illustrate this idea.

Table 7-2-5 Functions of NNMI

Items	Contents
Technical consulting	Local, state, and federal governments utilize available resources to fund the institute, for instance, the project of Manufacturing Extension Partnership hosted by the Department of Commerce. There are technical experts in every state who can work with and offer onsite help to SMEs.
Human resource development	Local universities and community colleges offer educational opportunity and training to students and labor to help them equipped with specific skills.
Business advisory	Local innovation and incubation center and venture capital companies can attract entrepreneurs and venture mentors, and accumulate experiences.

Source: IEK, ITRI (2013).

Figure 7-2-1 Network for Emerging Technology Formation



Source: See Table 7-2-5.

2. Developing Trend of Small- and Medium-Sized New Ventures in Taiwan

There are 96,153 new firms (less than 1 year from founding) in 2012. Among them, 95,945 (99.79%) are SMEs. New SMEs comprise 7.34% of all SMEs. Since the new ones are small, they contribute only 1.56% of revenues of all SMEs.

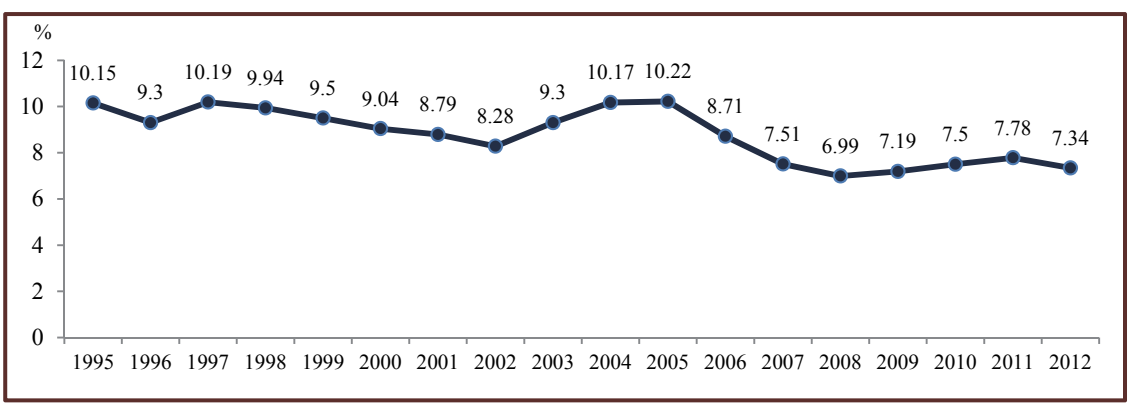
New ventures can revive industries because they are more innovative. With the adding of new ventures, the market could be more competitive, which in turn, enhances the economic growth, creates employment, and develops new markets. In recent years, new firms and SMEs in traditional

manufacturing in Taiwan are lack of growth momentum caused by price wars initiated by Chinese and Southeast Asian firms. Lack of enough investment in technology and innovative new ventures, Taiwan's manufacturing industry face the bottleneck of transformation. Innovation, differentiation, and value added will be the strategic priorities for the future of Taiwan's manufacturing.

(1) Declining share of new ventures

As shown in annual business tax data published by Fiscal Information Agency, Ministry of Finance, the share of new SMEs is decreasing. Although the share increased from 2009 to 2011, the share of new SMEs is still less than that in 2000. Figure 7-2-2 shows this pattern.

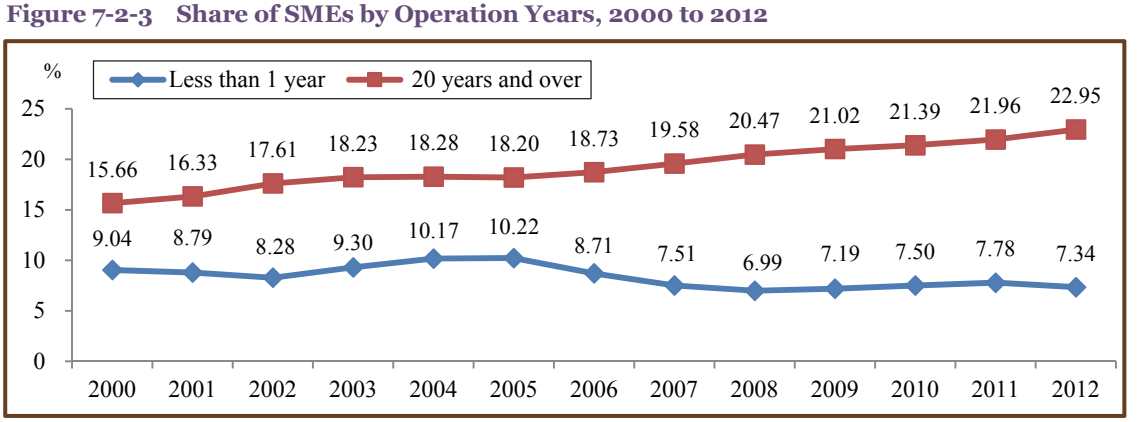
Figure 7-2-2 Share of New SMEs to the Total from 1995 to 2012



Source: Survey Database of Department of Statistics, MOEA; MOEA, *Factory Calibration and Operation Survey* (2012).

The share of SMEs by operation years from 2000 to 2012 indicated that young SMEs' shares were generally decreasing, while share of old ones (20 years and over) were generally increasing. Figures 7-2-3, 7-2-4, and Table 7-2-6 show these patterns.

Figure 7-2-3 Share of SMEs by Operation Years, 2000 to 2012



Note: Data of Lienchiang County were added since 2005.

Source: Calculated by the author with VAT Data of Fiscal Information Agency, Ministry of Finance; SMEA, MOEA, *White Paper on Small and Medium Enterprises in Taiwan* (2007, 2013).

Table 7-2-6 Share of SMEs by Operation Years, 2000 to 2012

Unit: %

Operation years / Year	Less than 1 year	1-2 years	2-3 years	3-4 years	4-5 years	5-10 years	10-20 years	20 years and over
2000	9.04	9.27	7.86	6.72	5.30	22.57	23.58	15.66
2001	8.79	8.68	7.60	6.69	5.85	21.89	24.17	16.33
2002	8.28	8.51	7.01	6.39	5.78	21.16	25.26	17.61
2003	9.30	9.40	7.41	5.97	5.15	20.57	23.97	18.23
2004	10.17	8.79	7.73	6.32	5.18	19.83	23.71	18.28
2005	10.22	8.81	7.75	6.37	5.19	19.83	23.63	18.20
2006	8.71	9.69	7.35	6.69	5.64	19.87	23.32	18.73
2007	7.51	8.57	8.09	6.31	5.86	20.11	23.97	19.58
2008	6.99	7.25	7.34	7.08	5.61	20.64	24.63	20.47
2009	7.19	6.76	6.16	6.45	6.33	21.01	25.10	21.02
2010	7.50	6.95	5.75	5.38	5.75	21.95	25.33	21.39
2011	7.78	7.20	5.88	5.04	4.79	22.30	25.05	21.96
2012	7.34	7.44	6.15	5.14	4.51	21.53	24.93	22.95

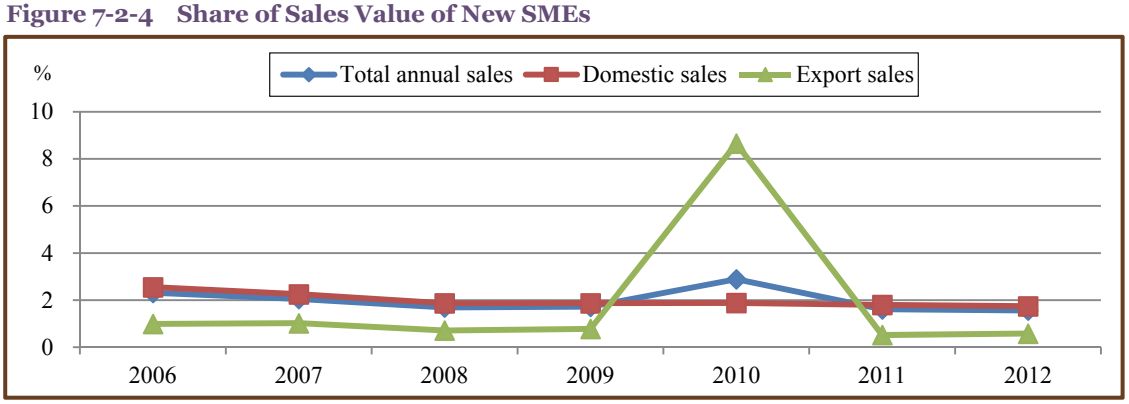
Note: Data of Lienchiang County were added since 2005.

Source: Calculated by the author with VAT Data of Fiscal Information Agency, Ministry of Finance.

(2) Share of sales value of new SMEs decreases and is dominated by domestic sales

Figure 7-2-4 shows that except for 2010, from 2006 to 2012, share of sales value of new SMEs decreased. In 2012, 94.28% of new SMEs revenues came from domestic sales; exports occupied only 5.72% of total revenue. From 2006 to 2012, both domestic and export shares of sales value decreased.

Figure 7-2-4 Share of Sales Value of New SMEs



Source: Calculated by the author with VAT Data of Fiscal Information Agency, Ministry of Finance; SMEA, MOEA, *White Paper on Small and Medium Enterprises in Taiwan* (2012).

(3) Most new SMEs are in service sector

In 2012, 85.19% of all new SMEs were in service; 74.81% of total service sales came from domestic market; service exports contributed 54.94% of total exports; total sales in service contributed 73.68% of total sales. In conclusion, most new SMEs were in domestic service market.

Table 7-2-7 Numbers, Sales, and Industrial Categories of New SMEs in 2012

Unit: Enterprises; NT$ million; %

Item / Industry	Number	Ratio	Sales	Ratio	Domestic sales	Ratio	Exports	Ratio
Total	95,954	100.00	177,861	100.00	167,679	100.00	10,183	100.00
Agriculture	702	0.73	456	0.26	438	0.26	17	0.17
Manufacturing	13,513	14.08	46,363	26.07	41,793	24.92	4,570	44.88
Service	81,739	85.19	131,042	73.68	125,448	74.81	5,595	54.94

Source: SMEA, MOEA, *White Paper on Small and Medium Enterprises in Taiwan* (2013).

Taiwan's manufacturing is faced with increasing competition, weakened growth momentum, and diminishing sizes. Whether new ventures could revive the manufacturing industry is the key question. However, the above analysis indicates that most new ventures are in service, which may not bode well for Taiwan's manufacturing. Therefore, it is crucial to take advantage of the U.S. manufacturing renaissance to revitalize Taiwan's manufacturing.

3. Implication of U.S. Manufacturing Renaissance to New SMEs

Generally speaking, cutting-edge innovation with emerging technology will bring shocks to the industry. According to the forecast of Mckinsey Global Institute, future cutting edge industries include Internet of Things, Mobile Technology, Automation Production, Advanced Robotics, Cloud Technology, Advanced Vehicle, Biotechnology, Advance Material, 3D Printing, and Clean Energy. This list is overlapped with the industry list in the U.S. manufacturing renaissance.

Take the 3D Printing industry for example. The Economist pointed out that with the development of digitalization in manufacturing, the additive manufacturing technology might lead to the third industrial revolution and the modification of global supply chain. With the maturity of the additive manufacturing technology and the large demand for customized products, there will be new production specialization in global manufacturing. Factories will become smaller to be located closer to material suppliers or to consumers. The development of the additive technology helps related industries, especially the ones using more automation productions, move back to and stay longer in U.S. or other European developed countries.

According to *2013 Global Manufacturing Competitiveness Index* published by Deloitte, Taiwan's manufacturing is at the 6th position with far less innovative ability. Although Taiwan owns many patents, only a few of them can be commercialized. Compared with the U.S., Germany, and Japan, Taiwan has far less technology investment in manufacturing industry and this could lead to deteriorated value added. In addition, there are other two risks for Taiwan's manufacturing: slowed momentum of innovation and its position within the industrial division of labor in Asia being challenged by Mainland China and ASEAN.

To help the manufacturing conquer these challenges, the government should direct new ventures into high value added industries. According to the forecast of Taiwan's manufacturing by IEK, by the end of 2020, the value added of most of the low value-added industries will keep decreasing, and

the value added will increase in the industries of Industrial Robot, Automotive Equipments, and IC Packaging and Design.

In the era of U.S. manufacturing renaissance, Japan, Mainland China, South Korea, and Germany have already thought about starting new production lines or emerging industries in the U.S. Taiwan should seriously look at the trend U.S. re-shoring and learn from U.S. experiences so that Taiwan could step into emerging industries and keep its existing important position in the global manufacturing, based on its existing success in ICT and Machinery industries.

III Case Studies of SMEs with Cutting Edge Technological Innovation

This section presents case studies of SMEs with cutting edge technological innovation. The SMEs were selected based on the industry lists of ARRA and AMP. If an SME is operating at the break-even point, then it is considered in the emerging phase. If an SME is profitable, then it is considered in the growth phase (Table 7-3-1).

Table 7-3-1 List of Industries and Products of Studied SMEs

Industry	Company	Major product
Advance Vehicle, Clean Energy	Bettery Energy Technology, Inc.	Key component materials for high-power lithium-ion batteries
Biotechnology	Baui Biotech Co., Ltd.	Medical implants
Additive Manufacturing, 3D Printing	Sky Tech Co., Ltd.; XYZprinting	3D printer
Robotics	GeStream Technology, Inc.	Innovative and humanoid robotic technology development, aggregation, and applications
Nanotechnology Materials	Applied Nano Technology Science, Inc.	Specialty component manufacturing
Information	Leaderg, Inc.	Robot design house providing cloud, app, and robotic solutions

Source: Cheng, Chen, and Huang (2014).

1. Case Studies

(1) Sky Tech Co., Ltd.

Sky Tech Co., Ltd. was founded in 2009. In the beginning, the company manufactured and sold clean rooms. In 2013, the company launched private brand 3D printers. The latest product, Sky-Maker, was selected as the number one Taiwan's superior brand in the category of R&D equipment in 2013.

A. Difficulties and keys to success in emerging phase

The general manager of the company had 7 years of practical experiences in design before starting the company. In 2011, through the introduction of a friend who was an engineer in U.S., he noticed that 3D printing might have a bright future. The successful fundraising of 3D printing in the website

of KickStarter encouraged him to step into the 3D printing market and started his own company and brand.

The starting fund was only NT$7.25 million. With this constraint, the employees were hired through the general manager's connections. The office located in the Zhonghe District of New Taipei City was bought with mortgage so that the company could have more cash to spend through the emerging phase.

B. Difficulties and keys to success in growth phase

After the company was established, it imported a large number of U.S. 3D printers for technical research. The hard work was paid off. In 2013, the company launched Sky-Maker series 3D printers and formally joined the 3D printing market. There are not many 3D printer manufacturers in Taiwan; most of them are agents of foreign brands. For firms that are subsidiaries of big companies with deep pocket and advanced technologies, they could sell cheap to expand market and gain share. With this kind of competition, the company found customers through personal connections. In the meantime, the company focused on enhancing technology and product quality and paid special attention on developing environmental friendly products and core patents. The company spent lots of time to modify the products to meet customers' needs and earn customers' trusts. Right now the averaged price of a single printer is about NT$40,000, not cheap in Taiwan's market; the average units sold was about 1,000 per year. Faced with the uncertainty in market demand, the company tried to differentiate its products from others and also outsourced some production processes to mitigate order fluctuation and to reduce cost.

The company was already profitable in 2013 when it launched the Sky-Maker 3D printer. With the increase of customers, the initial fund was not enough. Small business loans from banks are typically small, time consuming, and require real estate collateral; same problem with the SME Credit Guarantee Fund. The company also tried to apply for government R&D funds. However, the evaluation and auditing procedures were lengthy and the fund is not much; it could be worth that the auditor's estimated market value was very different from the company's. Therefore, this fundraising channel could not work, either. At the same time, the fast growth of the company attracted attentions of venture capital companies. However, investment from venture capital companies often caused stock dilution, which in turn, would cause the company to lose decision making power. Therefore, although there were 4 venture capital companies interested in investing, the company did not accept.

To be closer to the labor market, the company's office locates in a metropolitan area. However, it is not easy to find suitable employees because what they learned from schools is often not what the industries need and new graduates are usually not stable. Moreover, experienced designers often work abroad. Therefore, the company sometimes recruits through the general manager's connections; for example, poaching personnel from other companies. It costs more but is more efficient. To reduce personnel costs, the company outsources some production processes to other firms, studios, or personal workshop, and then makes finished products by itself. As the company grows, it starts to face the price competition. The company keeps its competitive advantage by producing high quality and environment friendly products, and obtaining patents of its core technology to counter pricing pressure and maintain the gross margin. In the meantime, the company pays special attention to develop market channels. The company obtains and maintains these channels through offering public

speeches and training. For instance, the company cooperates with Synnex Technology International Corporation and RT-MART to sell products in their stores and advertise in their publications. Till now, the customers of the company include regular consumers, engineers, personal studios, educational organizations, and computer manufacturers. Table 7-3-2 summarizes the difficulties and keys to success of Sky Tech Co., Ltd.

C. Strategies for developing foreign markets

The company thinks that although the supply chain of the 3D printing market has not been formed yet, the vigorous competition will saturate the domestic market in no more than 3 years. Therefore, even though the company currently focuses on the markets in Taiwan, U.S., and European countries, once matured, it will extend its reach to Mainland China and other countries. The 3D printing market started earlier in U.S. than in Taiwan, so it is more competitive there. The company entered the U.S. market in 2014 and the market share was small for now. For the U.S. market, the company works on one added characteristic of its product that can avoid the polish of the printers. This characteristic may differentiate the company with others and help the company directly connect with the U.S. market.

Table 7-3-2 Difficulties and Keys to Success of Sky Tech Co., Ltd.

Phase	Difficulty	Keys to success
Emerging	Fund shortage	Personal funds and bank loans
	Sales hardship	Through connections to meet customers
	Human resource shortage	Hiring through connections
Growth	Fund shortage	Raise more money through large mortgage
	Price competition	Outsource to reduce cost and risk
	Recruiting hardship	Hiring through connections and regular recruiting
	Cost reduction	Outsource OEM parts and modules to other firm, studios, or personal workshops.
	Market competition	Establishing market channels by selling in partner firms' stores and advertising in their publication; enhancing quality and product differentiation to maintain higher prices.

Sources: See Table 7-3-1.

(2) Bettery Energy Technology, Inc.

Located in Jhongli Industrial Park, Bettery Energy Technology, Inc. was founded in January 2009 by the research team of lithium battery of the Department of Chemical and Materials Engineering, National Central University. The company focuses on the development of a variety of materials for lithium batteries used in electric cars, electric motorcycles, and electric golf cars. The company successfully raised funds of NT$200 million in 2011 and was expected to expand production in 2012 and to collaborate with upstream, midstream and downstream lithium battery firms. The company also worked with Central University, Industrial Technology Research Institute, and National Synchrotron Radiation Research Center for many years and developed lots of patents and accomplished many research projects. It participated in the Start-Up Taiwan Accelerator Project

hosted by MOEA to be aggregated with the supply chain of large- and -medium-sized enterprises. Company shareholders include many material and equipment companies, such as CSB Battery Co. Ltd. The primary products of the company are key component materials for high-power lithium-ion batteries; the company also sells lithium iron powder, battery cell, and battery modules. In addition, the company produces pouch cell battery and is one of the limited numbers of companies that has the two technologies at the same time. The production of pouch cells battery has not reached scale economy so the company has not profited from it.

A. Difficulties and keys to success in emerging phase

The founder of the research team of lithium battery of the Department of Chemical and Materials Engineering, National Central University, Professor Ting-Kuo Fey, is also the chairman of the company. The research team won the first place in the entrepreneurship contest hosted by the Center for Academic-Industrial Cooperation and Incubation in 2008. Professor Fey and the team believed that the market of the electronic car would have a bright future so they founded the company. The starting fund was NT$3 million.

The key technology held by the company is its ability to synthesize lithium iron phosphate, a material for battery anode. Early on, the company could only produce 1 to 10 grams of lithium iron phosphate in one production. It was not much but enough for making batteries in the lab and for studying the characteristics of lithium iron phosphate and its power generating capacity. Later, to achieve scale economy and reduce cost, the company invested in the technology to produce kilograms, not tons, of lithium iron phosphate in one production. This is because to go from gram-level production to kilogram-level production is a big technological challenge, and from kilogram to ton level only requires increases of inputs.

In the process of upgrading the technology from gram to kilogram level, with the help of Professor Fey, the Center for Academic-Industrial Cooperation and Incubation, the company got many cooperative education projects from Department of Chemical and Materials Engineering of National Central University, Industrial Development Bureau of Ministry of Economic Affairs, and National Synchrotron Radiation Research Center. Through the accomplishment of these projects, the company gained useful experiences and technologies. At the end of 2010, the company successfully produced kilograms of lithium iron phosphate in one production and tons of it afterwards.

To produce tons of lithium iron phosphate requires input increases; this is a challenge not in technology, but in funding. When the company started, the employees were graduate students or part-time workers. Most of them voluntarily gave up wages. In addition, the company's office was in research labs and empty space of the Center for Academic-Industrial Cooperation and Incubation, so there was not much rental costs. The center also offered resources of legal consulting, accounting, education and training, venture capital match making, and government funding. Since there was money left over from cooperative education projects, money was not a big issue at that time. However, at the ton-level production stage, the money needed for production equipments were millions of New Taiwanese dollars, not to mention the money needed for factory buildings. Therefore, the company needed to raise fund through other channels.

The company did the first and second fundraisings in 2010 and 2011. The capital was raised from NT$115 million to NT$268 million, with the help of Professor Fey and the Center. The company then moved to Jhongli Industrial Park and hoped to be able to produce 30 tons each month. However, because of the severely competition in the market, the company had to reduce the production to 10 tons every month. This, however, gave the company a chance to focus more on technology enhancement and cost reduction.

Now the major challenge for the company is to make every battery produced by the company's products have the same electronic capacity. The company has reduced the production process from seven or eight steps to five. This not only enhances product consistency, but also reduces workforces and cost. There are less than ten battery companies in Taiwan. Through communication and Professor Fey's connections, Bettery tries to convince them to conduct tests and evaluations to confirm product qualities and enhance product demand. However, since supplies from those companies have already met the demand and it takes a long time to conduct tests and evaluations, it is not easy to convince those firms. Bettery had built a lab for pouch battery, battery production, and can be used to examine problems of downstream firms. Table 7-3-3 summarizes the operation difficulties and keys to success of the company.

Table 7-3-3 Operation Difficulties and Keys to Success of Bettery Energy Technology, Inc.

Phase	Difficulty	Key to success
Emerging	Technical bottleneck	With the help of Professor Fey and the Center for Academic-Industrial Cooperation and Incubation, the company got many cooperative education projects. Through the accomplishment of these projects, the company learned many useful experiences and technologies.
	Human resource shortage	Professor Fey's graduate students joined the team.
	Product launching	Through Professor Fey and connections with other battery companies, Bettery tried to convince them to conduct tests to reduce the time of evaluation before launching.
	Fund shortage	With the help of Professor Fey and the Center for Academic-Industrial Cooperation and Incubation, the company met several venture capital companies; CSB Battery Co decided to invest.
	Price war	Enhance production technology and product consistency. Establish pouch battery lab for battery production and examination of the problems of downstream firms.

Source: See Table 7-3-1.

B. Strategies for developing foreign markets

Bettery's primary goal is to substitute traditional lead-acid car battery with the lithium iron phosphate battery and to expand the applications of its battery. The advantages of the lithium iron phosphate battery include longer life (more than 10 years), easy to start, and environmental friendly. However, because of the constraints of technology and quantity, the current price is 4 to 5 times higher than the traditional lead-acid one, although the life is 3 times longer. To reduce the price, the company needs to have large orders to achieve scale economy.

The company is limited by fund, human resources, and patents to develop North American or European markets,. For instance, the patent of lithium iron phosphate is held by a university in Québec, Canada. Any product uses the material has to pay the royalty. Fortunately, the patent expires in 2017. As the environmental regulation getting tighter and the launching of the U.S. manufacturing renaissance, Bettery should have a chance to enter the North American and European markets after the company grows larger. In Mainland China, the authorized agent of Bettery is the WPG Holdings who is at the trial stage and the company has not received orders of tons of products. Bettery works hard to extend the market and hope to enhance production to 30 tons per month. Bettery hopes the government can help aggregate resources of upstream, midstream and downstream to increase competitiveness of this industry.

(3) GeStream Technology, Inc.

GeStream Technology, Inc. was founded in 2005; the primary products are educational robots. Eight years after the company was established, its capital reached NT$17 million with about 20 employees. 80% of its revenue comes from education related business and 20% from robot sales.

A. Difficulties and keys to success in emerging phase

The founder, general manager Chang, started to invent small robots in 2005 because of his passion for robots. In 2006, Mr. Chang left his job and founded GeStream Technology, Inc. With an undergraduate degree in mechanical engineering and graduate degree in information engineering, Mr. Chang and his friends invented remote controlled robots. Through the improvement in control module, sensor model, and innovative motors, Mr. Chang's team successful produced the world's smallest humanoid robot, which measures 153 mm (6 in) in height and was awarded the Guinness World Records. The company also won the Business Start-Up Award by Ministry of Economic Affairs, the Industrial Innovation Achievement Award by Ministry of Economic Affairs, the Golden Pin Design Award by Taiwan Design Center, and the National Quality Assurance Golden Award by Chinese Industry, Commerce, Economy, Trade, Science & Technology Development Association.

All these awards came with lots of efforts. When the company started, it was faced with many challenges of recruiting and funding. Because of the funding constraint, many employees were Mr. Chang's friends who were also interested in robots and willing to work part time after their formal jobs. All the administrative and operative works were taken care of by Mr. Chang himself. The starting fund was only NT$3 million. The company rented a 30-Ping office in Taoyuang. Since there was not enough capital and human resource, Mr. Chang designated the company to be a design house and the major purpose was to enhance product's value added. Since the core strategy was design and innovation, its only task was to study and design robot's structure and model and to produce and improve robot's chips and motors. Other parts were outsourced, and the final assembly, test, and pack were done by the company.

There were no similar competitors or parts suppliers when the company started. Mr. Chang decided to launch private brand robots when the industry was not matured. The company used three overlapped blue G's as its logo. In the beginning, since no one knew this company and there was not much money for marketing, there was almost no customer. After awarded the Guinness World Records in 2009, the company was noticed in some scientific expositions and there were foreign

orders.

The company's robots were expensive, about NT$18,000 per robot on average, but very delicate. The multi-axis joint allows the robot's joints to do 360 degree rotation; the use of servomotor and sensor module takes lots of time, knowledge, and money to purchase advanced parts. Because the company invested lots of money in R&D, the profit margin was not high. However, the investment was valuable in education and technological development.

B. Difficulties and keys to success in growth phase

Since the sales of robots were not stable, to increase revenue, the company decided to customize robots for customers, such as educational robot, home care service robot, security monitor robot, and industrial automation robot. In the meantime, the company was faced with the problems of delayed payments, and high product price due to high customization cost. In addition, the company had to offer maintenance and trouble shooting, which add pressure on finance and human resources.

With regard to funding, although the government offered several match chances, the company did not find a suitable offer because of the rigorous requirement from domestic venture capital. Therefore, the main funding resource came from revenue, which was not enough for growth. When the company was started, it was the only one in the world that had the technology of producing mini robots. As time went by, many firms in Europe, U.S. and South Korea also had this technology and it was applied to other areas like the sweeping robots. Although the company has the lead in technology, it will probably lose its leading position because of high production cost due to lack of scale, a typical problem for SMEs in Taiwan.

Although the company could not find steady customers, through attending expositions, it happened to be noticed by educational institutions in the fields of mechanical engineering and information engineering. Through many discussions with several educational organizations, the company decided to change its operational strategy to cooperate with educational organizations. In addition to classroom teaching, the company also worked with university labs and participated in academic-industrial cooperation and gained steady revenues from it. In addition, since educational organizations did not need the company to teach every day, the company could hire part-time instructors to reduce personnel costs. Like new ventures in other industries, the company could not offer as good benefits to employees as large firms do, so its employees could not stay long and often transferred to larger firms. Table 7-3-4 summarizes difficulties and keys to success of GeStream Technology, Inc.

C. Strategies for developing foreign markets

The company had received requests from U.S. to sell robots there. However, since the company did not have enough human resources to conduct customer service in U.S., it had to give up this chance. Right now the company invites foreign customers to Taiwan for demos. In the long run, the company hopes it could recruit foreign technical specialists to develop the U.S. market.

In addition, the company may need legal consulting to enter the U.S. market. Right now Taiwan government only offers lawyers' or consultants' phone consulting, but no specific solutions. The company hopes that the government could provide more supports, especially in legal issues for SMEs to develop foreign markets.

Table 7-3-4 Difficulties and Keys to Success of GeStream Technology, Inc.

Phase	Difficulty	Key to success
Emerging	Technology bottleneck	R&D with friends
	Human resource shortage	Connections
	Funding shortage	Personal funds; reducing costs by working part-time and by doing administering work
Growth	Competition	Special design of multi-axis joint to allow robot's joints to do 360 degree rotation; cost reduction
	Funding shortage	Personal funds and revenue
	Foreign market	Recruit foreign sales persons
	Cost reduction	Hiring part-time instructors
	Human resource shortage	Accumulating technologies and experiences through academic-industrial cooperation

Source: See Table 7-3-1.

(4) Leaderg, Inc.

Leaderg, Inc. was founded in 2011 as a small studio. After the company won several awards, it moved to the International Entrepreneurship Hub in Center for Public & Business Administration Education of National Chengchi University and App Creative Sharing Park of Institute for Information Industry (III). Afterwards, the company moved to a new space offered to new ventures by III. Right now the primary products are cloud software, apps, and embedded software for robots. The company's capital was NT$25 million and operated at the break-even point.

A. Difficulties and keys to success in emerging phase

Starting in 2004, apart from the formal job, the founder of the company worked part-time on designing robot related software out of his passion for robots. In 2011, the founder resigned from the formal job and started Leaderg, Inc.

The app and cloud markets were extremely competitive when the company was established. In the meantime, Taiwan's robot market was just started and the demand was not much. The founder specialized in programming and won the Best Culture and Creativity Award in the Industrial Development Bureau's App Star contest in 2011. In 2012, the company was invited to move to App Creative Sharing Park of III. After that, the company moved to the Digital Education Institute of III. During this period, the app industry grew very fast and related cloud industry was getting more attentions. Now the market is very competitive and price wars happen all the time. In the robot market, technologies in automatic control, image processing, and image recognition have relatively high threshold, hence less competitive (but slow growth).

To deal with the competition and market threshold, in addition to the sales of apps, software, and web designs, the company worked hard to design robotic software. With regard to the apps and software, the company had the advantages of being familiar with a variety of programming languages, so it could focus on high threshold cases such as automatic control, image processing, image recognition, and embedded robot software; the sales of these cases occupied half of the revenues.

The company invests its profit back to technology and product lines.

In addition to differentiating itself with technology, the company also seeks potential customers through the founder's connections and the help from III. In the first 6 months off the start of the company, it moved to the International Entrepreneurship Hub in Center for Public & Business Administration Education of National Chengchi University. The main reason was that the Hub offered relatively simple and safe environment and help to new ventures in cultivation and financing. Moreover, there were other firms in the Hub; through discussions and connections with them, the company was able to come out new ideas and create connections.

Because of the characteristics of the industry, the company had a hard time in recruiting and fundraising. The company's administration policy was copied from the founder's previous corporation. The starting capital was founder's personal money. In October 2013, the founder raised funds by selling stocks to his friends. In addition, the company was chosen by Go Incubation Board for Startup and Acceleration Firms of GreTai Securities Market. Being an over-the-counter company could be another way of fundraising. Table 7-3-5 lists difficulties and keys to success of Leadreg, Inc.

Table 7-3-5 Difficulties and Keys to Success of Leadreg, Inc.

Phase	Difficulty	Key to success
Emerging	Competition and price war in app and cloud market	Differentiating itself in high technology and threshold fields; moving to incubation center to reduce cost
	Human resource	Founder's college friends; regular recruiting
	Funds	Personal funds; selling stock shares to friends
	Low demand in robot market	Founder's connections and the help from Institute for Information Industry; participating in contests to meet potential customers; sales in app and cloud markets; developing the U.S. market

Source: : See Table 7-3-1.

B. Strategies for developing foreign markets

The company now focuses on developing the software of a real-time video streaming app, MySNG. The company runs an online Robot Club which will include online shop, news, and technical articles. The goal is to be Taiwan's robot portal site. Now the Club's website has Chinese traditional version, Chinese simplified version, and Japanese version. As to robot related products, the company is raising money through crowdfunding website to develop a cupboard robot.

As to the development of the U.S. market, the company is working hard on gaining the chance to design the software for drones and to design apps for smart phones for U.S. companies. The company participates in 104 Dream Crib Project to raise funds and to meet potential customers in Silicon Valley in U.S.

(5) Applied Nano Technology Science, Inc. (ANTS)

ANTS is specialized in R&D of vacuum and nanotechnology applications. Right now the primary product is the Magnetic Rotary Feedthrough, a vacuum/ambient sealing interface while transferring

power from ambient into vacuum, a critical vacuum components for tremendous application. The company's current capital is NT$33.08 million.

A. Difficulties and keys to success in emerging phase

ANTS was founded in 2001. In the beginning, the company worked with Material and Chemical Research laboratories of Industrial Technology Research Institute and AST Products. At the same time, one of the founders of the company, Dr. Yue, raised funds from major shareholders of AST Products and San Yang Metal Industrial Co., Ltd. The relationship between ANTS and AST Products is very special. AST Products is a company focuses on developing novel surface technologies and coatings. When ANTS started, it was an OEM for AST Products. One of the major shareholders of AST Product, Dr. Ih-Houng Loh, and Mr. Yen of San Yang Metal Industrial Co., Ltd. are co-founders of many companies such as GSC, SINTO, and ICARE. As one of the subsidiaries, ANTS did not have to worry about funding.

Since shareholders had different ideas and expectations of ANTS, in the emerging phase, ANTS was an OEM for a variety of products, including automated equipments, magnetic rotary feedthrough, and plasma equipments. ANTS was an OEM mostly for AST Products; other customers included Chi Mei Corporation and AU Optronics. ANTS worked for semi-conductor companies later on.

During the OEM period, ANTS also conducted R&D and market analysis to determine its future product line. The company decided to invest in the production of magnetic rotary feedthrough. Through cooperation with firms in TFT-LCD Panel industry and through the experience from product maintenance, the company collected user experience/information to produce products suitable for customer's needs and to build its own test process and equipments. All these efforts earn customer trusts and shorten product launching time.

The company accumulated enough technology and experiences before launched its products, so there were no human resources, especially sales personnel, or funding problems. After the products were launched, the major challenge was to earn customer's confidence. Although there is no professional sales personnel, the accumulated user experience/information was a valuable asset of the company. With this information, the company's own unique test procedure, and a variety of technologies accumulated in the OEM period, the company was able to build software and hardware for testing, which gave the company more flexibility to meet customer's needs and reduce costs.

B. Difficulties and keys to success in growth phase

The company grew faster and earned lots of profits after it entered the supply chain of U.S. semi-conductor equipment giant, Applied Materials, in 2010. The technology used in ANTS's magnetic rotary feed through was relatively new. Since Taiwan does not have an innovation friendly environment, new technology has a hard time to be accepted; therefore, ANTS only had a few customers in Taiwan. Half of the company's revenue comes from international semi-conductor equipment companies like Applied Materials, ULVAC, and ANTS's mother company, AST Products. The Mainland China and U.S. markets were developed through local agencies. ANTS did not have many competitors; only a few in Taiwan and Japan produce similar products.

In the meantime, the company adjusted and conducted R&D to develop other product lines. Because of this, the company was short of human resources. When the company started, employees

were hired through founders' connections. In the growth phase with huge demand of human resources, the company needed to recruit in the regular way. However, since the company was not famous and located in a rural area, it had a hard time to attract people. In addition, new graduates were lack of project management experience, so they did not fit the company's needs. Therefore, recruiting was a challenge.

To make up this situation, the company improved its policy, benefit, and working environment; the company also participated in industrial- academic cooperation projects to promote itself. Now the company is more organized and offers on-job training courses. It plans to build new factories and research centers near the headquarter to facilitate industrial-and-academic cooperation.

Although the company is still short of human resources, it keeps enhancing its technology by cooperating with international equipment firms. Through this, the company also learned the certification skill to enhance qualification of its products. Table 7-3-6 lists difficulties and keys to success of ANTS.

Table 7-3-6 Difficulties and Keys to Success of ANTS

Phase	Difficulty	Key to success
Emerging	Funding	From mother company and Dr. Ih-Houng Loh
	Technology	Accumulating experiences through OEM; building own test procedure and equipment
	Customer confidence	Self test procedure and equipment; offering product certification
	Product launching	Collecting user experience to produce products fitting customer's needs; building customer's confidence to shorten launch time
	Human resource shortage	Recruiting through founders' connections
Growth	Training	Offering on-job training courses; participating in industrial-and-academic cooperation projects
	Fund	From mother company and Dr. Ih-Houng Loh
	Technology enhancement	Accumulating experience through cooperating with international equipment firms; previous experience; certifications
	Re-organization	Reorganizing personnel
	Marketing channel	Working with international firms and local agents
	Competition	New technology leading to lower competition

Source: : See Table 7-3-1.

C. Strategies for developing foreign markets

In the future, the company will continue to expand its product lines and recruit qualified people. The company was not impacted very much by the U.S. manufacturing renaissance, because most of its customers locate in Asia. Even though the U.S. market becomes a major one in the future, the company is able to fast transfer its production and personnel, and the mother company can help find local equipment firms. Since the product size is small, the transportation cost is low hence fast reaction to markets.

(6) XYZprinting

XYZprinting was established in 2013, a subsidiary of New Kinpo Group. The company's primary product is 3D printer using fused deposition modeling (FDM) technology. The initial capital was NT$600 million with 140 employees. The company was expected to break even in the next two years.

A. Difficulties and keys to success in emerging phase

New Kinpo Group accumulated many 3D printing related technologies from past operation experiences. The group thought the desktop 3D printing market was not mature so there was a chance in that industry. In addition, to differentiate from the group's OEM business and to prepare for the future 3D printing OEM for other big companies, the group started a new brand, XYZprinting, to enter the desktop 3D printing market.

The 3D printing technology has been developed for more than 10 years. The products can be for both industries and desktop uses. Operation revenues include sales of printers and consumables, digital service (3D sketching), and printing service. Technologies for industry 3D printers are more mature and the printed products are more delicate and similar to traditional molded products. In the desktop 3D printing market, the FDM technology patent was heavily utilized in 2010 so the printer price was largely decreased. The delicacy of printed products cannot be compared with those produced by industrial level ones but are good enough for telecommuting, product design, customizing production, and small scale production.

Although the FDM technology related patents expire one by one, the desktop 3D printing market is not mature and not dominated by big firms. Existing desktop printers are expensive, from 1,000 to 4,000 U.S. dollars per printer. There are other problems with the printers, such as user unfriendly interfaces and low quality printed products. In addition, there is no desktop 3D printing patent held by a single company to form barriers for new entrants. With great expectation for the desktop 3D printing market, XYZprinting chose a perfect timing to enter the market. The company utilized the FDM technology and with resources from New Kinpo Group, XYZprinting expanded market share early on. The company chose to mold the printers to reduce cost and price, about US$500 per printer, so the products were easily accepted by the market. Right now there are single color and multiple color printers. The company focuses on enhancing technologies and creating value added services. It works on developing more printing materials, downsizing printers, enhancing quality, and offering a variety of digital services.

With the help from the mother group, there is no funding, technology, or recruiting issues. However, since New Kinpo Group is OEM oriented and XYZprinting is a private brand, the operation styles are very different. In addition, XYZprinting locates in a rural area, with the link of OEM image of the mother company, it is not easy to recruit marketing personnel. Fortunately, since the great prospect of the 3D printing industry is attractive to some people and the company offers excellent working environment, the recruiting issue is gradually overcome.

In March 2014, XYZprinting's products were available online on Taiwan's PChome, Amazon (U.S.), Tmall.com and Taobao.com (China), and Rakuten (Japan); European online sale was available in April, 2014. XYZprinting's retail store is in the U.S. The products are sold in VIBO stores in Taiwan. The company is planning to open a demo store in Taiwan. The company

participated in International Consumer Electronics Show in 2014 to promote itself. The cheap price, US$ 499, of the product, da Vinci 1.0, attracted lots of attentions and sales quantities increased from 300 to 400 to more than 1,000 per month. From this experience the company learned that market demand was able to be created. Applying this experience in Taiwan, the company encourages customers' feedbacks and used these feedbacks to increase products' applications and to enhance product quality and functions. In the meantime, the company also promotes itself through participating in industrial-academic cooperation projects, working with government's 3D printing promotion policies, and donating products to educational organizations.

Since digital contents may be the major revenue source of the 3D printing industry, the company launched the XYZprinting Cloud Service, including XYZware patented software, 3D model gallery, and news. The company is learning by doing and hopes that it can combine the 3D printing and related services to strengthen its own business model. Table 7-3-7 summarizes difficulties and keys to success of XYZprinting.

Table 7-3-7 Difficulties and Keys to Success of XYZprinting

Phase	Difficulty	Keys to success
Emerging	Human resource	Connections of the New Kinpo Group; regular recruiting
	Technology breakthrough	Experiences of the New Kinpo Group; Industrial-and-academic cooperation
	Compromising within organizations	Recruiting new marketing personnel
	Competition	Molding products to reduce costs and enhance market share
	Product launching	Combining customer feedbacks to modify products to meet customers' needs
	Marketing	Marketing through social networks, blogs, social medias, and news; selling online; donating to educational organizations

Source: See Table 7-3-1.

B. Strategies for developing foreign markets

XYZprinting keeps promoting itself in international markets. Its goal is to let every customer be able to print what he/she wants. The company will start from Taiwan and learn from Taiwan's customers, and apply Taiwan's experience to other international markets.

(7) Baui Biotech Co., Ltd

BAUI Biotech Co. Ltd., a private brand of Taiwan, has supplied medical implants since October, 2009.

A. Difficulties and keys to success in emerging phase

The primary operation of the company is R&D, manufacturing, and sales of medical implants. Baui Biotech Co. Ltd. locates in Wugu District of New Taipei City. Before the brand established, the company was an OEM and ODM. It invested a lot on improving and innovating production process.

BAUI Biotech Co. Ltd. has the experience of foundry and manufacturing of medical implants more than 20 years. Four years ago, with abundant experiences in production process, improvement, and innovation of medical implants and with advantages in production costs, the general manager and his father launched this brand and established the company in Taipei City. In the beginning, there were only 6 employees hired through friends. Later on, the company started to recruit in the labor market. Now there are 60 employees with departments specialized in sales, financial and accounting, medical regulation, R&D, and production. The company is steadily growing.

When the company started, it had capital of NT$10 million from the family. The company believed that the depth and width of R&D determines the success of the future; therefore, it invested a lot in R&D and was significantly paid off. The company was experienced in spinal medical instruments and expanded applications of existing products to tooth root and skull related areas. In addition, the company spent a lot on purchasing the latest equipments and machineries to improve production process, accumulate experience, break through bottleneck, and reduce costs, which in turn, could differentiate this brand from others.

B. Difficulties and keys to success in growth phase

Now the company's capital is NT$35 million and revenue is NT$185 million. Through long-term contracts with many hospitals, the company could grow steadily. Growth in revenue leads to increase in spending on R&D. In 2013, the company spent NT$17 million in R&D, or 9.2% of revenue. To enhance product quality, the company hired an assistant professor of Neurology Department and the leader of Biomechanics Research Laboratory of University Michigan as technical consultants in 2010 to develop materials for bone substitute and soft tissue repairing. In 2013, the company hired the Secretary General of Taiwan Committee for Clinical Laboratory Standards as consultant of clinical medicine to help with the product effectiveness. All these efforts of academic and industrial cooperation were paid off by attracting lots of attentions in foreign expositions.

As the company grew, the need for funds increased as well. The company financed with banks and found cheaper location for its sales, R&D, and production departments. As to recruiting, other than hiring through friends and poaching from other firms, the company also hired through internet job banks.

To grow faster, the company also actively participated in government held assistance projects. The company believed that the academic and industrial cooperation projects held by the government did help the company meet potential partners. However, academic researches often ignore the actual needs in the industry and research results often cannot be applied due to the constraints from medical regulations. Therefore, the company hopes that when matching the academic and industrial partners, the government could include the medical area. Since customer-oriented research results are more practical and have commercial values, cooperation in this way not only can deepen relationship between academia and industry, but also can help industrial development. Right now the company works with orthopedists from College of Medicine and Graduate Institute of Medical Mechanics of Chang Gung University and invests lots of funds in the research of future orthopedic materials. The company hopes that the government can speed up the pass through of imported medical materials and loosen related medical regulations so that newer product could be launched and more patients could get help.

The company's sales come from 13 medical institutes and 85 regional hospitals in the country. In addition, the company expanded foreign markets through actively participating in foreign expositions and academic seminars; right now the company has contracts with medical retailers in U.S., France, Mainland China, Malaysia, Vietnam, Iran, and Turkey, and hope to have more partners in other countries. Table 7-3-8 summarizes the difficulties and keys to success of BAUI Biotech Co. Ltd.

Table 7-3-8 Difficulties and Keys to Success of BAUI Biotech Co., Ltd.

Phase	Difficulty	Keys to success
Emerging	Fund	Family funds
	Sales	Through the connections built during the OEM period, the company expanded its sales scale.
	Human resource	Recruiting through connections
	Technology	Experiences accumulated during OEM period; purchases of new equipments to shorten technical breakthrough time
	Competition	Reduce cost by improving production process, accumulating experiences, and technical breakthrough.
Growth	Fund	Finance with banks
	Human resource	Regular recruiting
	Technology	Cooperating with research and academic organization
	Marketing	Participating in foreign expositions or academic seminars
	Competition	Long-term contracts with hospitals

Source: See Table 7-3-1.

C. Strategies for developing foreign markets

BAUI Biotech Co. Ltd. believes that when gaining profits, the more important thing is to enhance medical product quality and reduce patients' sufferings. With this belief, the company will keep investing in R&D and introduce the latest foreign medical instruments into Taiwan.

About 10% of the company's entire sales come from foreign orders. As the domestic medical instrument market is getting matured, to avoid price wars, the company will focus on foreign markets. According to 2012 Market Research Report of Global Information, the spinal implant market values 11.5 billion U.S. dollars. The value will reach 14.8 billion U.S. dollars in 2017, a compound annual growth rate of 5.1%. The company will actively participate in foreign expositions to explore the European market, and hopes the brand will be an international one. The company believes that if the government could help the industry with related policies, it can compete in the U.S. market with the help of U.S. manufacturing renaissance, and fuel the growth of Taiwan's medical and biotechnical industries. The company is confident that it will become an internationally well known brand in the foreseeable future.

2. Summary

Table 7-3-9 summarizes the difficulties of new ventures in the emerging and growth phases. In the next section, solutions and policy suggestions will be presented.

Table 7-3-9 Difficulties and Keys to Success in the Emerging and Growth Phases

Phase	Difficulty	Keys to success
Emerging	Funds	Personal funds
	Technology	The chosen technologies are related to the background of the founder, or the founder hires through connections to speed up technological improvement.
	Human resource	Connection is the most important way to recruit; the next important one is regular recruiting.
	Brand	Since new ventures usually have the most advanced technology and most market is less competitive, most of the time the founder launches his/her own brand. Competitiveness increases as time goes by.
	Product	Products can win customers' confidence through cost reduction and quality control.
	Marketing	Through connections and customers.
Growth	Funds	Funds come from founders, mortgage, or revenue. Most new ventures do not want investments from venture capital companies so that the new ventures can retain their independence.
	Human resource	Employees' benefits offered by new ventures cannot compete with those offered by big companies, which makes it difficult for new ventures to keep good employees. Loyalty of employees hired in the emerging phase through connections is the key to the stability of the company. In addition, most new ventures obtain long-term employees through industrial academic cooperation and on-the-job trainings.
	Technology	Technological enhancement is achieved by hiring professionals through connections or obtaining technology through industrial academic cooperation.
	Market	New ventures often survive by differentiating their products from others through cost reduction or increasing product's value added.
	Marketing	Most founders of new ventures are professionals in the industry. The advantage of this is that the founders are familiar with the technologies, and the shortcoming of this is that the founders do not know much about marketing. Therefore, most new ventures get orders through connections or through attending expositions, which makes the new ventures less competitive than big firms are.
	Foreign markets	Because of the limitation of resources, it is difficult for new ventures to develop foreign markets. Most of the new ventures conduct foreign market marketing through agents or attending expositions abroad.

Source: See Table 7-3-1.

IV Strategies for New Ventures

To take advantage of the U.S. manufacturing renaissance, Taiwan needs to create business friendly environment for new ventures, such as tax breaks and support for the commercialization of R&D results to foster the establishment of SME start-ups in these emerging industries; while at the same time, on the finance side, efforts should be made to coordinate the resources of different government agencies and to encourage banks to increase the size of loans they are willing to grant to SMEs engaged in the development of cutting-edge technologies.

1. Create Business Friendly Environment

The advantage of Taiwan's manufacturing is the existing high technology basis. Therefore, there should be a policy to combine the resources from research institutes and appropriate financing sources to encourage entrepreneurs.

(1) Offer tax incentives to encourage new ventures' spin-off from mother companies

Many countries use tax incentives to encourage big mother firms to split out new ventures from them. For instance, the basic law for SMEs in Japan shows that firms with capitals less than 300 million Japanese yens have tax advantages when splitting out. To avoid abuse, only firms fit certain conditions can apply. In Chapter 3 of Business Mergers and Acquisitions Act of Taiwan, firms that fit certain conditions will be given exemptions of transaction tax, business income tax, tax incentives, and tax advantages of the amortization of goodwill and expenses. To encourage split out in this way, the government can help the mother firms reduce operational risk and encourage big firms to invest in R&D of advanced technologies.

(2) Encourage commercialization of research results

Taiwan's research is in the leading position in the world for a long time. However, it seems that the country is lack of energy to commercialize research results. To shorten the distance between basic research and technological development, the government could learn from U.S. experiences to establish the innovation institute to aggregate investments from industries, universities, and government to help with commercialization.

(3) Strengthen entrepreneurship

Taiwan has lots of professionals in the areas of electronic and mechanical engineering. With a little help in the strengthening of entrepreneurship, these professionals could be potential entrepreneurs in new ventures. The government can help the potential entrepreneurs better understand the industries and get financial aids easier so that the potential entrepreneurs could be more motivated. For instance, the government could invite the potential entrepreneurs to visit new ventures to help the potential entrepreneurs know the industrial environment more.

2. Increase Bank Loans to New Ventures and Integrate Resources from All Government Agencies

Every government agency in Taiwan has projects encouraging the development of SMEs. Projects related to the incubation and financing of SMEs include Innovation & Startups, Taiwan SMEG, Incubation Center of SMEA of MOEA, and Start-Up Taiwan Accelerator. Projects related to the financial aid of R&D include Measures to Promote Industrial Research and Development Loans, A+ Industrial Innovative R&D Program, etc. Contests and awards include Small Business Innovation Research (SBIR) and Business Startup Award.

Although there are so many government projects, not every business could get help, especially the new ventures. Most new ventures start from R&D and design; they do not have guarantees to get enough loans or mortgages in the emerging phase when the new ventures need the funding the most. To help new ventures with cutting-edge technology and high risk, Taiwan SMEG proposed the Direct Guarantee project to directly evaluate the enterprise. If the enterprise is full of potential, then Taiwan SMEG will issue a Letter of Commitment that the enterprise can use to get financial help. However, this service is not fast and useful enough for most new ventures.

In Taiwan, venture capital companies will not invest until the SMEs grow stably. To an SME, if it is not in urgent funding need, it often will not accept venture capital's offer because for fear risk of losing independence. In most cases, founders' personal money or borrowing from friends are the primary financial sources of new ventures in Taiwan. Table 7-4-1 lists financial sources of new ventures in different life phases.

Table 7-4-1 Financial Sources of New Ventures in Different Life Phases in Taiwan

Funding method / Phase	Loan					Stock
	Government funds	Venture capital	Mother company	Foreign funds	Self and friends	Go Incubation Board, listed, over the counter
Emerging	✓				✓	
Growth	✓	✓	✓	✓	✓	✓
Decline			✓	✓		✓

Source: See Table 7-3-1.

The government can help the new ventures by copying the previous experience that successfully nourished the cultural and creative industry and the electronic commerce industry by encouraging banks to lend more or to extend loan period to new ventures. In addition, the government could help new ventures with the idea of incubation accelerating. The idea was proposed in 2005 by Y. Combinator. The idea combines incubation program and venture capital organization to help new ventures grow fast and enhance value added. In 2012, SMEA of MOEA analyzed experiences from many countries and launched an incubation accelerating program suitable for Taiwan's new ventures. Program contents include Incubation School, Startup Taiwan Angel Club, and Incubation Airport. In 2013, an incubators alliance was established. It combines resources from Industrial Technology Research Institute, National Chiao Tung University, Chung Yuan Christian University, Incubation Center, institutions, and professional service organizations. However, the venture capital company

hosted by the accelerator is still profit oriented, so it only invests in new ventures that have potential or are already successful. This venture capital company is not very helpful to new entrepreneurs. Therefore, helping the new ventures by encouraging banks to lend to them or simplifying the application to Taiwan SMEG are more effective policies.

3. Assist Firms in Building Differentiation Strategy

From case studies in the previous section, it is very obvious that new ventures split out from the mother companies have advantages in marketing and finance over new ventures starting from universities, research institutes, or personal studios. New ventures split out from mother companies often gain market share by starting price wars; however, this would cause products to enter the decline phase earlier. Faced with the price war, new ventures from universities, research institutes, or personal studios could protect themselves by differentiating products and technologies and strengthening marketing strategies. The government could assist individual new ventures in building differentiation strategy.

4. Speed Up the Formations of Industry Cluster and Industry Chain of Cutting-Edge Technology Industries and Create Regional Innovation Mechanism

Industries with cutting-edge technologies often attract lots of firms in a short period of time. If there is no appropriate regulations or plans, price wars always cause products to enter decline phase earlier. The government can prevent this by leading discussions or negotiations among firms. Right now the projects of the Entrepreneurship 2.0 and the Technology and Industrial Fundamental Technology Project of Ministry of Science focus on the transfer of core technology to cause production specialization and prolong of products and industries' lives. In the meantime, the government hopes that through these projects, the regional innovation mechanism could be created so that new ventures with cutting-edge technology would successfully grow.

5. Assist New Ventures in Marketing and Gaining Business Opportunities in U.S.

Most new venture founders have backgrounds or connections in universities or research institutes with degrees of science or engineering areas. This is both advantages and disadvantages to new ventures. The advantage is that the founders command the knowledge and ability to breakthrough technological bottlenecks and to differentiate. The disadvantage is that the founders often lack marketing, sales, and management skills. Therefore, the government can help new ventures by offering marketing and management lessons and by matching the new ventures with companies specializing in these fields.

Participating expositions abroad is important to expand into foreign markets for new ventures. However, the cost is high so not every new venture can do this. Therefore, the government can help new ventures by subsidy or by leading exposition participating groups.

6. Accumulate Human Capital and Subsidize On-the-Job Trainings

Human capital plays a very important role in the emerging and growth phases of new ventures. However, SMEs cannot offer as good employee benefits as big firms do so it is not easy for SMEs to accumulate human capital. Lack of human capital will reduce surviving rate from emerging to growth phases.

Government agencies have plans to help SMEs develop human resources. However, since new ventures' talent demand is a little different from the demand of matured firms, perhaps the best way is to let new ventures conduct their own human capital developing programs and the government assists by subsidy of training and education expenses.

7. Create Market Demand by Introducing Products to Public Sector or Schools

Since the products created by new ventures are ahead of the market, the market demand could be very uncertain. The government could help new venture by purchasing or promoting the products. For instance, the government could encourage schools to use flat panels in classrooms or to utilize apps or 3D printing to help learning. The government could help new ventures have stable demand in domestic market and then, create long-term policy to help them develop foreign markets.

Take the 3D Printing industry for example. In the short term, the government can help it by offering assistance in technology, promoting related knowledge to the public, and purchasing the printers for public sector and schools. In the medium term, the government could encourage cooperation between the 3D Printing and the Culture and Creative industry or the Design industry to diversify the usage of 3D printing service. In the long term, the government could help the industry upgrade its product, material, and technology to enter industrial level markets such as medical instrument, 3C parts, or parts for Aviation industry.

8. Loosen Related Regulations

Since the new ventures are ahead of the industrial development, most of the time current regulations are not suitable. If Taiwan wants to take advantage of the U.S. manufacturing renaissance, the government should learn from the U.S experience. For instance, in Taiwan, new medical instruments have to be evaluated by old regulations so that many new instruments could not be passed and enter the market. Therefore, regulators need to adapt quickly and revise and loosen outdated regulations.

9. Learn from ARRA and AMP to Invest in Human Capital and Create Innovation and Research Mechanism

The NNMI project combines resources from local industries and academia, strengthens industrial and academic cooperation, reinforces the connection between industrial cluster and local innovative system, and develops differentiated technologies. The U.S. government granted 100 billion U.S. dollars in educational part of ARRA to invest in state education system to improve school

infrastructure and to modernize education. It is expected that because of this investment, the U.S. high technology human capital will grow faster and there will be more employment opportunities.

On the contrary, although Taiwan's educational expense is getting higher each year, the public educational expenditure is decreasing; The ratio of government educational expenditure to GDP is lower than the average ratio of OECD member countries. Government should increase its educational expenditure and pay more attention to the fields of science, technology, engineering, and mathematics (STEM) and to the recruiting of professors in the STEM fields. In this way, Taiwan could have its own human capital in research, technology, application, and innovation.

Moreover, the government could copy the NNMI project to fund an innovation research institute or to utilize current research system to provide onsite assistance and professionals to work with SMEs. In the meantime, the government should encourage small and big firms to provide funds, equipments, materials, and labor to work with local manufacturing innovation research institute. To meet the demand for special technical skills, local universities and community colleges could train students and employees together or the government could loosen related regulation to encourage foreign technicians or professionals to work in Taiwan. The government could encourage entrepreneurs, venture tutors, and new ventures to share their experiences. Besides, the government needs to focus on and invest more in the industries that Taiwan has advantages such as Additive Manufacturing, Advanced Micro-fabrication Manufacturing, Lightweight Metal Manufacturing, ICT Application, Cloud Service, Mechanical Manufacturing, and Intelligent Manufacturing. The government could encourage firms in these industries to work with firms in AMP alliance to gain the opportunity to enter the U.S. market in the future.

10. Attract Foreign Venture Capital Companies to Invest in Emerging Industries Related to U.S. Manufacturing Renaissance

Some foreign venture capital companies have been practiced for many years and have matured with comprehensive evaluation mechanisms. They are more willing to invest in firms in emerging phase. To diversify funding methods, increase surviving rate, reduce risk, and enhance motivation for new ventures, the government could help match new ventures and foreign venture capital companies. Recently, Institute for Information Industry and New Zealand Venture Investment Fund Limited signed the memorandum of understanding to speed up cooperation between the two parties.

Part Three Government SME Policies and Prospects

Many SMEs in Taiwan possess unique technology and innovative products, but lack the scale, capital, technology, and talents of many large businesses with which they regularly compete. The Taiwanese government has for many years been implementing policies designed to resolve the hurdles facing SMEs and provide proactive support and assistance to them.

The government's development strategy for SMEs in 2013-2014 has focused on four key areas: improving the provision of financing services to SMEs and boosting investment in the SME sector, encouraging SMEs to upgrade and transform themselves and to enhance their R&D capabilities, putting in place the mechanisms needed to support innovation and new business start-up and incubation, and promoting the in-depth development of local industries and helping these industries to capitalize on market opportunities. A large number of projects and ancillary measures have been implemented in order to help achieve these goals. Each year, the government revises its SME development strategy to reflect changes in the economic environment in Taiwan and the global economy as a whole and carries out planning and implementation of related ancillary measures to boost the competitiveness of Taiwan's SMEs and contribute to their stable, continued development.

Taiwan has for many years been an active participant in the SME-related meetings and activities undertaken by international organizations, such as APEC and the International Small Business Congress (ISBC). Part Three reviews the important measures and examines their goals, implementation and results.


3D PRINT

CHAPTER 8

Improving Financial and Funding Services and Strengthening Investment in SMEs

Many SMEs in Taiwan possess unique technology and innovative products, but lack the scale, capital, technology, and talents because of their small size, operational weaknesses, volatile cash flow and lack of financial transparency, SMEs generally find it very difficult to obtain funding either from the capital market or venture capital due to unproven business models and / or lack of track records, or from banks due to unstable financial performance / cash flow and lack of tangible assets that could be used as collateral. This situation has a direct negative impact on the SMEs' ability to survive and grow, and there is thus a clear need for the government to provide financing guidance and credit guarantees.

In order to provide comprehensive assistance for SME development, and achieve a further strengthening of financing channels, the Ministry of Economic Affairs (MOEA) has been working actively to provide financial and funding services such as credit guarantees, short-term financing, and funding guidance. These measures are aimed at helping, for examples, SMEs make effective use of their intellectual property to obtain financing; arrange the provision of direct credit guarantees by the SME Credit Guarantee Fund; provide assistance to business startup; launch the Phoenix Loan scheme for micro-enterprises; use the Firefly Mutual Guarantee scheme to help SMEs in the upstream, midstream and downstream segments of particular industries to obtain loans at preferential interest rates; and organize SME investment plans, thereby giving SMEs a wider range of financing channels to choose from.

This chapter is divided into three sections. Section I discusses measures to improve financial and funding services. Section II focuses on SME credit guarantees. Section III covers government's measures to strengthen investment in SMEs.

I Improving Financial and Funding Services

The government has been working actively to establish effective financing guidance mechanisms. Besides encouraging SMEs to make use of the various types of policy loans that are available from the government, establishing "SME Financing Service Windows" at major banks to give SMEs better access to financing information, and encouraging SMEs to make full use of the various low-interest loan schemes that the government provides, the government also uses the SME financing guidance system and the SME Troubleshooting Center to provide various types of guidance and information to help SMEs with requests for emergency assistance, and to provide consulting services. In addition,

the government works with financial institutions to provide financing help for SMEs that are experiencing financial difficulties, help SMEs establish sound financial and accounting systems and enhance their financial management capabilities, and use the SME Credit Guarantee Fund to provide credit guarantees, thereby increasing banks' willingness to extend loans to SMEs.

1. Providing SMEs Financing Assistance through Various Stages of the Business Life Cycle

With the passage of time, SMEs will go through various stages of the business life cycle and need to meet various challenges and financing sources to succeed, shown as followed:

(1) Stage: Start-up

A. Challenge: Small scale / sales; lack of financial transparency to reflect real business condition.
B. Financing Need: Seeking seed / start-up fund.
C. Focus: Building foundation.
D. Guidance: SME Development Fund, SME Instant Solution Service Center, etc.
E. Financing solution:
Guarantee: Entrepreneur-type guarantee (SME Credit Guarantee).
Short-term: SME Development Fund, Phoenix Loan, Youth Loan.
Long-term: VC, Angel, OTC, SME Investment Companies.

(2) Stage: Growth

A. Challenge: Increased sales but need sound financial, cash flow, and working capital management.
B. Financing need: Seeking financing from financial institutions.
C. Focus: Building financial and accounting system.
D. Guidance: Measures of financial management, SME Instant Solution Service Center, etc.
E. Financing Solution:
Guarantee: Regular guarantee;
Short-term: Policy low cost loans, bank loans;
Long-term: Capital market, strategic investors.

(3) Stage: Mature

A. Challenge: Stable but need to find new opportunity, cut costs, and sustain cash flow.
B. Financing Need: Mostly comes from profit and organic cash flow generation.
C. Focus: Building sound financial and accounting system.
D. Guidance: Measures of sound financial system, SME Instant Solution Service Center, etc.
E. Financing Solution:
Guarantee: Regular guarantee;

Short-term: Policy low cost loans, bank loans, etc;

Long-term: Capital market, strategic investors, etc.

(4) Stage: Decline (or Exit)

A. Challenge: Dropping sales, profits, and cash flow; reinventing or exit.

B. Financing need: Restructuring, seeking strategic partner, or exit (sale).

C. Focus: Reinventing or exit.

D. Guidance: Measures of reinventing business, SME Instant Solution Service Center, etc.

E. Financing Solution:

Guarantee: Regular guarantee;

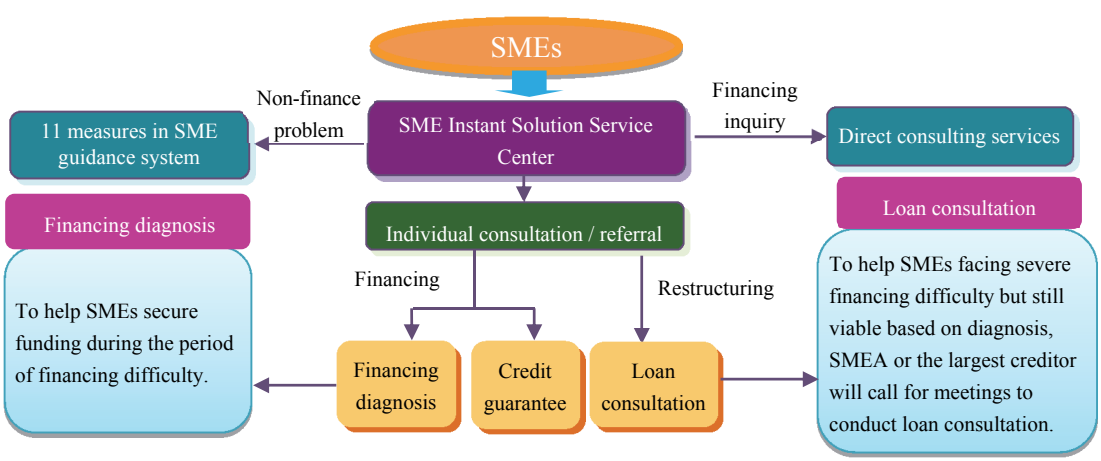
Short-term: Policy low cost loans, bank loans, etc;

Long-term: Capital market, strategic investors or buyers.

2. Providing SME Financing Value Added Service: SME Instant Solution Service Center

The SMEA (Small and Medium Enterprise Administration) has established the SME Instant Solution Service Center to provide SMEs with consulting services in line with their individual needs. It provide quick and effective assistance in a wide range of areas, including financing diagnostics and consulting, financing and loans related referral, guidance, refinance, extension, line of credit, and so on for both borrowers and creditors to enhance SMEs' financing capacity and risk management. The consultation mechanisms are outlined in Figure 8-1-1.

Figure 8-1-1 Financial and Funding Consultation Mechanism



Source: Small and Medium Enterprise Administration, Ministry of Economic Affairs (2014).

3. SME Financing Services Platform: Help SMEs Secure Financing

SME Development Fund Managing Committee initiated the SME Financing Services Platform in April 2008, funded by SME Development Fund along with five banks (Taiwan Cooperative Bank, First Commercial Bank, Taiwan Business Bank, E.Sun Bank and Chinatrust Commercial Bank) to

make it easier for SMEs to secure bank loans by providing financial diagnosis and clear, transparent details about SME operations that banks can use as a basis for decision-making when determining whether or not to grant loans to SMEs. If banks have a clearer picture of the business models that SMEs are using and of what their funding needs are, they are more likely to expand the provision of loans to SMEs, creating a win-win situation for SMEs and the creditors. The SME Financing Services Platform formally commenced operations on April 1, 2009. As of 2014, a total of 26 banks have joined the Platform, which offers 24 hour service (https://loansp.moeasmea.gov.tw).

4. SME Financing Service Contact Windows

To help provide SME owners and managers with the financing information they need, and to expand the range of financing service channels available to SMEs, the SMEA has arranged for the establishment of SME Financing Service Contact Windows in the branches of major financial institutions since 1998. These Contact Windows provide inquiry and consulting services related to financing guarantees, investment and financial management. SMEs can use the Contact Windows to obtain comprehensive financial information, and to find out about the various types of low-interest loans that the government makes available to SMEs, thereby helping to solve SMEs' financing problems. On the other hand, SMEs can provide feedback through the Window to the government for policy formulation.

5. The Taiwan Small Business Integrated Assistance Center (SBIAC) – Providing Specialist Financial Management Support Services

The Taiwan Small Business Integrated Assistance Center (SBIAC) was founded in 1982 through the provision of donations by seven financial institutions – the Bank of Taiwan, Land Bank of Taiwan, Taiwan Cooperative Bank, First Commercial Bank, Hua Nan Commercial Bank, Chang Hwa Commercial Bank and Taiwan Business Bank – with the aim at strengthening SMEs' managerial capabilities and competitiveness through the provision of comprehensive guidance, assistance with financing, advice on improving financial management, and assistance with the cultivation of specialist talent, in line with government strategy regarding SME development. The SBIAC provides a comprehensive range of guidance and funding support services for SMEs with significant development potential that have experienced difficulty in obtaining financing from financial institutions (http://www.sbiac.org.tw/index.jsp).

6. Plan for Increasing Loans to SMEs by Domestic Banks

To encourage the development of a long-term partnership relationship between SMEs and banks, and thus help SMEs obtain working capital, the Financial Supervisory Commission (FSC) decided that implementation of the Plan for Increasing Loans to SMEs by Domestic Banks should continue into the ninth stage, from January 1, 2014 to December 31, 2014, with the target of raising domestic banks' outstanding loans to SMEs by at least NT$240 billion by the end of 2014, of which 50% to 90% of the loan amount are guaranteed. The average annual loans made to SMEs under the Plan commencing in July 2005 amounted to around NT$240 billion as targeted.

The range of SMEs that are eligible for assistance under this scheme was expanded by deeming that small commercial enterprises as defined by Article 5 of the Commercial Registration Law that conform to the criteria for SME Credit Guarantee Fund credit guarantees can be classed as SMEs; in addition, "Special Award for Contributions to Balanced Regional Development" and a new (2014) "Special Award for Financing E-commerce Industry" has been instituted.

7. Young Entrepreneur Start-Up Financing Loans

The MOEA launched the Young Entrepreneur Dream Building Financing Loans in August 2012 and later merged with the Young Entrepreneur Financing Loans in 2014 into Young Entrepreneur Start-up Financing Loans. Young entrepreneurs aged between 26 and 45 who are eligible for the Young Entrepreneur Start-Up Financing Loans can apply for this start-up loans at preferential interest rates when they are getting their new businesses off the ground, and benefit from the provision of direct credit guarantees up to the 90%-95% range by the SME Credit Guarantee Fund (http://www.moeasmea.gov.tw/ct.asp?xItem=11788&ctNode=609&mp=1).

8. Policy Loans for Special Projects to Help SMEs (Young Entrepreneurs in Particular)

The government provides SMEs with various types of policy loans, either directly or through collaboration with banks. What distinguishes these loans from ordinary loans is that the loans are granted for specific purposes, and have preferential interest rates. In 2013, altogether, 24 different types of policy loan are available in 11 categories: SME upgrading loans, loans for the purchase of production equipment, business start-up loans, R&D loans, tourism development loans, export and overseas investment loans, recovery loans, small-value loans, international patent dispute loans, distribution services loans, and loans for entrepreneurs who have returned to Taiwan from overseas. For example, SME Innovation Development Special Project Loans was effective from Jan. 27, 2014 to Dec. 31, 2016 with a total of NT$30 billion available for SMEs, especially young entrepreneurs, who can also take advantage of the Young Entrepreneur Start-Up Financing Loans as mentioned above before applying this special loan.
(http://www.moeasmea.gov.tw/ct.asp?xItem=11788&ctNode=609&mp=1).

II SME Financing and Credit Guarantees

To help strengthen the provision of credit guarantees to SMEs, the government established the SME Credit Guarantee Fund in 1974. More recently, as part of the government's efforts to ensure that the operation of the credit guarantee system and industry guidance system conform to the needs of the government's industrial policy (thereby facilitating effective policy implementation), on May 15, 2003 the Executive Yuan approved the replacement of the Ministry of Finance by the Ministry of Economic Affairs as the regulatory authority with oversight over the SME Credit Guarantee Fund; from this point on, the SME Credit Guarantee Fund was able to provide both direct and indirect credit guarantees.

1. SME Credit Guarantee Fund: Principles, Operation, and Functions

The main purpose that the SME Credit Guarantee Fund was established to provide credit guarantees to SMEs, and to work closely with financial institutions in the development of financing guidance services for SMEs, helping SMEs obtain the funding they need from financial institutions and thereby contributing to the healthy development of Taiwan's SME sector and promoting Taiwan's economic growth and social stability. The SME Credit Guarantee Fund's main functions are as follows:

(1) Helping SMEs overcome the difficulties that they experience when trying to provide the collateral needed to secure loans.

(2) To make financial institutions more willing to provide loans to SMEs.

(3) To maximize the efficacy of guidance projects undertaken by other SME guidance organizations.

2. Establishment and Operation of the SME Credit Guarantee Fund, and Application for Credit Guarantees

The mechanisms for the establishment and operation of the SME Credit Guarantee Fund involved the allocation of a supporting budget by the government and the signing of contracts with financial institutions whereby they agree to provide additional funding to boost the Fund's ability to provide credit guarantees, and to share some of the potential loss (Figure 8-2-1), thereby enabling the Fund to continue providing guarantees and helping SMEs that have significant development potential but lack sufficient collateral secure the financing they need from financial institutions.

As of the end of June 2014, cumulative government subsidy amounted to NT$92.470 billion, or 78.41% of the total subsidy; signed financial institutions' cumulative subsidy amounted to NT$24.964 billion, or 21.17% of the total subsidy.

Application for a credit guarantee can be made either via a financial institution, or directly to the SME Credit Guarantee Fund, or a dedicated window, depending on the requirements of the individual enterprise making the application.

(1) Application via a financial institution

The SME Credit Guarantee Fund has signed credit guarantee agreements with 40 leading Taiwanese financial institutions. Business enterprises can submit their application for a credit guarantee at any of over 3,000 branches belonging to these 40 financial institutions throughout Taiwan; the financial institution in question will then pass the application on to the SME Credit Guarantee Fund.

To improve overall service quality and create a more user-friendly online handling environment, the SME Credit Guarantee Fund has restructured the existing "authorized guarantee" and "special project guarantee" systems so that applications received via financial institutions are now handled by a single, unified contact window; the new credit guarantee online processing system was launched on July 1, 2012.

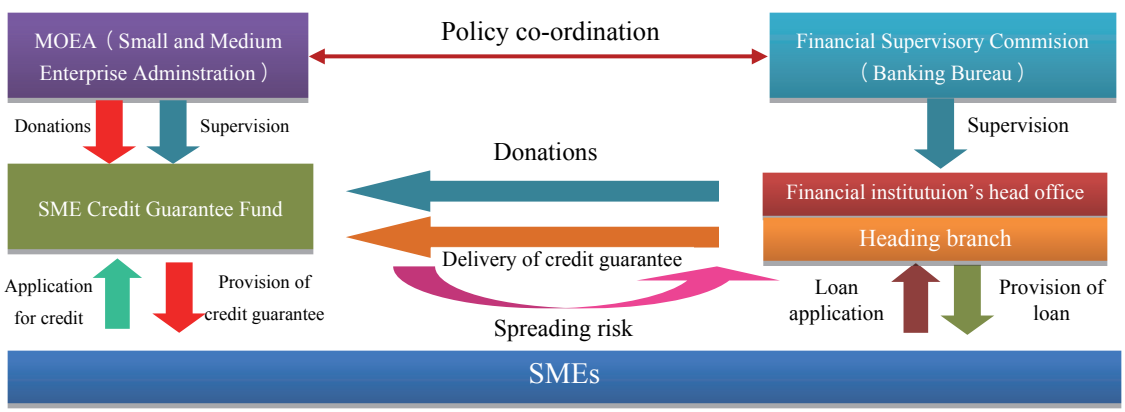
(2) Application made directly to the SME Credit Guarantee Fund

In line with government policy regarding industrial development and the strengthening of SME financing, SMEs with significant R&D, operational or market development potential and SMEs recommended by government agencies or cultivation units may now apply directly to the SME Credit Guarantee Fund for credit guarantees, which they can then use to secure financing from financial institutions.

(3) Application via a dedicated window

To assist a specific industry (such as Cultural and Creative industry), a related government institution provides a dedicated window, via which an eligible SME in the industry can apply for a credit guarantee, with preferential terms.

Figure 8-2-1 Establishment and Operation of the SME Credit Guarantee Fund



Source: SME Credit Guarantee Fund (2013).

3. SME Credit Guarantee Programs: Supported by Separate Funds or by SME Fund

The Taiwan SME Credit Guarantee Fund has expanded its coverage significantly. Examples of SME credit guarantee programs are: Loans to Enhance SME Export, Policy-oriented Loans, Loans for Knowledge-based Enterprises, Natural Disaster Reconstruction Loans for SMEs, Loans to Assist SMEs Affected by Trade Liberalization, Micro Entrepreneur Loans, and Loans for Young Entrepreneurs and Start-ups.

For "Credit Guarantee Programs Supported by Separate Funds," the Taiwan SME Credit Guarantee Fund's credit guarantee is provided on a risk-sharing basis. The credit risk beyond the Fund's guarantee coverage percentage shall be assumed by related financial institutions. Examples of "Credit Guarantee Programs Supported by Separate Funds" are: Firefly Counterpart Fund (Eligible Client: SMEs recommended by the donating enterprises), Micro/Women Start-up Loans, Micro Loans and Strategic Industry Loans Sponsored by Kaohsiung City Government, Strategic Industry Loans Sponsored by Taipei City Government, and Youth Business Start-up Loans Sponsored by Taipei City Government (Eligible Client: Individuals aged 20-45 approved by Taipei City

Government; Maximum Guarantee Coverage of 95% with Annual Guarantee Fee of 0.5%).

4. The Benefits Achieved in Terms of SME Funding

After 40 years of hard work, the SME Credit Guarantee Fund has achieved impressive results, and the total volume of credit guarantees provided has grown rapidly and reached record high.

(1) Help SMEs secure funding

As of the end of June 2014, the SME Credit Guarantee Fund had helped a total of 353,960 enterprises. The total number of credit guarantees provided through financial institutions was over 5.47 million with a cumulative credit guarantee volume of NT$8,776.4 billion for loans of NT$12,276.0 billion; The total number of credit guarantees provided through financial institutions for SMEs was over 5.41 million with a cumulative credit guarantee volume of NT$8,648.3 for loans of NT$11,852.0 billion (Table 8-2-1 and Table 8-2-2).

(2) Reducing the negative impact of the global economic downturn on SMEs

The downturn in the global economy often leads financial institutions to adopt cautious lending policies. Over the years, whenever Taiwan's economy was depressed, the SME Credit Guarantee Fund stepped up its support for SMEs, helping mitigate the negative impact that SMEs experienced during a downturn and in the early stages of the recovery (Figure 8-2-2).

Table 8-2-1 The Performance of the SME Credit Guarantee Fund in Credit Guarantee Provision, 2007-June 2014

Unit: Recipients; NT$ millions

Item / Year	No. of credit guarantee recipients	No. of credit guarantee applications accepted	Combined value of credit guarantees	Total amount of financing secured	Outstanding credit guarantees at year-end	Outstanding financing at year-end
2007	154,859	238,801	290,611	495,257	358,998	554,129
2008	147,452	237,446	330,757	523,151	328,988	501,395
2009	139,755	254,807	475,248	631,207	393,928	532,439
2010	135,821	312,593	692,598	863,787	489,577	625,493
2011	136,244	342,796	808,426	1,011,834	554,123	699,851
2012	139,095	370,144	911,183	1,142,475	610,065	767,883
2013	145,648	394,645	1,056,065	1,312,363	681,357	851,181
2014 (Jan.-June)	142,532	196,862	557,581	690,716	707,691	885,220

Note: The number of credit guarantee recipients listed above is the total for that fiscal year; it does not include the following types of guarantee recipient: credit guarantees for tertiary education student loans, which the SME Credit Guarantee Fund has been handling on behalf of Taipei City Government and Kaohsiung City Government since January 2003; credit guarantees for overseas study loans, which the Fund has been handling since August 1, 2004; credit guarantees for young people's overseas working holidays, which the Fund has been handling since July 1, 2005; credit guarantees for Taipei City Young People's Overseas Study Loans, which the Fund has been handling since June 1, 2011.

Source: SME Credit Guarantee Fund (2014).

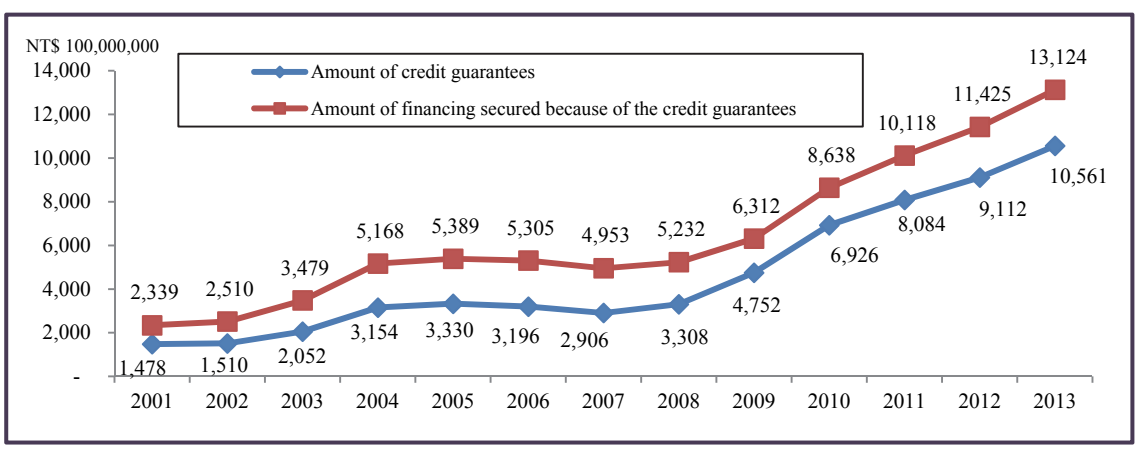
Table 8-2-2 Provision of Credit Guarantees to SMEs by the SME Credit Guarantee Fund, 2007 – June 2014

Unit: Recipients; application; NT$ millions

Item / Year	No. of credit guarantee recipients	No. of credit guarantee applications accepted	Combined value of credit guarantees	Total amount of financing secured	Outstanding credit guarantees at year-end	Outstanding financing at year-end
2007	147,227	236,409	288,210	492,721	348,553	542,550
2008	139,768	235,020	327,830	519,654	318,705	489,946
2009	130,269	248,374	462,030	613,141	376,768	511,394
2010	124,932	305,463	676,592	842,801	468,750	600,562
2011	124,640	336,973	800,382	1,001,720	536,400	679,336
2012	126,864	364,829	904,700	1,134,424	593,698	748,809
2013	133,002	388,219	1,048,059	1,302,095	665,192	832,162
2014 (Jan.-June)	129,815	193,433	553,070	684,883	691,522	866,190

Source: SME Credit Guarantee Fund, 2014.

Figure 8-2-2 Provision of Credit Guarantees by the SME Credit Guarantee Fund over the Past Thirteen Years



Source: SME Credit Guarantee Fund (2014).

(3) SME Credit Guarantee Fund has great impact on the growth of SMEs

The vast majority of SMEs that received credit guarantees from the SME Credit Guarantee Fund find that, within a few years, they were able to raise money on the capital markets or obtain loans directly from banks. Furthermore, As of June 2014, 2,550 of the SMEs that have been granted credit guarantees in the past have since grown sufficiently large to be classed as “large enterprises” rather than SMEs, and 814 have secured a stock market or OTC listing.

As of June 2013, 63% winners of the Employment Contribution Award, National Award of Excellent SMEs, Rising Star Award, SME R&D Innovation Award, and National Quality Award had previously been recipients of credit guarantees from the SME Credit Guarantee Fund.

5. New Measures Being Implemented by the SME Credit Guarantee Fund

To help SMEs and micro-enterprises obtain the working capital they need, and to reinvigorate the provision of small-value commercial loans at the local level, in addition to working with other organizations to provide Firefly Counterpart Guarantee Fund credit guarantees, the SME Credit Guarantee Fund is also playing its part in the MOEA's SME guidance policy through the active implementation of various new credit guarantee initiatives in 2012, including the Young Entrepreneur Financing Loans, Micro Business Loans, Supplier Financing Guarantee Project, SME Export Financing Guarantee Project, and Low Income Household Self-reliance Loan that is co-sponsored by NPO (Non Profit Organization) and the SME Credit Guarantee Fund.

(1) The Young Entrepreneur Financing Loans

Young entrepreneurs aged between 26 and 45 who are eligible can apply for this start-up loans at preferential interest rates and benefit from the provision of direct credit guarantees up to the 90%-95% range by the SME Credit Guarantee Fund. As of Dec. 2013 (starting from August 2012), the SME Credit Guarantee Fund had helped a total of 809 loans, amounted to a total of NT$418 million.

(2) Micro Business Loans

As of June 2014 (starting from October 2012), the SME Credit Guarantee Fund had helped a total of 4,032 loans, amounted to a total of NT$5,599 million.

(3) Supplier Financing Guarantee Project

As of June 2014, the SME Credit Guarantee Fund had helped a total of 4,337 loans, amounted to a total of NT$6,797 million.

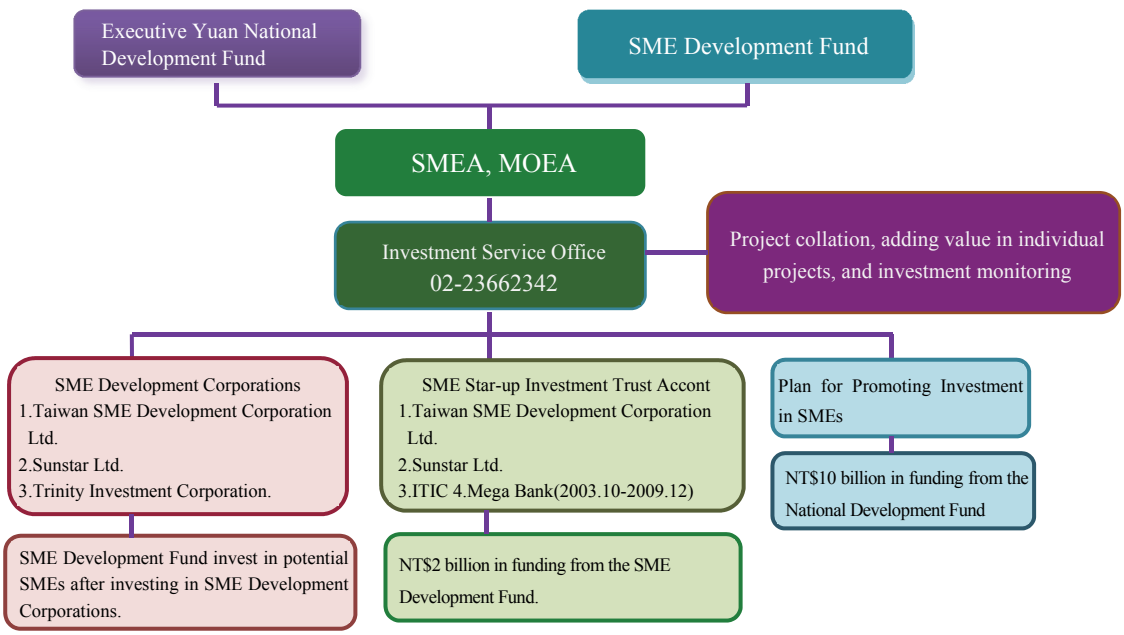
(4) Low Income Household Self-reliance Loan

As of June 2013, the SME Credit Guarantee Fund and NPO had helped a total of 248 loans, amounted to a total of NT$133.34 million.

III Strengthening Investment in the SME Sector

SMEs have always been the foundation on which Taiwan's economy rests, and they play an important role in ensuring social stability through job creation. To enhance the competitiveness of Taiwan's SMEs and create new financing channels for them, on March 26, 1993 the government promulgated the Regulations Governing the Establishment, Operation and Management of SME Development Corporations, with the aim at investing in the SME sector and providing SMEs with managerial and consulting guidance through the establishment of SME Development Corporations. In October 2003, to help SMEs overcome the difficulties that they often experience in securing equity investment, the SMEA established the SME Start-up Investment Trust Account system; in August 2007, the National Development Fund, Executive Yuan allocated NT$10 billion for use in this project, with the SMEA being commissioned to implement the Plan for Promoting Investment in SMEs. The SME investment architecture formed by these three measures is illustrated below (Figure 8-3-1):

Figure 8-3-1 Framework for Promoting Investment in the SME Sector



Source: Small and Medium Enterprise Administration, Ministry of Economic Affairs (2014).

1. Establishing the Investment Services Office

To ensure more efficient implementation of investment initiatives, the Small and Medium Enterprise Administration established the Investment Services Office in September 2007. It was intended that the Office would provide support for the agencies commissioned to implement the Plan for Strengthening Investment in SMEs and the SME Start-up Investment Trust Account project, through the provision of "brains trust" consulting services and administrative support services. The Investment Services Office has been providing comprehensive guidance service for the companies charged with providing guidance for SMEs and incubation centers, and has been supporting the matching of domestic and overseas venture capital with business enterprises in Taiwan, while also serving as a platform for coordination and communication between the investment management companies involved in implementing investment projects and the SMEs taking part in the projects. The clients of the Investment Services Office are: (1) investment funds' entrusted agencies: National Development Fund, Executive Yuan, and the SME Development Fund Management Committee; (2) SMEs who need fund; (3) professional management companies.

2. Establishment of the SME Start-Up Investment Trust Account to Invest in SMEs with Significant Growth Potential

On May 29, 2003, the SMEA received approval from the Executive Yuan to transfer NT$2 billion from the SME Development Fund to establish the SME Start-up Investment Trust Account, with the

funds in question to be entrusted to the custody of designated banks. Investment from the SME Start-up Investment Trust Account began in October 2003.

3. The National Development Fund's Plan for Promoting Investment in SMEs

To stimulate investment in the SME sector by venture capital firms and other private-sector companies, on April 17, 2007 the National Development Fund approved the Plan for Promoting Investment in SMEs; the Fund allocated NT$10 billion for investment in SMEs. This Plan is being implemented over a period of 10 years, with the actual investment taking place during the first seven years, and the remaining three years being devoted to the disposal of remaining investments. The formal launch of the Plan for Promoting Investment in SMEs took place on August 30, 2007.

Originally, under the Plan for Strengthening Investment in the SME Sector, venture capital firms were invited to invest in SMEs with significant growth potential at a 1:1 ratio with the Executive Yuan National Development Fund. In September 2010, the Implementation Measures for the Plan for Strengthening Investment in the SME Sector were revised, with adjustments made to the capital provision ratio, with the aim at promoting SME development, making it easier for early-stage SME start-ups to secure funding, and supporting the Executive Yuan's strategy of promoting service sector development to create more job opportunities in Taiwan:

(1) For enterprises at the seed-capital / start-up stage, the capital provision ratio was set at a ratio of NT$3 from the Executive Yuan National Development Fund for every NT$1 provided by the investment management firm.

(2) For enterprises in the cultural and creative industries, the capital provision ratio was set at a ratio of NT$3 from the Executive Yuan National Development Fund for every NT$1 provided by the investment management firm.

(3) For enterprises in key service industries, the capital provision ratio was set at a ratio of NT$2 from the Executive Yuan National Development Fund for every NT$1 provided by the investment management firm.

(4) For enterprises that have added at least 30 new employees (in Taiwan) during the year prior to appraisal by the professional management firm, the capital provision ratio was at a ratio of NT$2 from the Executive Yuan National Development Fund for every NT$1 provided by the investment management firm.

It is anticipated that the measures outlined above will give investment management firms more incentive to invest in emerging industries, encouraging private-sector firms to support government policy by investing in those industries the development of which the government is seeking to prioritize. As of the end of June 2014, investment had been secured for a total of 177 enterprises, with the National Development Fund providing a total of NT$5.5 billion in investment and investment management firms providing NT$4.7 billion, for a combined total of NT$10.2 billion. Total induced investment from private sector reached NT$39.2 billion; 54 enterprises helped by the Plan have secured a stock market or OTC listing.

4. The National Development Fund's Plan for Promoting Investment in Strategic Service Industries

To stimulate investment in the strategic service industries to promote service industries and employment, service exports, and the financing of SMEs in service industries, on May 2012, the National Development Fund approved the Plan for Promoting Investment in Strategic Service Industries. The key elements of the Plan are: the Fund was allocated NT$10 billion for investment in strategic service industries, such as information services, Chinese e-commerce, digital content, cloud computing, the MICE industry, gourmet Taiwan, international logistics, healthcare, and design services.

This Plan is expected to be implemented over a period of 13 years, with the actual investment taking place during the first ten years, and the remaining three years being devoted to the disposal of remaining investments. The capital provision ratio was set at a ratio of NT$3 to NT$5 from the National Development Fund for every NT$1 matching investment. As of the end of June 2014, investment had been secured for a total of 28 enterprises, with a total of NT$3.4 billion (http://www.issip.org.tw/ctlr?PRO=Index).

CHAPTER 9

Promoting Transformation, Upgrade and R&D Enhancement for SMEs

This chapter is divided into four sections to discuss various government measures promoting transformation, upgrade, and R&D enhancement for SMEs. Section I covers IT related measures for SMEs; section II examines measures to enhance SME operation, quality and innovation; section III reviews guidance on energy conservation, green opportunities, and reduction of carbon emissions; section IV discusses measures for technology upgrade and R&D capacity.

I Measures Related to IT Strategy for SMEs

1. Identifying and Cultivating SMEs with High Growth Potential

SMEA, MOEA (SME Administration, Ministry of Economic Affairs) launched various measures to identify and cultivate SMEs with high growth potential in 2014 focused on four main strategies: (1) actual / virtual integration, (2) operational excellence, (3) innovation clusters, and (4) green and sustainable business models.

2. Digital Inclusion and Applications

In 2005 MOEA launched the "Bridging Industry Digital Divide Project" focusing on the digital development of rural industries. The main targets of this program are micro-enterprises with less than 20 employees. Local community-based training activities are provided to increase the ability of micro-enterprises in rural communities to conduct digital business, incubate talents, and further extend online opportunities and improve competitiveness.

2013 saw the launch of the "Digital Inclusion for Small and Medium Enterprises Project." From "Digital Divide" to "Digital inclusion" represents an in-depth thinking change. This project aims at encouraging the owners of SMEs to integrate their business into today's digital economy and help traditional business in remote or rural areas use information technology to improve their business. More than that, the project aims at assisting groups like middle- aged or senior women and aborigines to improve their livelihood through using information technology. The main areas of emphasis in the project in 2014 are outlined below (plan site: http://e98.sme.gov.tw/Plan):

(1) Enhance digital application: Tailored training to help SMEs build and use web pages, blogs, and social media tools such as Facebook to enhance their networking, digital marketing, and e-commerce capability.

(2) E-enablement and marketing: Identifying SMEs that already have significant e-enablement potential and providing guidance service and experience sharing to help them achieve advanced level of e-enablement management and marketing capability.

(3) Advanced counseling for selected SMEs: Help SMEs with significant potential upgrade their business models from e-enablement, operation, value added product development, and marketing (physical and virtual); advanced counseling though case study and sharing.

(4) SME e-cluster: Promote SME clusters through integrated resources of IT, e-enablement, services and marketing to achieve synergy in exploring digital business opportunities.

3. International E-commerce Program

"The Promotion of SME International E-commerce Program" implemented by the SMEA, MOEA aims at helping SMEs enhance their international e-commerce capability, such as international B2B and B2C platforms, digital marketing talents cultivation, and product development. In 2012, the program helped SMEs integrate high quality products and develop 80 new export markets, such as Mauritius, Malta, El Salvador and Croatia. In 2014, the program will focus on:

(1) Providing multi-level international internet marketing services model to help export-oriented SMEs use various e-commerce models, expand overseas channels, and develop new markets.

(2) SME counseling, case study, and share of experience.

(3) Inviting SMEs with significant e-enablement potential for export to participate in international e-commerce case study and experience sharing.

4. Promoting Cloud Computing Services to Stimulate Upgrade and Transformation

The SMEA, MOEA has established the SME Cloud Computing Promotion Service Center under the Cloud Computing Industry Development Plan to help SMEs in Taiwan make more effective use of cloud computing-based services, with emphasis on driving Taiwan's development of cloud computing technology R&D, operational efficiency, and the development of innovative cloud computing based business models.

The government has identified a number of key high-value-added application fields in which it will provide subsidies to encourage information service providers to step up the development of "total solutions" that integrate cloud computing technology innovation, system innovation and service innovation, thereby helping to transform service models, meet the shared cloud service needs of SMEs (such as business software, personal mobile commerce, e-commerce, etc.), speed up the creation of new cloud-based service models and stimulate the growth of the cloud computing value chain, build a new paradigm and achieve across-the-board diffusion, and in so doing permitting the development of new markets, new applications and even new industries, with a consequent increase in business opportunities (plan site: http://cloud.moeasmea.gov.tw).

5. Value-Added ICT Application

To encourage SMEs to make more effective use of ICT (information and communications technology) to strengthen their innovation capability, the SMEA, MOEA has launched the SME ICT Innovation Upgrading Plan, which involves integrating smart technology with innovative value-added creation and working to strengthen network and cluster linkages; the Administration is encouraging leading industry clusters and bellwether firms, who have great potential in market expansion of their high value added products or services, to develop cutting-edge smart ICT applications that can facilitate value-added integration of value chains and processes, technology and services, thereby enhancing the capabilities of industry as a whole through integration, knowledge sharing, scale, and moving upward along the value chain (http://ict.sme.gov.tw).

6. Taiwan E-learning and Digital Archives Program (TELDAP) – SME Online University

Taiwan' SME Online University has been recognized as the first e-learning website developed for SMEs in Asia. Boasting more than 1,100 free online courses in six major categories, including ICT, human resource, finance, marketing, entrepreneurship, and comprehensive knowledge, the SME Online University has served about half a million SME employers and employees since its launch in 2003. Traffic to the site has climbed steadily with tens of millions visitors. The learning at the SME Online University is free; anyone who could access to the internet via his or her subscribed ISP is eligible for enrolling as a student of the University.

In addition to the courses, there are many learning facilities and services for the online learning students as well as a physical university. Such as University Book Store, the SME Online University provides voice book reviews for 260 current business book titles for members to download. There are 257 business celebrity speech videos available for members to use Under TELDAP, SME e-learning service expands the application of e-learning in formal education and lifelong learning to nurtured SME talents (plan site: http://www.smelearning.org.tw).

7. ICT Applications for Manufacturing Industries: Moving Upward along the Value Chain from OEM toward ODM and OBM

The manufacturing industries ICT value-added application plan launched by IDB (Industrial Development Bureau), MOEA, focuses on helping manufacturing industries move upward along the value chain from OEM model toward ODM and OBM through ICT applications and pro-innovation, pro-business environment. 2014 will see more efforts on “Knowledge-Oriented Industries” and “Commercializing Knowledge” (http://www.ecos.org.tw).

In view of the less promising outlook of OEM business, companies are expected to increasingly engage in activities beyond manufacturing. Entering into ODM is a step towards this trend. Prototype creation, detailed product design and development of product concepts, the core activities of ODM, may prove feasible for Taiwanese companies to master as those activities rely largely on one's

expertise in the manufacturing process. But moving up the front-end of the value chain will involve devoted personnel to these newly added activities.

In order to avoid over-reliance on buyers, achieve product differentiation and nurture customer loyalty, Taiwanese manufacturers may choose to adopt OBM, stepping into the back-end of the value chain. Rather than just expanding the range of manufacturing-related services into ODM, these companies will try to capture greater profits by building their own brand names and the marketing and distribution capability. However, OBM is a difficult business model, and the tenet of success is the commitment to invest in the brand over the long term. Given a lack of brand development expertise and financial resources, Taiwanese companies can incubate their brands in some small pilot markets. After becoming successful, the brands may be promoted in other potential markets.

8. Promoting Overseas Chinese-Language E-commerce

Taiwan's e-commerce sector has enormous development potential, deriving competitive advantage from its innovative business models, unique products, strong ICT capabilities, and the influence of Chinese culture on Taiwanese lifestyles. The Department of Commerce, MOEA has therefore decided to implement the Overseas Chinese-Language E-commerce Plan – Integrated Physical and Virtual Channels, with the aim at promoting sales of Taiwan's products and virtual services in the global Ethnic Chinese language market. The Plan involves the provision of assistance to help Taiwanese companies solve the problems related to money flow, distribution, and product certification, and to help cultivate international e-commerce talent, thereby helping to build Taiwan into an "innovation laboratory" for e-commerce. The key items for implementation include: helping firms to make effective use of e-commerce to develop the China market, putting in place the basic infrastructure needed to support cross-strait e-commerce linkage, and promoting cross-strait business matching.

From 2010 to 2013, 542 firms obtained counseling and exported products to Mainland China though the integrated physical and virtual channels of the Overseas Chinese-Language E-commerce Plan.

In 2014, at least three firms who were experienced in overseas Chinese-language e-commerce and capable of counseling would be picked and subsidized; they will serve as counselors to over 80 firms with products of Taiwan specialties.

9. Promote Smart Shopping Services

In 2013, MOEA joined forces with the Institute for Information Industry, International Integrated Systems Inc. and UDN Digital Co. to launch smart shopping services. Pilot projects were implemented in Taipei 101 Mall and Kaohsiung City's Dream Mall in June.

Taipei 101 Mall's smart shopping experience includes a range of novel features. Shoppers can use their cell phones to access a mini-shopping directory. After stipulating a price threshold for a particular item, the interactive guide will show where matching items can be found and display them on screen, saving the effort of running around looking for them. A Wi-Fi positioning service will

help shoppers locate their parked cars when they leave and the system can provide traffic information and recommend which exit to take.

When it comes to dining at a popular restaurant like Din Tai Fung, the intelligent network can integrate information about times, weather conditions and queue numbers to give expected waiting times. Suggestions for nearby attractions to while away the intervening minutes are also provided. At Kaohsiung's Dream Mall, customers can take advantage of the network's mobile shopping facility. By sweeping the cell phone over the product's barcode, items can be picked up at a designated information desk 30 minutes after payment, eliminating the need to push a shopping trolley or lug bags around.

In 2014, the above mentioned services will help 14 enterprises establish smart shopping services connecting to about 4,000 point-of-sale terminals enabling 1.5 million annual transactions amounting to NT$300 million as expected. Total investment is estimated at about NT$600 million (http://www.iservice.org.tw/).

II Enhance Quality, Operation and Innovation

To stay ahead of competitors, SMEs must improve the overall quality of their products and services by shifting the whole value chain upward. Among others, this upward shift involves offering better designs and features, building brands, using environmentally friendly materials, improving warehousing and logistics, as well as strengthening marketing and distribution.

1. Upgrading SME Quality

In order to assist SMEs in carrying out the requirements of quality management systems, training high-quality management talents, and creating a new quality image for Taiwan's SMEs, the SMEA has continued to promote the "SME Quality Management Upgrade Project," including innovation, industrial guidance, personnel training and promotion.

The industrial guidance portion focuses on SME short-term quality service diagnosis, top-quality enterprise guidance for successful SMEs (such as winners of National SME Award, the Rising Star Award, the SME Innovation Research Award, etc.), general enterprise guidance (focused on six emerging industries and ten servicing industries) and value chain guidance (such as industry cluster, ODM, and OBM).

Personnel training includes: organizing quality management awareness and application promotion seminars; international certification series, business management quality series, key industry management practices, tourism and leisure services series and other online courses; tailor-made corporate internal training programs to meet the manpower development needs of SMEs (plan site: http://smeq.moeasmea.gov.tw).

2. Helping SMEs Innovate and Transform Themselves through Quality Enhancement, and Strengthen Their Overall Competitiveness

To help SMEs strengthen their quality-related basic capabilities and ability to make effective use of collaborative logistics, so that quality can serve as the foundation for enterprise transformation and innovation, SMEA has been collating information relating to quality standards and rules in Taiwan and overseas, with the aim of enabling SMEs to achieve breakthroughs in terms of products, technology and markets. In 2012, SMEA implemented the SME Innovation and Transformation Strategy, with the goal of using quality improvements, industry cluster and network development, the adoption of hi-tech, value-added applications, and responsiveness to "green" trends, to strengthen SMEs' innovation capabilities. The main areas addressed and the key points of the promotional efforts in 2014 are (1) SME counseling and diagnosis on business analysis, competitiveness enhancement, and use of resources from government measures; (2) strengthening quality-related basic capabilities, building model enterprises with an outstanding reputation for quality, and achieving high-level quality that has a real impact on moving upward along the value chain; (3) helping SME innovate and transform through quality management and the right business model in particular value added activities (R&D, design, production, logistics, distribution, branding, services, etc.); (4) counseling on coordinated quality tests; (5) counseling on global quality management and conforming to international certification requirements; and (6) quality control talent.

3. Optimizing Intellectual Property (IP) to Create Value for SMEs

The SMEA, MOEA has been implementing the SME Innovation IP Value Creation Plan, to help SMEs that have been undertaking technology innovation gain economic value from their intellectual property (IP), and evaluate the potential for diversified IP utilization. Under this Plan, experts provide individual firms with guidance regarding their IP organization, and SMEs are encouraged to attach more importance to IP. The guidance provided under the Plan helps SMEs reduce the time and cost needed to complete R&D projects. It aims to achieve coordinated linkage and effective evaluation guidance service with respect to the entire IP value chain, including IP management and protection, IP acquisition and technology transfer, IP distribution and utilization, etc. The Plan's main work items include (1) operation of the SME IP Value-Added Service Center, to help optimize SMEs' IP-related capabilities; (2) planning the development of IP project guidance mechanisms to enhance SMEs' ability to utilize IP effectively; (3) building the necessary legal and regulatory framework and policy environment; (4) counseling on IP evaluation, acquisition, commercialization, and management. In 2014, the Plan will in particular help upstream, midstream and downstream SMEs across the supply chain of the bicycle industry in business and IP counseling.

4. Promoting Innovation and SME Cluster Integration and Expansion

SME clusters and export consortia development are a noteworthy form to enable the SMEs to link and integrate to regional and global value chains. They critically function as a means to improve the competitiveness of SMEs productivity and competitiveness within the regional and global economy.

In order to promote the upgrading of industrial technology and knowledge and to utilize cluster-based guidance models to help enterprises upgrade and transform themselves and to enhance their competitiveness, SMEA launched Innovation and Integration Services for SME Clusters to provide (1) technology, product and management guidance for intensive SME clusters, (2) guidance to help SMEs in service industry clusters adopt innovative technology, and (3) guidance to help SMEs in manufacturing clusters adopt innovative services. Main work items in 2014 include (1) cluster benchmark case studies and business cluster matching, (2) bright spot – cluster leader, (3) co-branding and international marketing, and (4) service cluster counseling and social value (http://www.smecluster.org.tw/).

5. The Emerging SME Innovation-Based Value-Added Service Plan

To encourage Taiwan's SMEs to develop service innovation and create new value, thereby raising their competitiveness, the SMEA, MOEA implemented the Emerging SME Innovation-based Value-added Service Plan. The implementation measures adopted for this Plan include practical guidance, which comprises showing firms how to adopt a service-oriented mindset, stay abreast of changes in consumer needs, and keep their finger on the pulse of the market. This will help firms to explore the new sources of demand and new business opportunities to which that service innovation can provide access; they can then go on to undertake service design and make effective use of technology in the development of high-profitability business models and service systems. At the same time, the sharing of service innovation case studies and the arranging of business matching collaboration can help to encourage more firms to participate actively and enthusiastically in service innovation. In 2014, main work items include (1) providing servicing innovation knowledge sharing platform, market intelligence, consumer research reports, and service design toolbox, (2) offering diagnosis and assessment services to SME business models of servicing innovation, and intense target counseling to enhance existing services or open up new servicing demand, and (3) servicing innovation forums, case studies, and engaging servicing providers in collaboration and innovation.

6. Plan to Support Micro-enterprises and Sole Proprietorships

To address unique needs of micro-enterprises and sole proprietorships as diverse and flexible working patterns gradually replace traditional one, SMEA, MOEA launched a separate plan (used to merged into SME programs) to support and counsel micro-enterprises and sole proprietorships (less than 5 persons). In 2014, main work items include (1) expanding micro-enterprise and sole proprietorship servicing platform to provide toll free counseling line (0800-05-1638) and online consultation for market intelligence, diagnosis and assessment, (2) team counseling and mentoring on legal, financial, marketing and operation issues, (3) talent cultivation including SME online university, and (4) promoting business opportunity matching and community cooperation model.

III Guidance to SMEs on Energy Conservation, Green Opportunities, and Carbon Emission

1. Guidance to SMEs on Energy Conservation and Reduced Carbon Emissions

In order to provide guidance for SMEs on energy conservation and reduced carbon emissions as well as to enhance the capacity of SMEs to respond to changes and explore new business opportunities, "Project for Energy Saving and Carbon Emissions Reduction Consulting for SMEs" has been initiated with the following key tasks:

(1) Providing consultation and recommendations on improving production efficiency, carbon footprint and energy consumption.

(2) Guidance for energy-saving technology and reduction management.

(3) Demonstration of guidance for industries.

(4) Cultivating green elites.

2. Guidance to SMEs in Response to the International Green Supply Chain

To help SMEs respond to international green product directives and the green procurement requirements of major international manufacturers, establish a capability for green supply chain management, effectively adapt to customers' green supply chains and create green business opportunities, the SMEA, MOEA has promoted the "SME Response to the International Green Supply Chain Guidance Project" with the following priorities (http://green.pidc.org.tw/):

(1) Providing guidance to SMEs that have been affected by European Union (EU) directives on green products.

(2) Providing guidance to enterprises on compliance with green product standards and certification and on deepening their quality control technology in order to provide products with stable quality in the long term.

(3) Providing guidance on green supply chain system models and propagating the supply chain of SMEs.

(4) Implementing cases in new directive guidance models and compiling teaching materials on model cases for follow-up and expanded applications.

(5) Organizing green supply chain management classes for instructors and auditors, and also green supply chain expert forums, workshops and seminars to promote related concepts and applications.

3. Taiwan Industrial Greenhouse and Energy Reduction Services Corps

In order to provide greater assistance to industries in energy conservation and carbon reduction, costs reduction, and response to international environmental guidelines/standards, the IDB, MOEA has formed the "Taiwan Industrial Greenhouse and Energy Reduction Services Corps." To offer guidance and counseling on green technologies, diagnosis tools, case studies, industrial collaboration, and talent cultivation (plan site: http://www.ftis.org.tw/tigers/index.asp).

IV SMEs: R&D Enhancement and Technology Upgrade

In order to encourage businesses to invest in R&D to enhance core strengths in international competition, MOEA has offered many guidance measures and funding sources for innovative R&D. These are expected to increase the input of R&D, upgrade the industry and improve the competitiveness of the country.

1. Improving Working Environment for SMEs; Promoting Sustainable Growth

In order to reduce industrial occupational hazards in the country, the IDB has implemented the "SME Working Environment Improvement Project" with the following key tasks: (1) basic technical guidance on working environment improvement; (2) guidance on the industrial park safety and health mutual aid system (SHMAS); (3) guidance on risk management; (4) research on regulations and monitoring of international safety and health trends; and (5) other policy awareness promotions and campaigns (http://www.cesh.twmail.org).

2. Instant Technical Assistance to SMEs

In order to help SMEs upgrade and transform, the IDB, MOEA has implemented the "Instant Technical Assistance Program of SME" since 2009 by utilizing existing mature technological capabilities of the corporate world, academic community and technical services industry to provide R&D, design, production, logistics, automation and electronic technologies necessary for upgrading the industry and to provide real-time, small scale, short-term technical guidance, so that the technology levels of SMEs can be upgraded and their competitiveness enhanced. In 2012, a total of NT$111 million subsidy was offered to 753 SMEs (of 2,290 applicants) for technology upgrade and transformation, resulting in NT$1,056 million output increase and NT$528 million cost saving (plan site: http://proj2.moeaidb.gov.tw/itap/index.php).

3. Conventional Industry Technology Development (CITD)

Most Taiwanese exporters have traditionally engaged in OEM, under which products ordered are designed mainly by customers who usually own a brand name. Suppliers only focus on the manufacturing process, and the keys to success are low cost and high flexibility in response to customer demand. However, competition from suppliers in developing Asia, especially Mainland China, has been rising, initially in terms of price, later in quality and other aspects over time. Taiwanese SMEs are therefore continually compelled to develop strategies that help them stay ahead of competitors.

CITD is a government-funded program that provides enterprises with R&D subsidies which are used to encourage conventional industries to develop new products and new technologies to expand service offerings and make R&D endeavors more prevalent in conventional industries. 2014 CITD budget is NT$285 million. The features of the program include:

(1) Product development: Maximum amount subsidized per case is NT$2 million.

(2) Product design: Maximum amount subsidized per case is NT$500,000.

(3) R&D alliance: Maximum amount subsidized per case is NT$10 million; and maximum amount granted is NT$2.5 million to the leading enterprise and NT$2 million each for other individual companies.

(Plan site: http://www.citd.moeaidb.gov.tw/CITDweb/Web/Default.aspx).

4. Promoting Bellwether New Product Innovation and R&D

IDB, MOEA launched Plan of Bellwether New Product Innovation and R&D to help and subsidize bellwether firms, who have great potential in market expansion of their high value added new products or services, thereby enhancing their innovation and R&D (http://outstanding.itnet.org.tw). Main areas of subsidy are: (1) plan of leading new product development (for new products with great potential and at least domestically leading technology content), (2) plan of innovation application services and R&D (including Proof-of-Concept, Proof-of-Service and Proof-of-Business), and (3) theme-based development plan (themes initiated by IDB).

5. Small Business Innovation Research Program (SBIR)

To encourage SMEs to engage in innovating industrial technologies, products and services, Taiwan's government has continually promoted the “Small Business Innovation Research Program” (MOEA SBIR) in February 1999. In 2008, the “Promotion of Innovative R&D for Local Industries Program” (Local SBIR) was implemented, which is to assist in funding so that each municipal, county, city government can allocate more founds for R&D addressing the needs of industries with local characteristics. To ensure more SMEs can take advantage of this Program to grow stronger, upgrade and transform in response to fast industrial changes, the DOIT (Department of Industrial Technology, MOEA) will regularly and properly review funds allocated for innovative R&D projects applied by local industries to ensure that funds are catering to demands of SMEs.

Through grants and subsidies provided by SBIR, the risks and costs borne by SMEs engaging in innovation and R&D activities will be reduced. The program encourages SMEs to carry out active innovation and helps to expand private-sector investment in R&D so that the results and achievements will help the country further its economic development.

From the inception of the SBIR program in 1999 until June 2014, a total of 5,431 cases of innovation and R&D projects were approved and implemented, with government subsidies exceeding NT$18.9 billion. This has been instrumental in enhancing the technological capabilities of SMEs in this country and improving the industry's competitiveness, as well as in providing assistance on upgrading and transformation to conventional industries (plan site: http://www.sbir.org.tw/SBIR/Web/Default.aspx).

6. A^+ Industrial Innovation R&D Program

To lead businesses into investing potential technologies in advanced industries, the DOIT announced that it would replace "Industrial Technology Development Program (TDP)" with "A^+ Industrial Innovation R&D Program" to constantly encourage businesses into innovation. In the hope of guiding businesses to invest in high-end technology with higher industrial value, the DOIT encourages vertical- and cross-domain cooperation in order to tap industrial demands and develop comprehensive industrial ecosystem and the maximum efficiency.

By means of government subsidization, the A^+ Industrial Innovation R&D Program is able to enhance the enterprises' willingness to engage in technology R&D that is forward-looking but high-risk, and make a long-term R&D deployment in advance. In addition to inducing the industry to engage in R&D activities, it also encourages the enterprises to increase and accumulate the value of intellectual properties, cultivate and promulgate R&D personnel, start up new business units or new companies, and engage in innovative product development and services, which all serve to boost the competitiveness of the enterprises. (http://aiip.tdp.org.tw/index.php).

Business TDPs can be divided into three programs: (1) Industrial Technology Foresight Research Program (emerging technologies, products, and services), (2) Integrated R&D Program (vertical- and cross-domain cooperation to tap industrial demands and develop comprehensive industrial ecosystem and the maximum efficiency), and (3) Industrial Technology Innovation Center Program (R&D management system, encouraging foreign firms to set up R&D in Taiwan, intellectual property right, etc).

7. Assistance to Conventional SMEs' Technology Innovation by Partnering with Universities and Research Institutions

In order to help SMEs transform and innovate, and adopt the new ways of thinking that will be needed to cope with the ever changing global environment, in 2008 DOIT, MOEA began implementation of multiples technology development programs (TDP), such as the Plan for the Provision of Assistance to SME Technology Development by the University Sector (launched in 2009), and the Southern Taiwan Alliance of Researchers and Scholars, to help Taiwanese industry upgrade itself by making effective use of the extensive R&D capabilities of the universities and other research institutions.

Expert diagnostic service is provided to help enterprises to develop their R&D activity, and to make use of the R&D subsidies available from the government. The idea is to make the university sector a long-term partner for enterprise development, thereby strengthening SMEs' core technology capabilities and enhancing the competitiveness of Taiwanese industry.

As of May 2012, nearly 3,713 SMEs had benefited from the Plan for the Provision of Assistance to SME Technology Development by the University Sector. University and college experts had helped provide timely solutions to over 13,300 problems; assistance had been provided to help secure SME participation in 175 government research projects, involving a total of over NT$700 million in R&D funding; SMEs had been helped to install R&D equipment worth a combined total of over NT$3.5 billion; SMEs had been helped to secure orders worth approximately NT$4 billion, and more than 3,000 new jobs had been created.

In 2013, the Southern Taiwan Alliance of Researchers and Scholars selected ten industries to support for their value added transformation, including chemical machinery and equipment manufacturing, printing equipment, mechanical equipment manufacturing, yachts, appliance, industrial rubber products manufacturing, textile, kitchen and lighting, ceramic products, and food production machinery manufacturing.

In 2014, twelve conventional industries were selected for value added transformation including metal and furniture, chemical machinery and equipment manufacturing, printing equipment, mechanical equipment manufacturing, household electronics, yachts, bicycle, entertainment machinery and equipment manufacturing, textile, kitchen and lighting, ceramic products, and food production machinery manufacturing.

8. Service Sector Innovation and R&D Program (SIIR)

In order to foster the development of the commercial services industry and encourage enterprises to engage in research on "new service products," "new business models" and "new marketing models" or the development of "new business application technologies," the Department of Commerce has initiated the "SIIR " program to provide case-based subsidies, thus facilitating the introduction of new aspects and categories of business activities and enhancing the core competitiveness of the industry, while increasing its added value and creating a competitive advantage (plan site: http://gcis.nat.gov.tw/neo-s/Web/Default.aspx

Chapter 10

Strengthening Start-Up Capabilities and Promoting Incubation and Acceleration Programs

GEM 2013 Global Report (GEM: Global Entrepreneurship Monitor), published in Jan. 2014, showed that Taiwan's TEA (Total Early-Stage Entrepreneurial Activity) Index was 8.2%, above the average of innovation-driven economies at 7.9%, and Taiwan's entrepreneurial intentions was ranked No. 2 among innovation-driven economies, higher than that of South Korea and Japan. Both indicators reflect an entrepreneur-friendly environment promoted by government agencies' joint efforts in Taiwan.

To further the development of a high-quality environment for new business creation in Taiwan, and facilitate the identification of promising early-stage start-ups so that they can be matched with "angel" investors and benefit from regional industrial resources, while at the same time putting in place a comprehensive support network, the Small and Medium Enterprise Administration, Ministry of Economic Affairs (SMEA, MOEA) launched the "Start-Up Taiwan Program" in 2012. The key theme is "refining the incubation process to speed up the achievement of excellence," which embodies three key strategies: "stimulating innovative ideas and strengthening the start-up function," "improving incubation to speed up new business growth," and "optimizing the support network for new businesses." Due to the accelerated pace of globalization, industrial evolution and the flow of capital, excellent technology, sound business model, and cost advantage alone are not enough to excel without the "speed" which is becoming an important competitive edge. Business accelerator, or acceleration program (such as TechStars) has becomes a global trend. In 2014 "Young, Energy, Start-Up" or "YES Taiwan" became the key theme of the "Start-Up Taiwan Program," which embodies "Youth Entrepreneurship Program" and "Youth Entrepreneurship Work Platform" by joint effort of government agencies to integrate mentoring and incubation resources and form entrepreneur clusters.

This chapter consists of three sections. Section I discusses entrepreneurship counseling and incubation mechanism; section II focuses on the incubation center and its functions; section III covers government counseling and supporting projects for female entrepreneurs.

I Entrepreneurship Counseling and Incubation

The key theme "YES Taiwan" promoted in 2014 under the "Start-Up Taiwan Program" comprises 48 programs including "Youth Entrepreneurship Program" and "Youth Entrepreneurship Work Platform" through joint efforts of 13 government agencies. It covers 4 main areas: start-up dream development, dream building incubation, financing and investment, and R&D and innovation, to promote resource integration and sharing through large business platform, with a concept similar to "Entrepreneur Café" in U.S.

1. Entrepreneurship Consultation Services

SMEA, MOEA launched entrepreneurship consultation service plan in 2013 to help potential entrepreneurs stimulate innovative ideas, provide business information and advisory services, and to prepare them before starting new businesses, thus increasing the success rate. The plan will facilitate domestic entrepreneurial innovation, spread innovation awareness and shape entrepreneurial society. Main Services in 2014 are:

(1) Free counseling service: access to over 100 professional entrepreneurship consultants through "0800-589-168" toll-free entrepreneurship counseling line and "youth entrepreneurship dream building" online consultation system (http://sme.moeasmea.gov.tw/);

(2) Entrepreneur Café: promote would-be entrepreneurs, entrepreneurs and mentors to share ideas, knowledge, and resources;

(3) Start-Up Taiwan Product Show: offer free marketing platform to increase visibility and business / investor matching opportunity for entrepreneurs;

(4) Start-up knowledge bank, Start-Up Taiwan Newsletter, forums, and other in-depth publications;

(5) International community link, including ICSB (International Council for Small Business), GEW (Global Entrepreneurship Week) and GEM (Global Entrepreneurship Monitor), to strengthen entrepreneurial culture and international participation.

2. Entrepreneurship Incubation Education Program

The entrepreneurship incubation education program offers education and training opportunities for members of the public interested in setting up their own business, and for start-up owners, through the organizing of basic entrepreneurial skills courses, industry-specific courses, entrepreneur "boot camps," and the SME Online University digital learning portal site. It helps both existing and would-be entrepreneurs keep pace with new trends and access the latest information of management, technology, funding and international business start-up, thereby enabling entrepreneurs to make effective use of their own operational characteristics and sources of competitive advantage to enhance their market competitiveness. A diversified range of innovative educational methods are used to provide multi-faceted support, increasing the success rate for new start-ups and stimulating the growth of entrepreneurial drive in society as a whole, while also effectively promoting the

concept of lifelong learning and stimulating knowledge-intensive business start-up. Three main categories of the program are: (1) entrepreneurship incubation courses for existing and would-be entrepreneurs, with priority treatment for economically disadvantaged people and aborigines; (2) industrial forums on competition, benchmarks, sharing and teaching from industrial elites; (3) start-up counseling website on SMEA services, start-up funding, young entrepreneur financing, and so on (http://www.learningup.tw/index.php).

3. Entrepreneurship Dream Building Plan

Entrepreneurship Dream Building Plan, a start-up service network launched by SMEA, is to help firms with strong potential increase the visibility of products and services, expand more business cooperation opportunities and create a new vision of the business. The ultimate goal is to shape the benchmark of entrepreneurial companies and to assist in its sustainable operation. The service content is as follows: (1) the use of start-up consultants to help firms that have been in existence for less than three years evaluate their business model and development strategy, thereby helping them to stay competitive in business; (2) layered counseling for start-ups, including general counseling, mentorship, and mid- to long-term team assistance; (3) product exhibitions and international commercial exhibitions; (4) multi-media marketing and promotions; (5) entrepreneurship awards.

4. Youth Entrepreneurship Program

"Youth Entrepreneurship Program" is a three-year program (2014-2016) launched by SMES through joint efforts of 13 government agencies (Industrial Development Bureau, Department of Industrial Technology, Bureau of Foreign Trade, Department of Commerce, Ministry of Labor, Ministry of Education, etc.). The Program offers the "Youth Entrepreneurship Work Platform," and covers 4 main areas: start-up dream development, dream building incubation, financing and investment, and R&D and innovation, to promote resource integration and sharing through large business platform, with a concept similar to "Entrepreneur Café" in U.S.

Diverse entrepreneurship activities will be organized by government agencies, universities, incubation centers, and private organizations to fully tap young entrepreneurs and would-be entrepreneurs' potential for creativity, entrepreneurship, and innovation, and encourage youth who aspire and dream of becoming entrepreneurs to take part in a series of entrepreneurship courses, competitions, lectures, and product presentations. On the funding side, the SMEA will continue to show full support for enterprises, and will promote venture capital and angel funding for startups as well as merge the "Youth Start-Up Loan" with the "Youth Dream-Building Program" into the "Young Entrepreneur Start-Up Loan."

5. U-start: A College Graduate Entrepreneurship Service Program

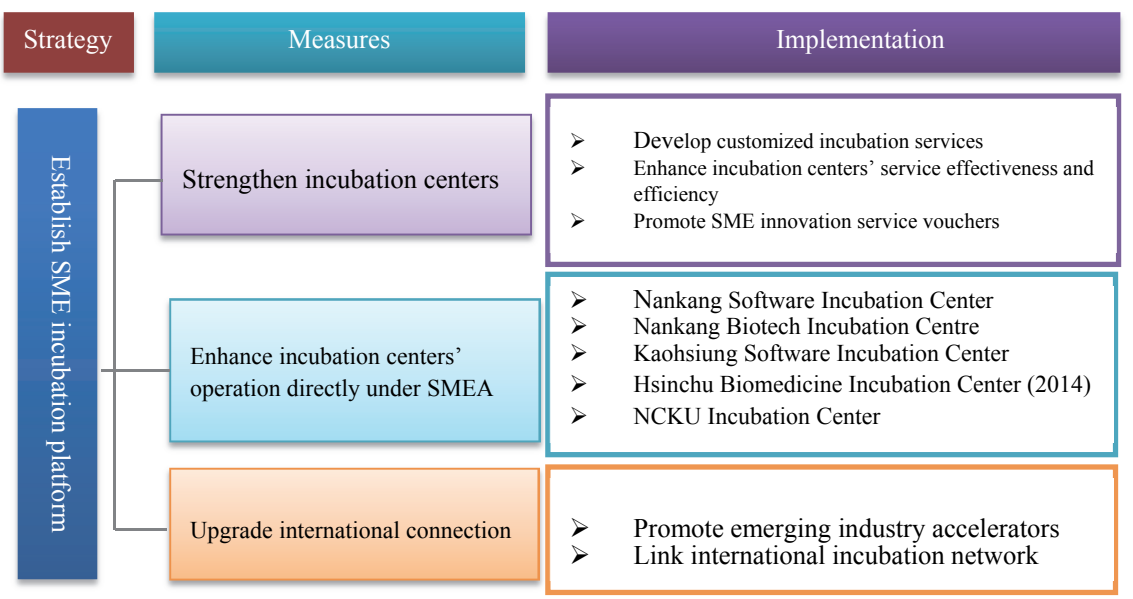
The Ministry of Education launched "U-start" in 2009 to prepare college graduates to be entrepreneurs through industry-university cooperation mechanism. 2014 College Graduate Entrepreneurship Service Program is divided into 3 industries: Service; Manufacturing; and Personal, Cultural and Recreational, for college graduates within 2009-2013.

As of June 2014, a total of 555 start-up teams obtained subsidies from the Ministry of Education to a maximum of NT$1.75 million (NT$0.5 million in year one and NT$1.25 million in year two) (http://ustart.moe.edu.tw/).

II Refining Incubation and Acceleration Programs

To help SMEs get established, undertake innovation and grow at various stages, since 1997 the SMEA has been working with other government agencies, research institutions, universities and private-sector companies to implement the government's incubation center policy and encourage the establishment of new incubation centers. The framework of SME incubation implementation mechanism in 2014 is shown in Figure 10-2-1.

Figure 10-2-1 Framework of SME Incubation Implementation



Source: Small and Medium Enterprise Administration (SMEA), MOEA (2014).

1. Strengthen Incubation Center: Current State and Its Approaches

A business acceleration program usually lasts between 3-6 months. The emphasis of the business accelerator is on rapid growth, and to sort out all organizational, operational, and strategic difficulties that might be facing the business. It can be understood as a holistic business advisory service, often bearing strong resemblance to traditional management consulting practices, but adjusted to fit SMEs. While incubators help companies stand and walk, accelerators teach companies to run.

An incubation center is a facility that cultivates new businesses, new products and new technologies, and helps SMEs upgrade and transform themselves. It provides a wide range of resources in an efficient, integrated manner (including the provision of office space, access to equipment, R&D technology, help in finding funding, business services, management consulting,

etc.), thereby reducing the costs and risk that new businesses need to bear in the start-up stage and in the early stages of R&D projects. By creating a first-class cultivation environment, incubation centers increase the likelihood that a new business will be a success. The following sections describe the current state of incubation center operation in Taiwan.

(1) Incubation Centers: Current state

A. As of 2012, there were over 130 incubation centers in Taiwan, located in 20 different counties and cities. Of this total, 76 incubation centers received subsidies from the SMEA in 2012. Four incubation centers operated by SMEA since 2002 are (i) Nankang Software Incubation Center (E-commerce, Embedded Systems, Software, and Network Communications), (ii) Nankang Biotech Incubation Center (Pharmaceuticals, Medical Equipment, and Healthcare, Agricultural Biotechnology), (iii) Kaohsiung Software Incubation Center (Digital Content, Software, and Technology Services), and (iv) NCKU Incubation Center (Biotechnology and Health Care, Green Energy and Environmental Protection, and Precision Machinery).

B. A new incubation center - the Hsinchu Biomedicine Industrial and Incubation Center will be opened and expected to operate directly under SMEA by the end of 2014. The Hsinchu Biomedicine Industrial and Incubation Center will integrate the links in the biotech industry development chain - R&D, trial production, clinical trials, patent transfer, and company incubation - within a single park and provide “one-stop shop” support and regulatory verification services. This will deepen biotech research capabilities, accelerate the commercialization of R&D results, and enhance production efficiency. It will focus on Optoelectronic Imaging, Information Technology, Biomedical Chips, Biomedical Materials, Regenerative Medicine, Orthopedics, and combination products. The NSC is working vigorously to attract prominent domestic and foreign biomedical and R&D organizations to the park to promote cooperative industry-academic development. The Information and Communications Technology (ICT) advantages of the neighboring Hsinchu Science Park will be employed to attract participation and investment and produce a biotech industry cluster effect.

C. Performance of all Incubation Centers (Table 10-2-1)

(i) In 2013, 86 incubation centers received subsidy. 5 firms that had been cultivated in incubation centers had secured stock market or OTC listing. Taiwan’s incubation centers had successfully cultivated 2,181 SMEs, and induced incremental capital investment of NT$7.74 billion. The ratio of increased capital over subsidy reached 49.32.

(ii) By the end of 2013, SMEA provided cumulated funding of NT$2.675 billion to incubation centers. Of over 130 incubation centers in Taiwan, 112 of them received subsidy. 68 firms that had been cultivated in incubation centers had secured stock market or OTC listing. Taiwan’s incubation centers had successfully induced incremental capital investment of NT$83.59 billion. The total number of people working at these firms was 128,990; total number of patents secured by these firms over the years was 3,469; there had been 1,621

instances of technology transfer. The ratio of increased capital over subsidy reached 31.25 (http://incubator.moeasmea.gov.tw).

Table 10-2-1 Incubation Center Performance: 2008-2013

Item \ Year		2008	2009	2010	2011	2012	2013	1997~2013
Input	SMEA subsidy (100 NT$ millions)	1.76	1.75	1.70	1.41	1.52	1.57	26.75
Output	No. of incubated SMEs	1,433	1,633	1,885	1,954	2,065	2,181	5,885
	No. of incubated startups	671	835	1,131	1,226	1,250	1,354	2,717
	Employees	35,345	28,038	31,038	30,489	34,185	29,368	128,990
	Patents secured	402	484	317	361	206	157	3,469
	Instances of technology transfer	181	270	162	195	84	62	1,621
	Ratio of increased capital over subsidy	37.5	36.57	31.76	45.11	36.43	49.32	31.25
	Increased capital (100 NT$ millions)	66	64	54	63.63	57.2	77.44	835.86
	No. of enterprises listed in stock market or OTC	7	5	3	3	2	5	68

Source：SMEA, MOEA (2014).

(2) Incubation center subsidy policy: Small Business Innovation Voucher (SBIV)

The number of incubation centers in Taiwan has been growing steadily. In order to meet the needs of various industries, incubation centers are, increasingly, providing a wider range of services. They are being encouraged to develop their own unique business models and core competencies, to be able to provide effective support for the development of start-up "bright spots." From 2013, SMEA adjusted its subsidy policy, adopting Small Business Innovation Voucher plan based on needs of small business to trigger industrial-academic cooperation and lead small businesses (particularly micro and small businesses, innovative businesses and those who acquired government funding for R&D works for the first time) to be engaged in innovative R&D works. The funding is provided for study of technical feasibility and configuration of intellectual property allocation, establishment and reformation of R&D process, customized configuration or evaluation for new product/service development, testing and verification of innovated products or techniques, strategic planning for commercialization or industrialization, consultation for entrepreneur and innovation, and pilot production process, design and marketing, which cover the diversified, creative and flexible features of small businesses. The businesses which are approved and qualified in closing review will be provided with an innovation voucher worth NT$ 300,000, which is exchangeable for customized innovative service from any knowledge service institute approved for this plan (http://www.aic.org.tw/innovation/index.html).

2. Enhance Incubation Centers' Operation Directly under SMEA

To cultivate R&D of key high-tech industries, MOEA has established four incubation centers through direct investment since 2002 to offer technology support and services in consultancy, resource sharing, brand marketing and business matching for startups and SMEs, and help them transform, enhance R&D abilities and boost their international presence. They are (1) Nankang Software Incubation Center, (2) Nankang Biotech Incubation Center, (3) Kaohsiung Software Incubation Center and (4) NCKU Incubation. Nangang Software Incubation Center was honored with the Incubator of the Year Award in 2013 by AABI (Asian Association of Business Incubation). In August 2013, Armorize Technologies, Inc., a leading developer of cloud-based (SaaS) anti-malware products from Nangang Software Incubation Center was acquired by Proofpoint, Inc., (NASDAQ: PFPT), a leading security-as-a-service provider for approximately US$25.0 million in cash.

To enhance operating efficiency of incubation centers directly under SMEA, introduce more assistance and creativity from private sectors, and to alleviate the burden on SME Development Fund, Nankang Software Incubation Center and Kaohsiung Software Incubation Center will adopt jointly commissioned operations after July 2014. In 2014 Nankang Biotech Incubation Center will transform its operation to reduce expense and promote fundraising from vendors. Similar efforts will also be made for other incubation centers directly under SMEA in 2014.

3. Upgrade International Connections

(1) Incubator vs. accelerator

In 2012, SMEA actively promoted "Star-Up Taiwan" plan, integrating regional industries and incubation resources, to provide a comprehensive "one-stop shopping" incubation services (including accelerator) (Figure 10-2-2).

There seems to be a considerable amount of confusion about the differences between accelerator and incubators. Many people use the terms interchangeably, but there are a number of elements that distinguish one from the other. At the same time, there is indeed overlap across incubator and accelerator services, both helping firms grow by providing guidance and mentorship. Incubator programs last for varying durations and include several forms of mentorship and support, and nurture the business for the time it takes for it to get on its feet, sometimes for many years. On the other hand, an acceleration program usually lasts between 3-6 months. The emphasis of the accelerator is on rapid growth, and to sort out all organizational, operational, and strategic difficulties that might be facing the business. It is a holistic business advisory service, often bearing strong resemblance to traditional management consulting practices, but adjusted to fit SMEs. "Star-Up Taiwan" plan integrates these two programs as follows.

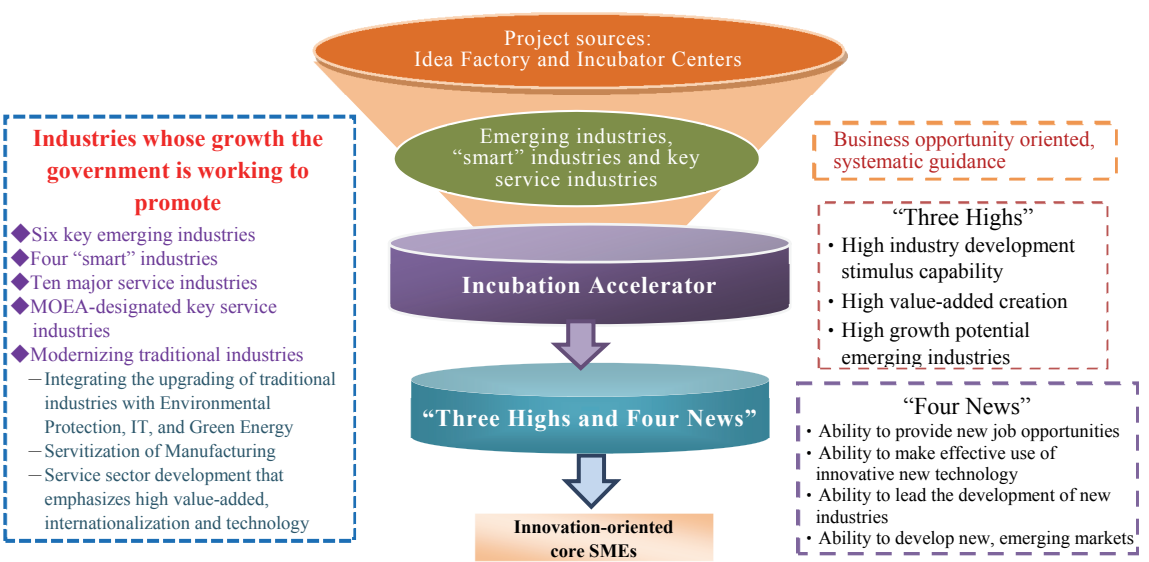
An "Idea Factory" uses a selection mechanism to evaluate the potential of innovative start-up ideas, and then provides the necessary environment and support at every stage from initial conception through sample fabrication to prototype creation. It then leverages the capabilities of a team of expert consultants to provide a comprehensive, "one-stop shopping" range of services that include technology evaluation, R&D input support, market research and business environment analysis, incubation guidance, international business matching and assistance with securing venture capital

funding, so as to help speed up the commercialization of the original innovative concept.

As regards the "Incubation Accelerator," once a start-up has passed selection, it begins to receive business opportunity-oriented, systematic guidance provided by experts, with a "one-stop shopping" service that covers technology appraisal, R&D input assistance, market research and business environment analysis, incubation guidance, international business matching and assistance with securing venture capital funding, with the aim of enhancing the success rate for new start-ups, and realizing the ideal of accelerating the transformation of innovative ideas into new technology, the transformation of new technology into new products, and the successful commercialization of those new products.

The wealth of new ideas created in the Idea Factory or in incubator centers can be brought into the Incubation Accelerator for the provision of business-opportunity-oriented, systematic guidance, so that the start-ups in question can grow and become more competitive, eventually being transformed into "innovation-oriented core SMEs" that embody the "Three Highs" and "Four News" (Figure 10-2-2).

Figure 10-2-2 The Methods Adopted to Cultivate Innovation-Oriented Core SMEs



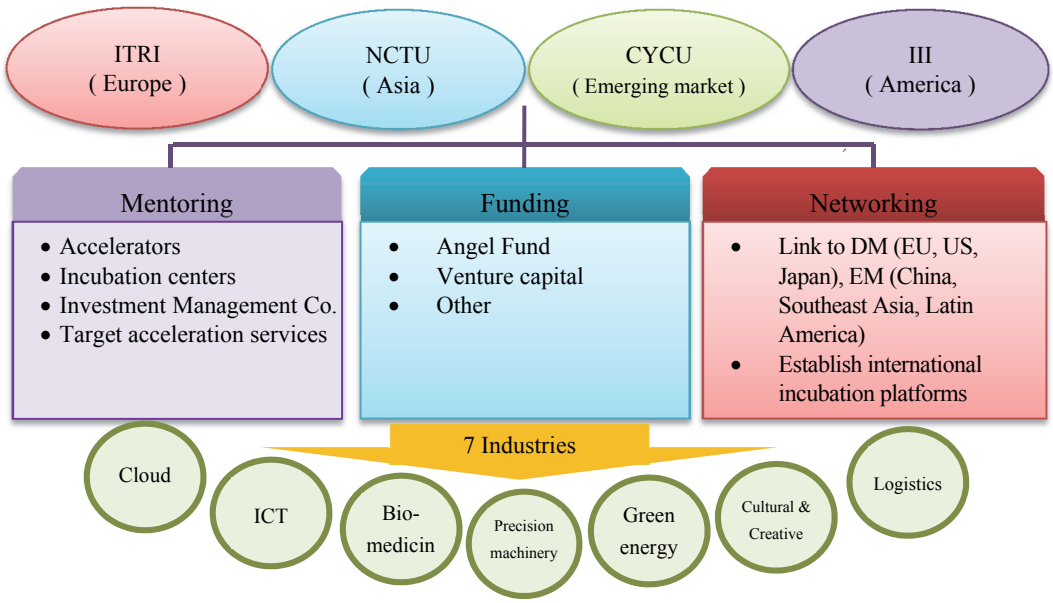
Source: SMEA, MOEA (2013).

(2) Emerging industries accelerator

From 2013, SMEA launched Emerging Industries Accelerator Program focusing on seven major industries: cloud computing, ICT, biomedicine, precision machinery, green energy, cultural and creative industries, and logistics. SMEA also established international incubation cooperation platforms in the U.S., Europe, Asia, and emerging market. It will select high quality firms with great potential from over 200 incubated firms for the Accelerator Program. The accelerator will provide 1,200 hour intensified consultation and offer target acceleration service toward medium to large enterprise from mentoring, funding, to networking. The goal of the program is to bring increased

investment and help over selected firms join supply chain of the large enterprises, obtain international orders, and facilitate international cooperation (Figure 10-2-3).

Figure 10-2-3 Emerging Industries Accelerator Program



Note: ITRI indicates Industrial Technology Institute of Taiwan; NCTU indicates National Chiao Tung University; CYCU indicates Chung Yuan Christian University; III indicates Institute for Information Industry.

Source: SMEA, MOEA (2014).

III Female Entrepreneurship Counseling

Female-owned enterprises account for over 36% of all enterprises in Taiwan and generate annual sales of NT$5.2 trillion. About 99% female-owned enterprises are SMEs.

1. Female Entrepreneurship Flying Goose Program

In 2013, MOEA launched the Flying Goose Program to help more female entrepreneurs with incubation services, such as incubation courses, team member type consultation, start-up funding, and so on to increase the success rate of female-owned start-ups, and enhance their operational efficiency and competitiveness (http://www.sysme.org.tw/woman).

2. Female Entrepreneurial Elite Plan

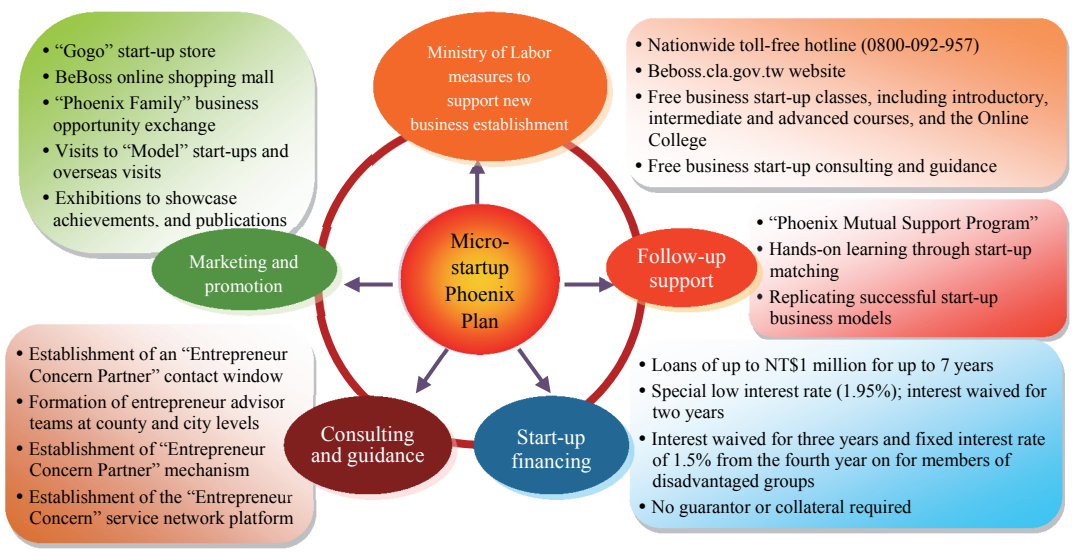
In 2012, the Female Entrepreneurial Elite Plan was launched as part of the Start-up Taiwan initiative. This sub-plan is being integrated with other start-up guidance resources to create a comprehensive service mechanism for female entrepreneurs. The goal is to (1) cultivate the development of female entrepreneurship "bright spots," and establish models of successful female-owned business; (2)

strengthen the dissemination of female entrepreneurs' successful experience to promote entrepreneurial activities among women.

3. Measures to Support New Business Start-Up – the Micro-startup Phoenix Plan

The Ministry of Labor launched the Micro-startup Phoenix Plan to boost labor-force participation by women and the middle-aged, establish a business environment conducive to new business creation, and help women and the middle-aged to start their own microenterprises, thereby creating new jobs. The Plan also provides entrepreneurs with advisors, and help in securing credit guarantees and loans. The structure of the Business Startup Phoenix Plan and the implementation measures are shown in Figure 10-3-1.

Figure 10-3-1 Micro-startup Phoenix Plan – Implementation Measures



Source: Ministry of Labor (2014).

4. Financing Support for Female Entrepreneurs

Funding is the most vital resource for female entrepreneurs. Two major sources of low cost loans available to women are:

(1) Young Entrepreneur Loans: To be eligible, candidates must be aged between 20 and 45, and must be the registered owner, or shareholder in, a company or other business enterprise that has been in existence for less than five years. For more information, go to: http://sme.moeasmea.gov.tw/SME/main/loan/ARM01.PHP

(2) Phoenix Micro-enterprise Loans: To be eligible, candidates must be women aged between 20 and 65 who have undergone a government training course within the past three years and received start-up consulting and guidance, and whose enterprise employs less than 5 people (excluding the business owner). The individual loans is capped at a maximum of NT$1 million

up to 7 years; interest is waived for the first two years of the loan period, with the loan rate equal to two year postal saving rate plus some extra basis points (typically around 100 bps including credit guarantee cost per year). In the case of business owners whose households are classed as "households with special circumstances," or who have been victims of domestic violence, occupational injury or crime, or who belong to a low-income household or a household that has been severely affected by a natural disaster, or who have been negatively impacted by trade liberalization, or who are the sole breadwinner for their family, or who are members of another disadvantaged group, interest will be waived for the first three years, and the annual interest rate for the fourth and subsequent years of the loan period will be set at 1.5% (with the difference being made up by the Ministry of Labor).

CHAPTER 11

Revitalizing Local Industries by In-depth Development, Marketing and Expansion

Over the last few years, the government has been actively working to promote the development of local specialty industries. The Small and Medium Enterprise Administration (SMEA), Ministry of Economic Affairs (MOEA) launched Factory Tourism Guidance Plan and One Town One Product (OTOP) program to offer traditional SMEs an alternative for transformation and bring glamour to all corners of Taiwan. Selected products can be exhibited in OTOP centers and fairs organized by SMEA to promote these quality products into domestic and international markets. Many websites were set up to market Taiwanese town products.

Other promotional plans include Plan for Helping Local Specialty Industries to Create Value, ICT Plan to revitalize regional economies through value-added creation; the Creative Lifestyle Industry Development Plan launched by the Industrial Development Bureau (IDB); Local Industry Development Fund Plan (with NT$1 billion budget set in FY2009 by the Executive Yuan). These projects seek to promote the development of local tourism, innovation and new business models, to encourage SMEs to actively participate in local specialty industry R&D, and to revitalize local economies by strengthening the competitiveness of local industries.

This chapter is divided into three sections. Section I discusses strategies including brand development and local clusters for local specialty industries; section II focuses on strategies and measures to help specialty oriented local industries build marketing capabilities; section III covers measures promoting business matching opportunities and exchange for SMEs.

I Local Industrial Development and Strategy

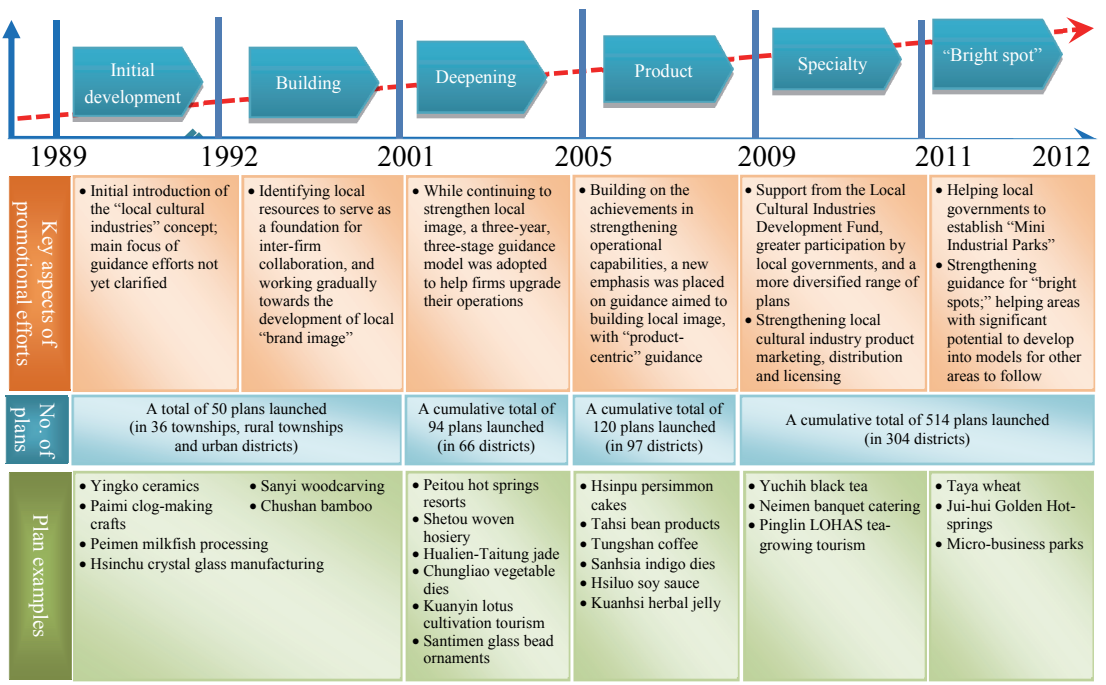
1. The Development of Local Specialty Industry

The term “local specialty industries” is normally used to refer to local industry clusters that have evolved in a particular township, rural township, city or community and which are engaged in manufacturing or service provision involving special local products with particular historic or cultural significance, or uniqueness, and making use of local materials, natural resources and traditional handicraft techniques, as well as local labor. “One Town, One Product” (OTOP, https://mall.otop.tw/) local specialty industry products can be divided into six broad categories: processed food products, cultural and handicraft products, innovative lifestyle products, local cuisine, agro-tourism, and traditional festivals and cultural traditions. The program does not simply develop one product, but takes a very holistic approach to the 319 local economies that it has identified for

economic aid. Assistance Projects were identified in every locality to make the chosen cottage industry of each village attractive to buyers. Results were measured in project outcomes.

In 1989, the SMEA, MOEA began to allocate resources to support the development of local specialty industries. Over the years, the support and guidance measures have focused on different aspects of local specialty industry development, as shown in Figure 11-1-1.

Figure 11-1-1 Timeline of the Development of Local Specialty Industries in Taiwan



Source: SMEA, MOEA (2013).

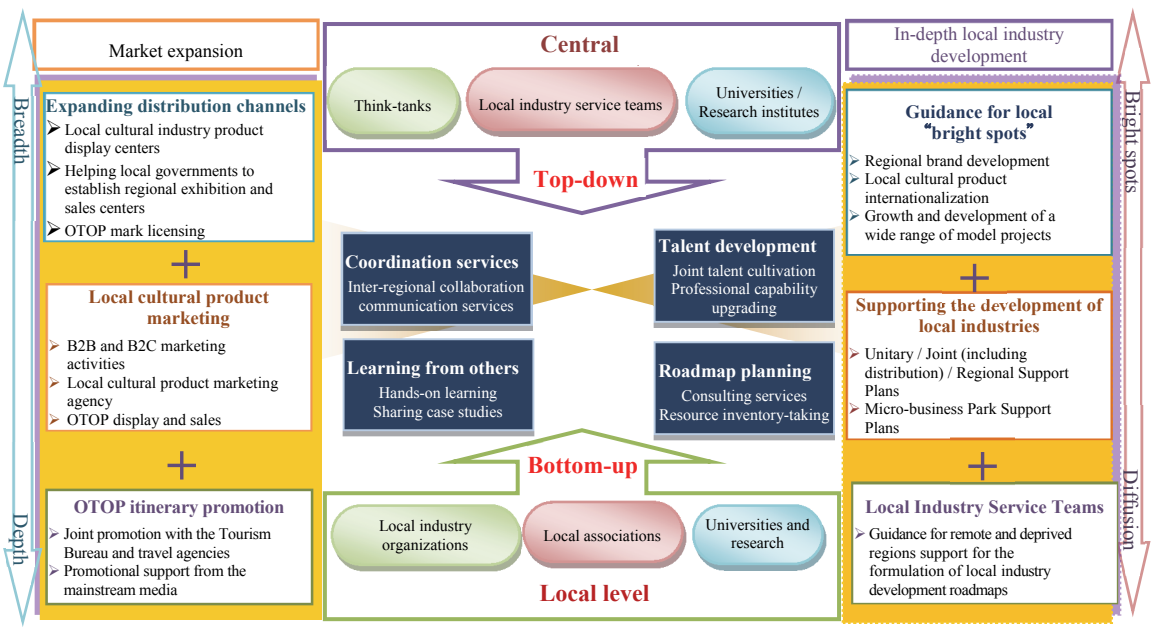
2. Strategy and Framework for Local Specialty Industry Development and Use of Local Industry Development Fund

In 2009, the Executive Yuan established the Local Industry Development Fund to promote local economic prosperity by providing funding assistance in line with the development needs of local industries at the county and city level. It was anticipated that the Fund would help to transform the face of Taiwan's local communities, encouraging people to move back to their home areas from the big cities and from overseas, creating new job opportunities, and imbuing local economic development with new vigor.

In 2012, SMEA, MOEA began implementation of a new Local Cultural Industry Guidance Plan based on the vision of building competitive Taiwanese local cultural industries, and with the objectives of revitalizing local economies and creating jobs in local communities. The main emphasis in terms of guidance is on helping domestic local cultural industries to strengthen the development of industry organizations, enhance firms' operational capabilities, improve the visual appearance of local communities, encourage local industries to internationalize, build "bright spot" local cultural

industries that can serve as a model for others, strengthen the economic potential of local cultural industries, and promote job creation at the local level. The strategy and framework for local specialty industry development are outlined in Figures 11-1-2.

Figure 11-1-2 Framework and Strategies: Local Specialty Industry Development



Source: SMEA, MOEA, http://fund.sme.gov.tw

The types of subsidies are as follows:

(1) Individual funding support projects: The proposals are submitted by city and county governments covering only a single urban district, city, township or rural township. The total funding per project is capped at NT$6 million over a three-year period. Plans are to be implemented over a period of 3 years.

(2) Integrated funding support projects: The proposals are submitted by city and county governments covering 3 or more urban districts, cities, townships or rural townships. The total funding per project is capped at NT$15 million over a three-year period (note: for distribution channel type project - capped at NT$20 million over a three-year period). Plans are to be implemented over a period of 3 years.

(3) Regional funding support projects: The proposals covering the regional development plan are submitted by the central government. The total funding per project is capped at NT$15 million over a three-year period. Plans are to be implemented over a period of 3 years.

3. Building Regional Brands: "Bright Spot" and "Town Brands"

In 2009, SMEA, MOEA launched the Local Industry Development Fund Plan, the objective of which was to support the development of local "bright spots," using the "local government authorities submit applications, and the central government commissions service providers give guidance"

model. It was anticipated that the creating of local specialty industry "bright spots" would contribute to the ongoing development of local industries, while also enhancing their overall production value, strengthening the image of local specialty industries and their appeal as tourist attractions, and helping to build strong "town brands" that can boost international visibility, strengthen local competitiveness, and serve as a model for other regions and other industries to follow.

4. Factory Tourism Plan and Transformation of Traditional SMEs

Recognizing the global trend towards "industry tourism" and the need for Taiwanese industry to upgrade itself, in 2003 the Industrial Development Bureau and the Central Region Office launched the Factory Tourism Guidance Plan. By developing factory tourism, traditional factories would be transformed into "tourist factories" with significant cultural and educational value, giving the enterprises concerned an opportunity to restructure themselves, and giving the general public new tourism and leisure options that are both fun and educational; factories that already have distinctive local character will be able to develop new business models through tourism that enable people to learn while they are enjoying themselves (http://taiwanplace21.org).

II Strengthening Marketing Capability for SMEs

1. Local Specialty Industries Guidance Plan on Marketing

Taiwan OTOP is a guiding program aimed at promoting and developing local specialty industries. Based on the municipal units of township and city, products that are historic, cultural, or unique in the local communities are deemed as the local specialty products; therefore, the scope covered is broad and products including processed foods, living crafts, creative living products, rural leisure, creative gourmet, and festival events. Based on its website, a total of 286 featured towns have been successfully coached as some famous examples, such as, Tachia Taro, Luku Hsiao-Pan-Tien and Chungliao Plant Dye, etc.

In FY2013, Local Specialty Product Marketing Plan of the Taiwan One Town One Product policy implemented several main projects: (1) conducting Taiwan's local specialty product licensing service, providing consumers convenience with identification of high-quality specialty products; (2) collecting, voting, selecting, and marketing specialty tourist routes and itineraries; (3) uncovering high quality OTOP enterprises and specialty tourist itineraries and products; organizing competition for OTOP Design Award, OTOP Tour Award, etc.; (4) maintaining and managing OTOP products service value-added network, including information services such as price inquiry, OTOP products and manufacturers, information updates by store operators and counselors; (5) setting up "Taiwan's Local Specialty Products Boutique," a collection of Taiwan's most exquisite souvenirs, fine crafts, and cultural and creative products, in Taipei 101 Mall, Sun Moon Lake in Nantou and Taichung High Speed Rail Station; (6) organizing marketing and sales events for specialty products, linking to local events / holidays and related SMEA guidance plans; (7) market expansion for Taiwan specialty products through international networks and platforms.

OTOP program is implemented with techniques and integration of innovation that result in new

products and services with value-added features and brands that drive growth and development of local special industries. The Government sees the soft power of Taiwan companies' innovation and design by providing relevant counseling program that assists the industries to use their innovative aspiration and aesthetics to tell stories for the products and to add points for the brand, thereby to increase added-value for industries.

With the long-term counseling and cultivation from the SMEA, the local specialty industries gradually exhibit unique and refined new image, presenting both cultural and fashion taste that highlight the touching Taiwan OTOP style.

2. SME Marketing Value Creation Plan: Integrating Marketing Resources for SMEs

Recognizing the urgent need for more marketing guidance resources for Taiwan's SMEs, in 2012 SMEA, MOEA began implementation of the SME Marketing Value Creation Plan, with the aim of providing guidance measures to help SMEs grow and transform themselves. The Administration has also set up an SME Marketing Service Center to provide "one-stop service," including consulting service, resource referral, information collation, planning management and follow-up services, so as to help SMEs overcome the challenges they experience with respect to marketing. One point particularly worth noting is that, in order to speed up the development of new business opportunities by SMEs, SMEA has invited a group of over 30 experienced marketing consultants – specializing in the fields of branding strategy, product development and distribution channel development – to form three "Marketing Service Flagship Teams":

(1) Branding Strategy Marketing Service Flagship Team: Focusing on consumer behavior research, market surveys, brand positioning, etc.

(2) Product Development Marketing Service Flagship Team: Focusing on product development, graphic design, packaging design, pricing strategy, marketing activities, etc.

(3) Distribution Channel Development Marketing Service Flagship Team: Focusing on sales, distribution, retail outlet planning, etc.

In order to help SMEs solve a wider range of marketing-related problems, SMEA has arranged for the SME Marketing Service Center to establish a toll-free consulting service hotline (0800-017-868), with expert advisors available to provide marketing-related consulting services. SMEA has also developed a special app that can be used to download marketing resources handbooks, marketing service team information, information about overseas trade fairs and other marketing opportunities, etc., with the aim of helping SMEs to access up-to-date information about the latest SMW Marketing Value Creation Plan activities.

3. International Marketing Plan for Service Industry

To encourage domestic service providers actively exploring overseas markets and enhance their international visibility, Bureau of Foreign Trade, MOEA launched "International Marketing Plan for Service Industry" to facilitate and subsidize international marketing and consultation, such as

overseas promotion activities, inviting media to Taiwan, building online marketing tools, production and design outsourcing, legal counseling on intellectual property rights and overseas authorization, and so on.

4. Argo Tourism Development Plan

Agro-tourism has not only seen a boom in Taiwan, but also become a hot selling point in the international market. For example, Taiwan's agro-tourism attracts more than 100,000 visitors from neighboring Singapore and Malaysia each year. Taiwan's agro-tourism has become highly competitive because it offers food, accommodation and play, with the help of government's integrated overall planning.

The Council of Agriculture, Executive Yuan has actively implemented the agricultural policy of "health, efficiency and sustainable management" to reconstruct wealthy and beautiful rural villages. The government has not only taken care of vulnerable farmers and guided rural youth to return home and work for their communities, but also created enriched leisure farms and promoted local leisure farm products, local gourmet, industrial culture, souvenirs and Argo-tourism brands (http://www.taiwanfarm.org.tw).

III Measures Promoting Business Matching and Exchange for SMEs

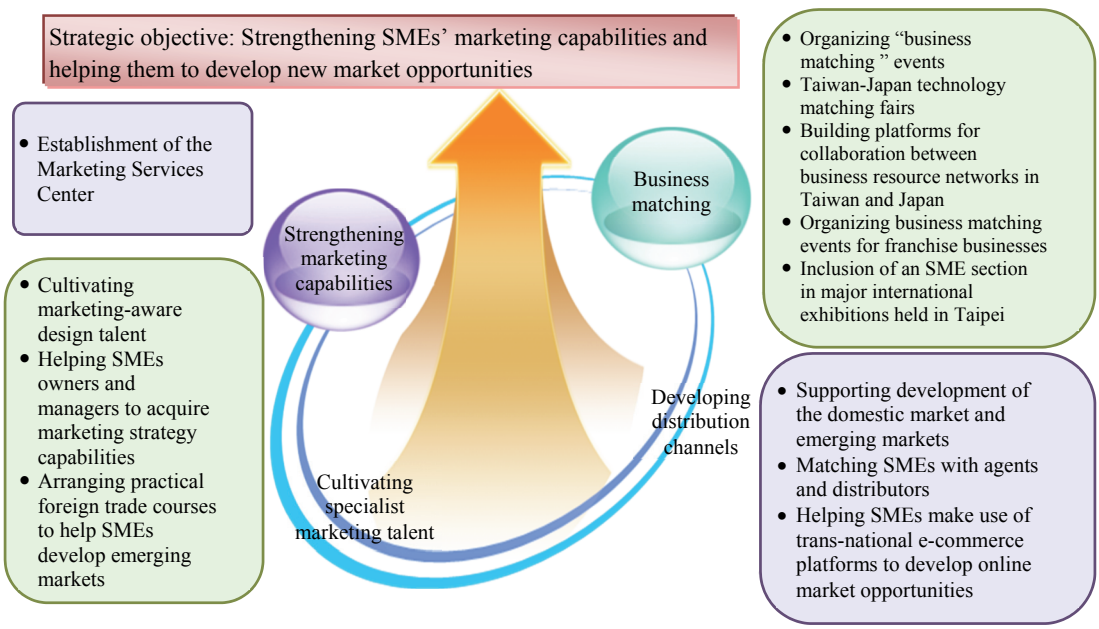
The SMEA, Bureau of Foreign Trade, Commerce Department, and other government departments and agencies have formulated a number of business development and marketing plans to help Taiwan's SMEs develop new business opportunities at home and expand into overseas markets. The aim of these projects is to assist SMEs in the development of new markets, in expanding their marketing and distribution channels (both in Taiwan and overseas), in raising the export competitiveness of their products, and in developing their own brands. The following sections examine the plans implemented in 2013–2014, focusing on business matching and exchange for SMEs.

1. Promoting Business Matching and Technology Cooperation

SMEA, MOEA launched the Plan for Promoting SME Business Opportunity Matching in New Products and New Technologies as well as the Integrated Services Network for SME Business Opportunity Matching to help SMEs develop new business opportunities, with the vision of enabling SMEs to get more value from their marketing activities. These measures incorporate strategies for business matching, distribution channel development, marketing capability enhancement, and cultivation of marketing expertise. They also provide active support to help SMEs obtain intensive exposure to general public for their new products quickly and at the same time build channels of marketing, so that the inventors of new technologies and new products can quickly find funding support to commercialize them, or can access key technologies that they require for successful commercialization and ensure that technology development conforms better to the market's needs.

The framework for SME business opportunity marching and marketing development is shown in Figures 11-3-1 below.

Figure 11-3-1 Framework for Helping SMEs to Develop New Business Opportunities



Source:SMEA, MOEA, 2012.

2. Promoting Collaboration between Taiwan and Japan SMEs

Developments in recent years have created excellent opportunities to further deepen the already strong and longstanding industrial and trade co-operation between Taiwan and Japan. These include the signing of a Cross-Straits Economic Cooperation Framework Agreement (ECFA) in 2010 and the signing of a Taiwan-Japan investment protection agreement near the end of 2011. In January 2012, the Executive Yuan approved the Taiwan-Japan Industrial Co-operation Bridge-Building Plan. Recently SMEA, MOEA initiated the plan for cooperation and exchanges between Taiwan and Japan SMEs, and in particular the establishment of "Taiwan-Japan SME Cooperation and Exchange Platform," paving the way for closer industrial ties between SMEs in Taiwan and Japan, focusing on the key industries whose growth the two countries are seeking to promote, and aiming to create a win-win situation through the development of a new model for Taiwan-Japan SME collaboration, so that Taiwanese and Japanese firms can work together to develop the China market and build a new Asian "Triangle of Gold."

Recently, a number of measures were implemented under the plan to boost Taiwan-Japan collaboration in the SME sector including Taiwan-Japan SME Cooperation and Exchange Plan; the establishment of Taiwan-Japan SME Cooperation and Exchange Promotion Platform, served as a service window and integrating Taiwan-Japan SME exchange channels; and the setting up of a venture capital fund to provide related financing and to encourage cooperative research and

development efforts (http://www.tjsme.org.tw). Other results during 2011-2013 period were: 164 Japanese enterprises and 495 Taiwanese enterprises involved in cooperation discussions (1,019 times), leading to over 50 strategic partnerships with expected potential business opportunities amounting to NT$5.1 billion.

Main implemented projects include (www.technomart.org.tw):

(1) Establishment of Taiwan-Japan SME Cooperation and Exchange Promotion Platform, to provide business intelligence, source of cooperation cases, matching information, and website maintenance.

(2) Strengthening Taiwan-Japan SME regional clusters cooperation and industrial resource networking.

(3) Organizing Taiwan-Japan SME business matching activities, to promote substantive, practical collaboration between Taiwanese and Japanese enterprises.

(4) Provision of follow-up and counseling regarding business matching opportunities, and trends in third-country markets and to integrate their capabilities with those of Taiwanese firms and build trans-national supply chains and trans-national industry clusters, and to enhance the success rate of Taiwan-Japan SME cooperation in technology, marketing, and funding.

3. Brand Building and Market Expansion

To enhance Taiwan's industrial upgrade and transformation, market development and international competitiveness, the Industrial Development Bureau (IDB), MOEA in 2013 launched Branding Taiwan Plan - Phase II, an ongoing strategy to foster the growth and success of Taiwan's commercial brands in international markets. The Plan will help industries increase brand penetration in overseas markets, enhance international visibility for Taiwan brands, and infuse Taiwan's economy with renewed vision and pride (https://www.branding-taiwan.tw). The key projects in 2014 include: (1) customized guidance and counseling based on types of brand development for benchmark model enterprises with established global brands such as Inter-brand's Taiwan Top 20 Global Brands (Acer, HTC, Asus, etc.), enterprises with global branding potential, and enterprises who intend to develop their own brands need basic counseling and cultivation at early stage; (2) whole value chain one-stop brand cultivation for selected key industries including intellectual property rights, patents, designs, channel management, and niche market development; (3) funding assistance for global promotion of self-owned brands; (4) brand management and talent training; (5) forward-looking consumer behavior research and analysis (https://www.branding-taiwan.tw).

4. Promote High-Quality / Affordable Products in Emerging Markets

Emerging markets possess a rapidly growing middle class that is looking for a high-quality but affordable lifestyle. This "good enough" consumption model, with its emphasis on reasonably-priced luxury and value-for-money, is creating new market opportunities. In 2010, the MOEA launched the Project to Promote Most-Valued Products in Emerging Markets (MVP), which was implemented over a three-year period (2010 – 2012), targeting emerging markets such as China, India, Indonesia

and Vietnam. To implement the MVP project, the MOEA coordinated the Bureau of Foreign Trade, adopting a four-pronged approach (market demand, innovative R&D, product design, and international marketing) and a framework based around three key axes – innovative R&D and production platforms, integrated international marketing platforms, and environment-building platforms – to help provide enterprises with coordinated guidance and support that addresses technology, production, design, branding and marketing related issues, to help them develop business opportunities in emerging markets. As part of MVP, the Bureau of Foreign Trade launched the Emerging Market Integrated Marketing Communication Project, targeting emerging markets such as China, India, Indonesia and Vietnam (http://www.taiwanexcellence.com.tw). Its main working tasks in 2013 were: (1) organizing marketing and sales events for Taiwan's high quality products; (2) assisting in building distribution channels; (3) conducting advertising and communication domestically and internationally; (4) managing websites and digital marketing; (5) setting up Taiwan pavilion in international professional exhibitions in target markets; (6) boosting the overall image of Taiwanese industry; (7) conducting visibility survey, promotion, and market research.

5. Help Competitive Service Industries Develop Global Market

The Bureau of Foreign Trade, MOEA has selected Medical Tourism, Cultural and Creative (including crafts and digital content), Information Services, Franchise / Chain Store, Management Consulting, and so on, as key service industries to promote international expansion (http://sv.taiwantrade.com.tw). Main projects include: (1) enhancing service industries' global competitiveness through seminars, forums, international marketing talent training; (2) inviting international services buyers to Taiwan, enhance international collaboration, and facilitating strategic alliances; (3) assisting enterprises in seeking international collaboration, and expanding footprint in target markets; (4) organizing overseas promotion and exhibition in target markets.

6. The Creative Lifestyle Industry Development Plan

The Industrial Development Bureau, MOEA launched the Creative Lifestyle Industry Development Plan to help domestic industries transform and upgrade themselves, create new jobs, help enterprises integrate cultural and creative elements into their operations, promote the development of innovative new products, services, locations and activities, and stimulate the adoption of new business models that can contribute to value-added creation and the development of new business opportunities (http://www.creativelife.org.tw). Main projects include: (1) selecting bright spot creative industries; (2) counseling for promoting consumer experience through design, survey, services, and technology; (3) promoting creative lifestyle features; (4) deepening industrial collaboration and exchange.

Chapter 12

Other Government Resources and Measures to Support SMEs

Based on the Article 4, the Act for Development of Small and Medium Enterprises (SMEs), in formulating policy, the government shall aim at furtherance of improvement and development of the business operations of SMEs without unfair treatment in respect of financial and taxation systems and other related matters. The government has also tried to enhance policy effectiveness by learning and sharing internationally, to enhance the global visibility of SMEs through expanding the substantial exchange and collaboration with the international community, and to help SMEs in finance and human resource.

This chapter comprises three sections that will discuss other SME supporting resources and measures not covered in previous chapters. Section I presents statistics regarding the utilization of government resources to assist SMEs, such as government procurement and SME financing. Section II examines the regulatory framework and forward looking programs and plans undertaken by the government. Section III outlines the active role of government agencies in organizing and participating in international affairs and activities of SMEs.

I Statistics on Government Resources Allocated to SMEs

It is explicitly stated in the Act for the Development of SMEs that the government should clearly specify in the SME White Paper the amount of resources allocated to SMEs. In addition to the resources expended by the government on SMEs, this section will also contain statistics pertaining to the government's procurement of property, public works or labor from SMEs as well as special loans made available to SMEs. However, statistics on government guidance resources and financing are limited to those from agencies at the central government level. The details are explained as follows:

1. Assistance to SMEs Totaled NT$28.6 Billion

The statistics on resources allocated by the government for SME guidance purposes include funding to government agencies that have a significant relationship with SMEs, e.g., the Small and Medium Enterprise Administration (SMEA), Industrial Development Bureau, Bureau of Foreign Trade,

Department of Commerce, Department of Industrial Technology and Department of Investment Services, as well as training expenses of the Ministry of Labor.

As for government agencies with a substantial involvement in providing guidance to SMEs, the total amount was NT$35.36 billion in 2013, of which NT$25.86 billion was allocated to SMEs, representing 73.14% in the final accounts (Table 12-1-1). When viewed by government agencies, the Department of Industrial Technology was ranked first with NT$12.09 billion in terms of allocation to SMEs, followed by the SMEA, with NT$5.39 billion. The next highest was the Bureau of Foreign Trade, with NT$ 4.53 billion. Total amount allocated to SMEs in 2013 declined by NT$1.71 billion, or down 6.21% from 2012.

Table 12-1-1 MOEA Resources and Funding Allocated to SMEs

Unit: NT$ thousands；%

Annual funding / Organizer	Fiscal year final accounts		Total amount allocated to SMEs		Increase (decrease)
	2012	2013	2012 ①	2013 ②	③=②−①
SMEA (incl. SME Development Fund)	6,857,301	5,385,223	6,857,301 (100.00)	5,385,223 (100.00)	-1,472,078
IDB (incl. industrial technology guidance and Industrial Park Development and Management Fund)	5,943,436	5,066,834	3,937,526 (66.25)	3,392,085 (66.95)	-898,318
BOFT (incl. overseas marketing and marketing consultation, and Trade Promotion Fund)	5,002,088	5,747,690	4,410,084 (88.16)	4,528,174 (78.78)	118,090
DOC (incl. promotion of trade modernization and commercial technology development)	1,167,415	1,132,522	471,275 (40.37)	470,620 (41.56)	-665
DOIT	18,442,370	18,028,617	11,899,750 (64.52)	12,087,317 (67.05)	187,567
Total	37,412,610	35,360,886	27,575,936 (73.65)	25,863,419 (73.14)	-1,712,517

Notes: 1. IDB stands for Industrial Development Bureau; BOFT stands for Bureau of Foreign Trade; DOC stands for Department of Commerce; DOIT stands for Department of Industrial Technology.

2. Figures in parentheses represent the percentages in the final accounts.

Source: Various government agencies.

In 2013, in addition to the relevant government resources allocated to SMEs by agencies such as the MOEA, 40 financial institutions also contributed a total of NT$2.5 billion to the Small and Medium Enterprise Credit Guarantee Fund of Taiwan to enhance the Fund's strength. Training expenses of the Council of Labor Affairs for SMEs totaled NT$0.34 billion. Therefore, total public and private sector guidance resources available to SMEs totaled NT$28.6 billion in 2013, down NT$1.6 billion from NT$30.2 billion in 2012.

2. Government Procurement from SMEs Reached NT$650.7 Billion

According to Government Procurement System statistics on awarded contracts, in 2013 the total amount contracted or subcontracted by SMEs in government procurement totaled NT$650.72 billion, a substantial decrease of NT$130.94 billion from NT$781.67 billion in 2012. All government procurement totaled NT$1.24 trillion in 2013, down NT$74.50 billion from the NT$1.32 trillion in 2012. Share of government procurement from SMEs in 2013 was 54.86%, down almost 8 percentage points from 62.80% in 2012.

3. Providing SMEs with Special Loans Totaling NT$3.4 Billion

Eligible SMEs in Taiwan have access to the following six types of special loans: SME Upgrade Guidance Loans, Youth Entrepreneurship Guidance Loans (including two categories, A and B), SME Development Fund Special Loans, Assistance for SMEs to Take Root Special Loans, Indigenous Integrated Development Fund Loans (Indigenous Youth Business Loans, Indigenous Economic Industry Loans, and Indigenous Micro-business Activities Loans), and Micro-business Start-Up Phoenix Loans (Ministry of Labor). A total of NT$3.438 billion in government-funded SMEs loans was made in 2013 (Table 12-1-2).

Table 12-1-2 Special Loans to SMEs Funded by the Government in 2013

Unit: NT$ 100 millions

Name of loan	Eligible applicant	Structure	Status	
			Total loan amount	Government funding
SME Upgrade Guidance Loan	SMEs	Each loan is funded by the Development Fund, Executive Yuan (25%) and lending institution (75%)	36.75	9.19
Youth Entrepreneurship Guidance Loan A	Youth aged 20-45 engaging in business start-ups	Each loan is funded by lending institution alone or lending institution along with Development Fund, Executive Yuan	20.01	5.31
Youth Entrepreneurship Guidance Loan B	Youth aged 20-45 engaging in business start-ups	Each loan is funded by lending institution alone	9.83	0.00
SME Development Fund Special Loan	SMEs	SME Development Fund	7.00	7.00
Assistance for SMEs to Take Root Special Loan	SMEs	Earmarked funds from CEPD Long-term Fund	59.37	7.99
Indigenous Integrated Development Fund Loans (incl. Indigenous Youth Business Loans, Indigenous Economic Industry Loans, Indigenous Micro-business Activities Loans)	Indigenous people	Fully funded by the Council of Indigenous Peoples	4.89	4.89

Name of loan	Eligible applicant	Structure	Status	
			Total loan amount	Government funding
Micro-business Start-Up Phoenix Loan	Women aged 20-65 and women aged 45-65	Loans provided by banks' own funds and interests subsidized by the Ministry of Labor	2.40	0.00
Total			140.25	34.38

Source: Various government agencies.

II Regulatory Framework, Programs and Forward Planning Undertaken by the Government

In recent years, nations worldwide introduced many notable policies measures supporting SMEs' flexibility, innovation and exports to enhance the overall competitiveness of their countries. In Japan, in line with promoting Abenomics' "third arrows growth strategy," the "Framework for Supporting SMEs in Overseas Business" was revised in March 2012, to achieve synergy with JICA (Japan International Cooperation Agency) and other related official development assistance (ODA) agencies to accelerate the overseas development of SMEs. In the U.S., Under the framework of the U.S. Reindustrialization, the National Export Initiative (NEI) was launched in 2010 to help meet the U.S. Administration's goal of doubling exports over the next 5 years by working to remove trade barriers abroad, by helping firms - especially small businesses - overcome the hurdles to entering new export markets, by assisting with financing, and in general by pursuing a government-wide approach to export advocacy abroad, among other steps.

Taiwan SMEs have been recognized as the key driving force of the country's economic development over the past half century. There were about 1.33 million SMEs, accounting for 97.64% of all enterprises, and hiring 78.30% of all employed persons in Taiwan. Although the SME sector has changed its structure and operations over time, it will maintain its position as the mainstay of Taiwan's economy for years to come with continued government support in business environment and transformation of technology and export strategies.

1. Policy Planning and Operational Mechanism

In order to help create a first-class environment in which SMEs can grow and prosper, the SMEA, MOEA (Ministry of Economic Affairs) strives to function as a bridge for communications via which SMEs and government agencies can coordinate the making of necessary changes to laws and regulations. The Administration has worked to establish a comprehensive set of legal and regulatory adjustment mechanisms, and has formulated standard operating procedures covering every stage from the collection and evaluation of data relating to problems affecting the legal and regulatory environment, through the establishment of a legal and regulatory monitoring center, to follow-up work.

The SMEA, MOEA uses two mechanisms: Instant Response and Coordination and Proactive Planning and Management to remove barriers and bolster competitiveness.

(1) Instant Response and Coordination

SMEA, MOEA uses multiple channels gathering SMEs' needs - relevant activities involving government officers, opinion leaders, and businessmen, service line, online consulting, special project window, investment and financing forum, local service network and other platforms that link internal and external resources - for quick response and coordination. Instant Response and Coordination comprises "information service and policy announcement" and "regulatory examination, adjustment and follow-up."

(2) Proactive Planning and Management

In 2014, SMEA of MOEA actively promoted policy measures for counseling and cultivating SMEs in emerging industries and for effective strategic government resource allocation.

2. Major Legal and Regulatory Projects Relating to SMEs in 2014

Major legal and regulatory issues relating to SMEs undertaken in 2014 are listed in Table (12-2-1).

Table 12-2-1 Major Legal and Regulatory Issues Relating to SMEs in 2014

Major projects	Content
Amendment and revision	• Amendment to the Act for Development of Small and Medium Enterprises • Revision of the Act for Development of Small and Medium Enterprises
	• Revision of Standards for Identifying SMEs
Regulatory adjustment	• Allowed the flexibility to determine face values; abolished the rule of requiring minimum face values of NT$10 for shares of companies listed on Taiwan's equity markets
	• Revitalize early funding mechanism
	• Legal and policy research and analysis on talent retaining for SMEs
	• Government regulatory easing and improvement of business legal framework, such as introducing the Limited Partnership Act and allowing in more foreign white collar workers
Research and development	• 2014 National SME Conference
	• Policies supporting high growth SMEs
	• Action plan for social enterprises
Policy management	• Enhance observation and analysis of worldwide legal, economic and industrial conditions for SMEs
	• Medium to long-term policy blueprint for SMEs
	• Establish mechanism for SME R&D and technology planning and performance measurement
	• Plans to counsel and cultivate emerging industries and enterprise innovation

Source: SMEA, MOEA (2014).

Followed are summaries of major amendments and revision undertaken in 2014.

(1) Amendments to the Article 35-1, Article 36-2, and Article 36-3 of Act for Development of Small and Medium Enterprises; and revision of Articles 35 and Articles 40 of Act for Development of Small and Medium Enterprises.

Article 35

This article is enacted to promote innovation and research and development of small and medium enterprises. A small and medium enterprise, by investing in research and development, may select to get the amount of tax credit up to 30% of the current year profit-seeking enterprise income tax payable between the following two methods. No change of the method is allowed once the choice is made.

A. Tax credit up to 15% of the research and development expenses, applied to the current year profit-seeking enterprise income tax payable.

B. Tax credit up to 10% of the research and development expenses, applied to the annual profit-seeking enterprise income tax payable for three years, starting from the current year.

For any instrument and equipment used for research and development, experiment or quality inspection purposes, if its service life is more than two years, the depreciation thereof may be accelerated by one half (1/2) of the number of years applicable as listed in the table of service life of fixed assets annexed to the Income Tax Act. Balance of service life in a length of less than one year after the depreciation acceleration shall not be taken into account.

Article 35-1

To promote circulation and application of innovation and R&D results, new shares of stock issued to a small and medium enterprise in exchange of its intellectual property rights, by an enterprise that is not listed in the Taiwan Stock Exchange, OTC, or the Emerging Stock Board, shall be excluded from the current year profit-seeking enterprise taxable income of the said small and medium enterprise.

New shares of stock issued to an individual in exchange of her (his) intellectual property rights, by an enterprise that is not listed in the Taiwan Stock Exchange, OTC, or the Emerging Stock Board, shall be excluded from the current year taxable consolidated income of the said individual.

When shares of stock mentioned in preceding Paragraph 1 and 2 are transferred through an actual transaction, stock gift, or inheritance, the total stock value shall be included in the current year taxable income of the recipient(s), calculated based on the actual transaction price or the fair market value of the stock at the time of the transfer, minus the related expenses or cost, incurred but not recognized yet, in obtaining the stock.

The above mentioned enterprise that issues new shares of stock to obtain intellectual property rights should report to the local tax authority within 30 days from the day after the date of the stock transfer. The said enterprise is subject to a 20% fine based on the actual transfer amount and required to resubmit the report with voucher(s) in required format if it fails to meet the reporting deadline, to report the fact, or to report with voucher(s) in required format.

In case the said small and medium enterprise or the individual who receive the shares of stock through intellectual property transfer is unable to provide the cost basis of the transfer for income calculation, a default 30% of the transaction price shall be applied to the cost basis of obtaining the stock.

Article 36-2

This article is enacted to respond to changes in the international economic situation and promote the willingness of domestic small and medium enterprises to invest and raise the domestic employment rate. During the period when the Composite Leading Indicators (MEI) are above certain levels, if a newly created small and medium enterprise or an existing small and medium enterprise that is in capital expansion commits certain amount of capital, hires certain number of additional people and increases its aggregate gross salary payments, it can deduct up to 130% of the annual gross salary payments to the additional domestic hires from its current year taxable income.

During the applicable period of this Article, if the said small and medium enterprise fails to meet the preceding key requirement in a year, it shall calculate its profit-seeking enterprise income and income tax payable based on the provisions of the Income Tax Act, starting from that year.

Article 36-3

In case a small and medium enterprise is qualified for the tax benefit of the same nature in the Act for Industrial Innovation, it can only select one Act for this tax benefit.

Article 40

This Statute shall come into force from the date of promulgation. However, Article 35, Article 35-1, and Article 36-2 come into force for 10 years from May 20, 2014.

This article is enacted to respond to changes in the international economic situation and promote the willingness of domestic small and medium enterprises to invest and raise the domestic employment rate. During the period when the Composite Leading Indicators (MEI) are above certain levels, if a newly created small and medium enterprise or an existing small and medium enterprise that is in capital expansion commits certain amount of capital, hires certain number of additional people and increases its aggregate gross salary payments, it can deduct up to 130% of the annual gross salary payments to the additional domestic hires from its current year taxable income.

During the period when the Composite Leading Indicators (MEI) are above certain levels, if a small and medium enterprise raises the average salary payments to junior employees, it can deduct up to 130% of the additional annual salary payments to the current domestic hires due to the salary raise from its current year taxable income. However, the benefit of deductible expense from the annual gross salary payments to the additional domestic hires, which is already addressed in the rule of the preceding Paragraph, shall not be applied here and double counted.

During the applicable period of this Article, if the said small and medium enterprise fails to meet the key requirement of the preceding Paragraph1 or the key requirement of the preceding Paragraph 2 in a year, it shall calculate its profit-seeking enterprise income and income tax payable based on the provisions of the Income Tax Act, starting from that year.

(2) Removal of the rule that requires minimum face values of NT$10 for shares of companies listed on Taiwan's equity markets.

After the face value rule is removed, listed or would-be listed companies on the main board, the over-the-counter market and the emerging market will be allowed the flexibility to determine face values based on their own needs. Many listed companies whose share prices have fallen below NT$10 have urged financial authorities to get rid of the requirement because it hurts them when they want to raise funds. The move to abolish the rule will help internationalize Taiwan's equity markets and bring them in line with regional markets that have no face-value restrictions.

3. Regulatory Adjustments

MOEA will continue to actively promote SME regulatory examination and analysis to reduce regulations that are unfair or improper, enhance industrial regulation coordination and service network, integrate inputs from SMEs, and integrate regulatory adjustment platform to improve effectiveness of regulatory examination.

III Participating in International SME Meetings and Events

Taiwan has for many years been an active participant in the SME-related meetings and activities undertaken by international organizations such as Asia Pacific Economic Cooperation (APEC), the International Small Business Congress (ISBC), Organization for Economic Cooperation and Development (OECD), the International Council for Small Business (ICSB), the Asian Association of Business Incubation (AABI), and National Business Incubation Association (NBIA), and uses these events and activities as an opportunity to share Taiwan's experience in SME development with other countries. In recent years, Taiwan has also been actively involved in international collaboration with regard to SME incubation and industry-university collaboration, which provide opportunities for the exchange of ideas and for collaborative growth, while also contributing to the development of a more international outlook and bilateral exchange. Followed are a list of important events Taiwan hosted or participated in 2013 and 2014.

1. Hosting SME International Conference / Events in Taiwan

(1) APEC Start-Up Accelerator Leadership Summit 2013

Taiwan hosted the event on August 13-14 in Sheraton Grande Taipei Hotel, bringing together over 30 startups and 200 top executives/officials from the APEC region to challenge current assumptions regarding how public and private sectors collaborate to build sustainable startup ecosystems in the APEC region and to recognize how startups can more effectively find new markets, customers, business models, revenues, and profits.

Day 1 (August 13), the APEC Start-Up Accelerator Leadership Summit Day, utilized a format of symposium style discussions and structured networking sessions in order to generate visionary commentary.

Day 2 (August 14), the Intel APEC Challenge-Demo Day, provided a platform for startups at various stages who seek internationalization, corporate partnerships, funding and opportunities to showcase their business strategies and products in front of global VCs and industry influencers.

Taiwan Global Incubation Week, which lasted for two weeks in August 2013 starting from "APEC Train-the-Trainer Workshop," followed by Start-up Taiwan Global Incubation Press Conference, APEC Start-Up Accelerator Leadership Summit, Emerging Industry Accelerator International Forum, and ASEAN Markets Illustration and Fund Matching Meeting.

Taiwan also participated in the 19th APEC Ministerial Meeting in 2012 and its APEC Start-Up Accelerator (ASA) initiative was well received and included in AMM Statement, and in the Declaration of the APEC Economic Leaders' Meeting in September 2012.

(2) 2013 International Entrepreneurship and Innovation Forum (November 2013)

Taiwan hosted the forum based on the theme of "Global Entrepreneurship: A Driving Force in Economy". Experts have been invited from Global Entrepreneurship Week, The Global Entrepreneurship Monitor (GEM), The International Council for Small Businesses (ICSB), Asia Council for Small Businesses (ACSB) and other international bodies to share international entrepreneurship trends, analyze global economic development factors, and create a stimulating environment for Taiwanese Global Entrepreneurship Week (18 Nov – 24 Nov) events, in order to enhance Taiwan's entrepreneurial power.

(3) 38th APEC Small and Medium Enterprises Working Group, SMEWG (March 2014)

The event was to strengthen the effectiveness of disaster resiliency improvement and to secure supply chain connectivity of SMEs and the multi-year project on Improving Natural Disaster Resilience of APEC SMEs to Facilitate Trade and Investment. Taiwan organized several training workshops and a high-level policy dialogue to raise awareness of disaster preemptive mechanisms among APEC regions. Additionally, during the above events, it showcased Policy Framework Models (PFMs) and Business Continuity Plans (BCPs) achieved in the past two years (2012-2013). Furthermore, this project generated a Focal Point Network at the end of the meeting, which integrated related experts from all sectors to practice this project.

2. Participating and Promoting SME International Exchange and Collaboration

(1) 20th APEC Ministerial Meeting (AMM), September 2013

Taiwan participated in the 20th APEC Ministerial Meeting and presented special report on how to strengthen the effectiveness of disaster resiliency improvement and to secure supply chain connectivity of SMEs. Taiwan's APEC Accelerator Network (AAN) initiative was well received and included in AMM Statement, and in the Declaration of the APEC Economic Leaders' Meeting later 2013.

(2) 23rd EBN Annual Meeting, June 2014

Taiwan signed a joint incubation cooperation memorandum of understanding with the European Business and Innovation Centre Network June 27 at the meeting in Lleida, Spain. The memorandum aims to bring together talent and capital markets to create mutually beneficial business opportunities.

SMEA Director General Johnny Yeh gave an address on Strategic Thinking for Entrepreneurship. He shared Taiwan's experiences in strategic thinking and policymaking to help entrepreneurs of the next generation. To deal with the issue of youth unemployment in Taiwan, the SMEA has promoted youth entrepreneurship acceleration policies and competitions, Yeh said. A key role is being played by university incubation centers as well as the four Start-Up Taiwan Accelerator alliances - Industrial Technology Research Institute, National Chiao Tung University, Chung Yuan Christian University and Institute for Information Industry. In response, EBN President Alvaro Simon de Blas said, "Taiwan is known for its innovative capability and flexibility. It also serves as an Asia-Pacific commerce and traffic hub." He stressed that Taiwan cannot be ignored, given rapid advances in the nation's commercial incubation and its strong economy.

(3) Promoting International Exchange and Collaboration

SMEA of MOEA signed Taiwan SME Memorandum of Cooperation with India and with El Salvador; participated in bilateral annual ministerial meetings with India, Philippines and so on, and promoted plurilateral and multilateral cooperation, such as TPP, WTO, and between Taiwan and New Zealand.

Appendix A

Act for Development of Small and Medium Enterprises

Publically announced in accordance with the Presidential Decree dated February 4, 1991.

Revised in accordance with the Presidential Decree dated May 21, 1997.

Revised in accordance with the Presidential Decree dated January 21, 1998.

Revised in accordance with the Presidential Decree dated December 27, 1990.

Revised in accordance with the Presidential Decree dated December 21, 2001.

Revised in accordance with the Presidential Decree dated December 17, 2003.

Revised in accordance with the Presidential Decree dated November 25, 2009.

Revised in accordance with the Presidential Decree dated June 4, 2014.

Chapter 1 General Principles

Article 1

This Act is enacted for the furtherance of sound development of small and medium enterprises by helping them improve their operation environments, promoting mutual cooperation, and assisting them in striving for growth with their own efforts. With regard to matters not provided for in this Act, the provisions of other relevant acts and regulations shall apply.

Article 2

The term “small and medium enterprises” used in this Act shall refer to the enterprises which have legally completed company registration or commercial registration under the Act and conform to the standards for identifying small and medium enterprises.

The standards referred to in the preceding paragraph shall be drawn up by the central competent authority according to the category, capital stock, amount of operating revenue and the number of regular employees and shall be submitted periodically to the Executive Yuan for approval.

Other government authorities, which administer small and medium enterprise assistance and guidance may, in accordance with their respective operational requirements, formulate separate criteria with loose requirements for objects of assistance and guidance.

Article 3

The term "competent authority" used in this Act shall be the Ministry of Economic Affairs at the central government level, the provincial (municipal) government at the province (municipality) level, and the county (city) government at the county (city) level.

Where any of the matters set forth in this Act involves the functional duties of an authority in charge of a particular enterprise, the competent authority referred to in this Act shall handle such matters in coordination with the said authority in charge of such enterprise.

For enforcement of this Act, government at various levels shall set up or designate a government agency to provide assistance and guidance.

Article 4

For achieving the objectives of this Act, the competent authority concerned shall take appropriate assisting or encouraging measures in respect of the following:

1. Market research and development;
2. Furtherance of rationalization of business operations;
3. Promotion of mutual cooperation;
4. Acquisition and securing of production factors and technology;
5. Education and training of competent personnel; and
6. Other matters relating to the establishment or sound development of small and medium enterprises.

In formulating the policy, acts and regulations, and measures in the preceding paragraph, the competent authority concerned shall aim the contents at the furtherance of improvement and development of the business operations of small-scaled enterprises without unfair treatment in respect of financial and taxation systems and other related matters.

The central competent authority shall publish a white paper, at the end of each fiscal year, on small and medium enterprises given the enforcement status, the review results and the prospective development of the provisions of the preceding two paragraphs.

Article 5

For furthering small and medium enterprises to conduct market research and development activities, the assistance and guidance provided by the competent authority to small and medium enterprises shall be emphasized on the provision of information services, the creation of exclusive brands for their own products, arrangement of marketing channels and/or development of potential market.

Article 6

For furthering small and medium enterprises to rationalize their business operations, the assistance and

guidance provided by the competent authority shall be emphasized on the following:

1. Research and development and development of new products;
2. Modernization and renovation of production facilities and improvement of production technology;
3. Improvement of the methods of operational management;
4. Expansion of market and acquisition of necessary information;
5. Conversion and adjustment of the field of business; and
6. Acquisition of resources and technical know-how for business operation.

Article 7

For encouraging mutual cooperation between small and medium enterprises, the assistance and guidance to be provided by the competent authority shall be emphasized on the following:

1. Vertical amalgamation of businesses of the trade and establishment and promotion of the satellite-factory system;
2. Horizontal amalgamation of businesses of the trade and establishment and promotion of joint production and marketing system;
3. Mutual fund or cooperative enterprise;
4. Technical cooperation and development of common technology;
5. Procurement of common equipment; and
6. Establishment of strategic marketing points.

Article 8

For assisting small and medium enterprises to acquire and secure production resources and technology, the assistance and guidance to be provided by the competent authority shall be emphasized on the following:

1. Formation and accumulation of capital;
2. Capital accommodation;
3. Acquisition of land, plant building, equipment, business site and business information;
4. Personnel training and upgrading of labor productivity;
5. Securing the sources of agricultural and industrial raw materials and technical know-how;
6. Assisting small and medium enterprises to obtain fund from capital market; and
7. Upgrading of the level of services and technical skill.

Article 9

The central competent authority shall set up small and medium enterprise development fund, with the use thereof to be confined to the following:

1. To finance the operating expenses required for carrying out assistance plans,
2. To take part in investment and development projects or provide financing assistance and guaranty jointly with financial institutions under the condition that such financial institutions or credit guarantee institutions can not provide financing or guaranty under normal terms and conditions,
3. To make investment in small and medium enterprise development companies, or to take part in investment in small and medium enterprise with small and medium enterprises development companies, financial institutions and identified investment institutions.
4. To provide financial support to the juridical persons institutions that are incorporated to conduct the activities specified in Article 4 , and
5. Other purposes relating to the furtherance of sound development of small and medium enterprises and as specified in this Act.

For the income-expenditures, safeguarding and utilization of the small and medium enterprise development fund, a small and medium enterprise development fund management committee shall be formed, with its organization structure and the regulations for income and expenditure, safeguarding and utilization of the fund to be stipulated by the Executive Yuan.

Article 10

The small and medium enterprise development fund shall be derived from the following sources:

1. Appropriation from the annual budget programmed by the central government,
2. Appropriation from other special-case funds,
3. Donation from individuals or public and private business organizations or groups,
4. Interests accrued on the fund, and
5. Other associated income.

The donation referred to in item 3 the preceding paragraph may, when certified by the competent authority, be deductible from the total income of the current year, free from any restriction on the amount, in accordance with the Income Tax Act.

Article 11

The provincial (municipal) and the county (city) competent authority (henceforth referred to as “local competent authority”) may, taking into account of the specific development requirements of small and medium enterprises, under its jurisdiction, draw up assistance plan and formulate budget, and shall be

responsible for the execution.

To carry out the assistance plan referred to in the preceding paragraph, the local competent authority may apply to the small and medium enterprise development fund for subsidy or assist the small and medium enterprises to obtain capital accommodation under special projects.

Article 12

The competent authority may, taking into account of actual requirements, cooperate with or consign to public and/or private research and service institutions, financial institutions, credit guarantee institutions, trade promotion institutions, industrial and/ or commercial organizations or other agencies for execution of the assistance activities under this Act; and shall set up separate assistance systems in connection with respectively the operations including financial accommodation, operational management, production technology, research and development information management, industrial safety, pollution control, marketing, mutual cooperation, and quality reinforcement, etc.

The regulations governing establishment up and supervision of the assistance systems shall be drawn up by the central competent authority and submitted to the Executive Yuan for approval.

Article 12-1

In enacting or adjusting acts related to small and medium enterprises, governments at various levels shall review the operation scales or characteristics of small and medium enterprises to facilitate observance by small and medium enterprises.

The central competent authority shall periodically review the acts related to small and medium enterprises on term, and judge the adapt ability of small and medium enterprises, and the influence to small and medium enterprises, and take a review report to the Legislative Yuan yearly.

Chapter 2　Financing Facilities and Guaranty

Article 13

In order to meet the capital requirements for small and medium enterprises, the central competent authority shall coordinate with financial institutions and credit guarantee institutions to enhance their respective functions of providing financing and guaranty to small and medium enterprises.

In order to meet the capital requirements for small and medium credit guarantee institutions, the central competent authority shall allocate budget for donation to such credit guarantee institutions for the maintenance of their guarantee capacity. Financial institutions which contract with such credit guarantee institutions shall also cooperate with the donation whereas and the central competent authority may also solicit donation from private businesses.

The total amount of donation from various financial institutions mentioned in the preceding Paragraph, taking into account the actual requirements, may be adjusted upward annually until reaching 35% of the total donation amount and be determined by the central competent authority according to the

safekeeping amount, overdue ratio, substitute pay off amount, credit remainder, net value, profit and loss status, and the donated amount.

The central competent authority shall actively help small and medium enterprises get the loan from banks, and report the review results of each fiscal year to the Legislative Yuan.

Article 14

All banks throughout the Republic of China shall, within the scope of their respective business, elevate the ratio of financing facilities provided to small and medium enterprises and shall set up small and medium enterprises assistance center in order to enhance the provision of relevant services.

Article 15

The competent authority shall coordinate various agencies to make ample budget available for providing special loans to small and medium enterprises, and instruct sponsoring banks to provide special or emergency financing facilities or to extend loans to meet with the requirements of enterprises implementing business converting projects or adapting to the change of economic situation; and to elevate, when necessary, the ceiling of such financing, loans and guaranty.

Article 16

The term "special financing" used in the preceding Article shall refer to the financing provided to small and medium enterprises carrying out any of the following projects:

1. Operational project for reinforcement of competiveness;
2. Research and development, pollution control or market expansion project;
3. Project for creation of new product(s) or upgrading the quality of product(s);
4. Factory relocation project which must be carried out so as to meet with the requirements of environment protection, urban planning, or road construction or other infrastructural projects sponsored by the government;
5. Any other special projects as approved by the competent authority.

Article 17

The term "emergency financing facilities" as used in Article 15 shall refer to the following financing provided to small and medium enterprises:

1. Loan provided as revolving fund in support of production and sales during the period of significant economic crisis;
2. Loan required for recovery of significant natural disaster;
3. Other loan as required to cope with emergency events.

Article 18

The term "loans to meet with the requirements of enterprises implementing business converting projects or adapting to the change economic situation" used in Article 15 shall refer to any of the following loans extended to small and medium enterprises:

1. Loan provided as revolving fund in support of production and sales during the period of economic recession;
2. Loan required for procurement of replacement or additional machinery and equipment in the course of business conversion; or
3. Loan required for procurement of automation equipment for improvement of productivity.

Article 19

Funds appropriated from the small and medium enterprise development fund for participate in the loans or guaranties sponsored by financial institutions or credit guarantee institutions in accordance with the preceding three Articles; the ratio of such appropriations may be determined by the competent authority in accordance with the actual requirements.

With regard to the bad debts resulted from causes which are not attributable to the intentional act, gross negligence or malpractice of the personnel handing the relevant matters set forth in the preceding Paragraph, they shall be fully indemnified from damage liabilities and exempt from disciplinary measures, according to the provisions of item 1,Article 77 of the Audit Act.

Article 20

The competent authority concerned may coordinate the financial institutions and/or credit guarantee enterprises to give priority to small and medium enterprises, which have sound management, financial and accounting systems and have paid up all taxes due, in providing financing facilities and guaranties.

Article 21

Where the operation of a small or medium enterprise is affected or it has to move to another place in order to meet with the requirements of environmental protection, urban planning, or road construction or other projects sponsored by the government, the competent authority shall assist it to apply for operating revolving loan or relocation loan from financial institution, and assist it to acquire the land required for factory relocation, when it is deemed necessary.

Article 22

Where a small or medium enterprise suffers great damages caused by natural disaster, the competent authority shall coordinate the financial authority for tax exemption or reduction or other remedies.

Article 23

In order to prevent small and medium enterprises from involvement in domino effect resulted from the

close-down of their respective related enterprises, the competent authority may coordinate and assist industrial associations to establish, either separately or jointly, mutual guaranty fund(s) for prevention of chain close-down of small and medium enterprises so as to provide credit guarantee in respect of special financing facilities for the small and medium enterprises having financial or operational difficulties in such cases.

The small and medium enterprise development fund may, when necessary, contribute to such mutual guaranty fund(s) at the initial stage upon its (their) establishment.

Chapter 3 Operation Management, Market and Product Development

Article 24

The competent authority may establish or assist the private sector to establish a small and medium enterprise guidance and service center, and may cooperate with relevant public and private institutions to provide small and medium enterprises with the following guidance and services:

1. Business operation diagnosis;
2. Improvement of the marketing and production technology, operation management and financial structure of small and medium enterprises;
3. Training of management or technical personnel of small and medium enterprises;
4. Production and market information and consultation services; and
5. Other relevant businesses activities.

Article 24-1

The competent authority may set up funds to assist in the development of local culture industries for local economic prosperity.

Article 25

For improvement of the operating efficiency and reinforcement of the competitiveness of small and medium enterprises, the competent authority may assist small and medium enterprises to jointly engage in activities such as production, marketing, procurement, transportation, cooperation in technology development, and research and development.

Article 26

The central competent authority may work jointly with relevant institutions, universities and colleges in the training of professionals in the fields of operation diagnosis and business administration so as to provide small and medium enterprises with guidance and services.

Article 27

The competent authorities may provide necessary assistance to various industrial associations or industrial and commercial organizations which have a dedicated service unit responsible for providing services to small and medium enterprises.

Article 28

For encouraging small and medium enterprises to manufacture quality and/or high value-added products or service, and to expand export market, the competent authority shall provide, in conjunction with institutions concerned, technical and marketing guidance and assist medium and small enterprises to participate in overseas exhibition, acquire market information, make joint advertising activities, trademark registration, patent application, or establish joint distribution warehouses abroad.

Where the plan of a small or medium enterprise for manufacturing quality and/or high value-added products or service planning has been evaluated and approved by the competent authority in conjunction with authorities concerned, the said small or medium enterprise may apply to the small and medium enterprise development fund to subsidize the expenses incurred in product and market developments.

Article 29

For upgrading the level of production skill of small and medium enterprises, the competent authority may entrust technical service institutions or retain technical experts to make research and development for new products or to acquire advanced technology for providing relevant guidance and services to various industries.

For transfer of new products or advanced technology, the competent authority may collect reasonable charges for amortization of costs incurred; If necessary, these charges may also be partly subsidized by the small and medium enterprise development fund.

Article 30

In order to assist small and medium enterprises for research and development, the competent authority may cooperate with appropriate technology research institutes in the establishment of institutes or places for exclusive use by small and medium enterprise conducting research , testing and development of technical skill and/or new products.

Small and medium enterprises may apply for use, by paying necessary charges, the equipment and facilities of the institutes or places set forth in the preceding to conduct experiment and research activities.

Article 31

The competent authority may, when it deems necessary, negotiate with public or private enterprises for appointment of their respective technical personnel, and support and assistance system to provide guidance in the fields of production skill or service know-how as required by small and medium enterprises.

Article 32

The central competent authority may establish or assist in the establishment of small and medium enterprise development companies to invest directly or indirectly in the small and medium enterprises having development potential and to provide consulting services and other relevant services in connection with domestic and/or overseas technical cooperation, market and product development or investment.

The central competent authority shall provide assistance to the institutes and juridical persons established for carrying out the activities specified in Article 4 of this Act.

The central competent authority may coordinate with the competent authority in charge of banking business under the Banking Act for approval of the participation of banks in the said small and medium enterprise development company so as to enable them to directly provide services referred to in the preceding paragraph.

The small and medium enterprise development fund may take part in the investment for capital formation of small and medium enterprise development companies.

The regulations governing the establishment and operation of the small and medium enterprise development companies and the standard and proportion of investment made by the small and medium enterprise development fund shall be stipulated by the Executive Yuan.

Chapter 4 Tax Remittance

Article 33

Where an investor provides a parcel of land in an industrial zone as his capital investment in a small or medium enterprise, and the said medium or small enterprise agrees to allow the investor to furnish the stock(s) of the said small or medium enterprise acquired by the said investor as the security for his payment of taxes, then the land value increment tax payable by the said investor may be paid in five equal installments in five consecutive years from the year in which the said parcel of land is committed to the investment.

The land to be invested under the preceding paragraph shall be used only by the said small or medium enterprise for its own. If the land is not used by the said small or medium enterprise for its own or is transferred to any other person, the outstanding land value increment tax shall be paid, in a lump sum, by the investor.

Article 34

Where a small or medium enterprise has moved, on account of any of the following causes, its factory or plant into an industrial zone, an industrial zone under an urban plan, or an industrial land designated in accordance with the act for Encouragement of Investment prior to the enforcement of this Act, the land value increment Tax payable on the sale or transfer of its original factory or plant site (land) shall be levied at the lowest tax rate:

1. Where the original factory land does not meet with the zoning requirements upon implementation of the urban planning or zoning plan;
2. Where the relocation of factory or plant is applied by the said small or medium enterprise and is approved by the competent authority due to the difficulties in making necessary improvement to meet with the requirements for pollution control, public safety or maintenance of natural landscape; and
3. Where the relocation of factory or plant implemented under the initiative assistance of the government.

Where the new factory land of a small or medium enterprise is transferred to another party (or other partied) within three years after the factory relocation made under the preceding paragraph, the reduced portion of land value increment tax reduced while assessing such tax on the original factory land sold or transferred prior to the factory relocation shall be assessed supplementarily in accordance with the act.

Article 35

This article is enacted to promote innovation and research and development of small and medium enterprises. A small and medium enterprise, by investing in research and development, may select to get the amount of tax credit up to 30% of the current year income tax payable between the following two methods. No change of the method is allowed once the choice is made.

1. Tax credit up to 15% of the research and development expenses, applied to the current year income tax payable.
2. Tax credit up to 10% of the research and development expenses, applied to the annual income tax payable for three years, starting from the current year.

For any instrument and equipment used for research and development, experiment or quality inspection purposes, if its service life is more than two years, the depreciation thereof may be accelerated by one half (1/2) of the number of years applicable as listed in the table of service life of fixed assets annexed to the Income Tax Act. Balance of service life in a length of less than one year after the depreciation acceleration shall not be taken into account.

The standards referred to the tax credit from investment in this Article, regarding scope, application deadline, application procedure, approving authority, applicable period, tax credit rate and other related matters shall be stipulated by the Executive Yuan.

Article 35-1

To promote distribution and application of innovation and R&D results, new shares of stock issued to a small and medium enterprise in exchange of its intellectual property transfer, by an enterprise that is not listed in the Taiwan Stock Exchange, OTC, or the emerging market, shall be excluded from the current year taxable income of the said small and medium enterprise as a profit seeking enterprise.

New shares of stock issued to an individual in exchange of her (his) intellectual property rights, by

an enterprise that is not listed in the Taiwan Stock Exchange, OTC, or the emerging market, shall be excluded from the current year taxable comprehensive income of the said individual.

When shares of stock mentioned above are transferred through an actual transaction, stock gift, or inheritance, the total stock value shall be included in the current year taxable income of the recipient(s), calculated based on the actual transaction price or the fair market value of the stock at the time of the transfer, minus the related expenses or cost, incurred but not recognized yet, in obtaining the stock.

The above mentioned enterprise that issues new shares of stock to obtain intellectual property rights should report to the local tax authority within 30 days from the day after the date of the stock transfer. The said enterprise is subject to a 20% fine based on the actual transfer amount and required to resubmit the report with voucher(s) in required format if it fail to a) meet the deadline, b) report correctly, or c) report with voucher(s) in required format.

In case the said small and medium enterprise or the individual who receive the shares of stock through intellectual property transfer is unable to provide the cost basis of the transfer, a default 30% of the transaction price shall be applied to the cost basis of obtaining the stock.

Article 36

A small and medium-sized enterprise may retain and withhold from distributing a surplus earning in an amount not exceeding double the amount of its paid-in capital. In case the retained and undistributed earnings exceed the aforesaid limit, any additional surplus earning retained in each year thereafter shall be free from the restriction stipulated in the Income Tax Act after as profit seeking enterprise income tax at the rate of 10% has been surcharged.

The retain and withhold from distributing a surplus earning after 1998 until then, shall obey the Income Tax Acts, and not apply to the preceding paragraph.

Article 36-1

Small and medium enterprises development companies may raise the preparation to investment loss, under 20% of the investment amount, so as to compensate for actual loss. If there is no actual loss situation within 5 years, they shall turn the raising preparation to be the benefit of the 5th year.

When corporations calculate the clearing accounts income due to cancellation, rescission, revocation, mergence, or transference with Article 75, of the Income Tax Act, the accumulate remaining amount from the investment loss preparation within the preceding paragraph, shall turn to be the benefit of the same year.

Article 36-2

This article is enacted to respond to changes in the international economic situation and promote the willingness of domestic small and medium enterprises to invest and raise the domestic employment rate. During the period when the Economic Sentiment Index (ESI) is above a certain level, if a newly created small and medium enterprise or an existing small and medium enterprise that is in capital expansion

commits certain amount of capital, hires certain number of additional people and increases its aggregate gross salary payments, it can deduct up to 130% of the annual gross salary payments to the additional domestic hires from its current year taxable income.

During the applicable period of this Article, the said small and medium enterprise will not be qualified for the benefit of the above deductible if it fails to meet the preceding key requirement.

The standards referred to the first paragraph of this Article, regarding level of the Economic Sentiment Index (ESI), applicable period, investment amount, number and types of additional people hired, aggregate gross salary payments, approving authority, application deadline, application procedure, and other related matters shall be stipulated by the Executive Yuan.

Article 36-3

In case a small and medium enterprise is qualified for the tax benefit of the same nature in this article and in other articles related to industrial innovation, it can only select one article for the tax benefit.

Chapter 5 Public Procurement Projects or Public Works

Article 37

Governments at various levels and government-owned enterprises shall assist small and medium enterprises to acquire business opportunities in making public announcements for procurement projects or construction of public works.

Article 38

For making public announcement for procurement projects, construction of public works or for entrustment of research and development tasks, government at various levels and government-owned enterprises shall, based on actual requirements, establish qualification requirement and registration system in respect of small and medium enterprises eligible for acting as a supplier or bidder.

Chapter 6 Supplementary Provisions

Article 39

The Executive Yuan may form a Small and Medium Enterprise Policy Deliberation Committee to be in charge of planning and reviewing the small and medium enterprise development policy. The organizational rules shall be stipulated by the Executive Yuan.

Article 40

This Statute shall come into force from the date of promulgation. However, Article 35, Article 35-1, and Article 36-2 come into force for 10 years from May 20, 2014.

Appendix B

Standards for Identifying Small and Medium Enterprises

Approved by Executive Yuan Order Tai (80) Jing #33054 on October 19, 1991.

Promulgated by Ministry of Economic Affairs Order Jing (80) Chi Tzu #059364 on November 25, 1991.

Revision approved by Executive Yuan Order Tai (84) Jing #32284 on September 4, 1995.

Revision promulgated by Ministry of Economic Affairs Order Jing (84) Chi Tzu #84029087 on September 27, 1995.

Revision approved by Executive Yuan Order Tai (89) Jing #10056 on April 8, 2000.

Revision promulgated by Ministry of Economic Affairs Order Jing (89) Chi Tzu #89340202 on May 3, 2000.

Revision approved by Executive Yuan Order Yuan Tai Jing #0940022741 on June 14, 2005.

Revision promulgated by Ministry of Economic Affairs Order Jing Chi Tzu #09400561550 on July 5, 2005.

Revision approved by Executive Yuan Order Yuan Tai Jing #0980048943 on August 17, 2009.

Revision promulgated by Ministry of Economic Affairs Order Jing Chi Tzu #09800639470 on September 2, 2009.

Article 1

The Standards have been drawn up in accordance with the provisions of Paragraph 2, Article 2 of the Small and Medium-sized Enterprise Development Statute (hereinafter referred to as the "Statute").

Article 2

The term "SME" as used in the Standards shall mean an enterprise which has completed company registration or business registration in accordance with the requirements of the laws, and which conforms to the following standards:

1. The enterprise is an enterprise in the manufacturing, construction, mining or quarrying industry with paid-in capital of NT$80 million or less.

2. The enterprise is an enterprise in the industry other than any of those mentioned in the Sub-paragraph immediately above and had its sales revenue of NT$100 million or less in the previous year.

For the purpose of business guidance, each of the government agencies may, in relation to such specific business matters, base their standards for identifying a SME on the number of regular employees as noted below, in which case the restrictions noted in the previous Paragraph shall not apply:

1. The enterprise is an enterprise in the manufacturing, construction, mining or quarrying industry and the number of its regular paid employees is less than 200.
2. The enterprise is an enterprise in the industry other than any of those mentioned in the Sub-paragraph immediately above and the number of its regular paid employees is less than 100.

Article 3

The term "small-scale enterprise" as used in Paragraph 2, Article 4 of the Statute shall mean a SME with less than 5 regular paid employees.

Article 4

The term "sales revenue" as used in the Standards shall be determined based on the figure as approved by the tax authorities in the year immediately prior to the year of determination. If the approval has not been given by the tax authorities, the determination shall be made in accordance with the following provisions:

1. Sales revenue shall be based on the operating revenue noted on the income tax declaration form for the most recent year bearing the "Documents Received" seal of the tax authorities.
2. If the enterprise is unable to obtain the document referred to in the Sub-paragraph immediately above, Sales revenue shall be based on the sales value noted on the sales and tax declaration form for the full year of the most recent year, with commissioned sales and non-operating income deducted.
3. In the case of sale representatives required to pay business tax by the tax authorities according to the laws, sales revenue shall be presumed to be NT$80 million or less.

If the enterprise was established in the previous year and less than one year has elapsed since business registration, or if business registration took place in the current year, sales revenue for the full year shall be calculated on the basis of the conversion from the figure already declared for each period.

Article 5

The "number of regular employee" as used in the Standards shall be based on the average monthly number of insured persons for whom labor insurance registration has been made with the Labor Insurance agency for the Taiwan and Fukien Region in the most recent 12 months.

Article 6

An enterprise shall be deemed to be a SME if any of the following is applicable:

1. In the case of a SME which has received guidance for expansion, where after expansion the size of the enterprise exceeds the standards listed in Article 2, such enterprise shall continue to be deemed to be a SME for two years immediately after the date of expansion.
2. In the case of a SME which has received guidance for merger, where after the merger the size of the enterprise exceeds the standards listed in Article 2, such enterprise shall continue to be deemed to be a SME for three years immediately after the date of the merger.
3. Where a guidance agency, guidance system or relevant agency undertakes the provision of collective guidance for SMEs in a given industry, if some of the enterprises exceed the standards listed in Article 2, and if the guidance agency, guidance system or relevant agency determines that there is good reason for providing joint guidance, such enterprises shall be deemed to be SMEs during the period of collective guidance.

Article 7

These Standards shall come into effect on the date of promulgation.

Appendix C

SME Statistics by Industry

Table C-1 Number of Enterprises by Industry and Enterprise Size, 2011-2013

Units: Enterprises; %

Industries \ Size		Total	Share	SMEs	Share	Large enterprises	Share
Total	2011	1,310,791	100.00	1,279,784	97.63	31,007	2.37
	2012	1,337,890	100.00	1,306,729	97.67	31,161	2.33
	2013	1,363,393	100.00	1,331,182	97.64	32,211	2.36
Agriculture, Forestry, Fishing and Animal Husbandry	2011	11,611	100.00	11,568	99.63	43	0.37
	2012	11,868	100.00	11,817	99.57	51	0.43
	2013	12,088	100.00	12,027	99.50	61	0.50
Mining and Quarrying	2011	1,266	100.00	1,245	98.34	21	1.66
	2012	1,226	100.00	1,203	98.12	23	1.88
	2013	1,192	100.00	1,166	97.82	26	2.18
Manufacturing	2011	141,103	100.00	135,768	96.22	5,335	3.78
	2012	142,918	100.00	137,436	96.16	5,482	3.84
	2013	144,760	100.00	139,099	96.09	5,661	3.91
Electricity and Gas Supply	2011	425	100.00	294	69.18	131	30.82
	2012	451	100.00	320	70.95	131	29.05
	2013	553	100.00	423	76.49	130	23.51
Water Supply and Remediation Services	2011	7,259	100.00	6,930	95.47	329	4.53
	2012	7,426	100.00	7,127	95.97	299	4.03
	2013	7,506	100.00	7,211	96.07	295	3.93
Construction	2011	100,230	100.00	98,988	98.76	1,242	1.24
	2012	104,394	100.00	103,130	98.79	1,264	1.21
	2013	108,779	100.00	107,498	98.82	1,281	1.18
Wholesale and Retail Trade	2011	668,996	100.00	651,955	97.45	17,041	2.55
	2012	678,054	100.00	661,201	97.51	16,853	2.49
	2013	683,983	100.00	666,857	97.50	17,126	2.50
Transportation and Storage	2011	31,420	100.00	30,405	96.77	1,015	3.23
	2012	31,707	100.00	30,662	96.70	1,045	3.30
	2013	31,345	100.00	30,283	96.61	1,062	3.39
Accommodation and Food Services	2011	123,237	100.00	122,862	99.70	375	0.30
	2012	126,894	100.00	126,499	99.69	395	0.31
	2013	131,083	100.00	130,653	99.67	430	0.33

Table C-1 Number of Enterprises by Industry and Enterprise Size, 2011-2013 (Continued)

Units: Enterprises; %

Industries \ Size		Total	Share	SMEs	Share	Large enterprises	Share
Information and Communication	2011	16,906	100.00	16,201	95.83	705	4.17
	2012	17,526	100.00	16,823	95.99	703	4.01
	2013	18,521	100.00	17,794	96.07	727	3.93
Finance and Insurance	2011	16,131	100.00	13,918	86.28	2,213	13.72
	2012	16,410	100.00	14,165	86.32	2,245	13.68
	2013	17,381	100.00	14,947	86.00	2,434	14.00
Real Estate	2011	26,300	100.00	25,108	95.47	1,192	4.53
	2012	28,460	100.00	27,180	95.50	1,280	4.50
	2013	31,499	100.00	29,986	95.20	1,513	4.80
Professional, Scientific and Technical Services	2011	38,752	100.00	38,054	98.20	698	1.80
	2012	40,214	100.00	39,549	98.35	665	1.65
	2013	41,881	100.00	41,167	98.30	714	1.70
Support Services	2011	29,115	100.00	28,750	98.75	365	1.25
	2012	29,968	100.00	29,563	98.65	405	1.35
	2013	29,039	100.00	28,607	98.51	432	1.49
Education	2011	1,275	100.00	1,267	99.37	8	0.63
	2012	1,432	100.00	1,421	99.23	11	0.77
	2013	1,630	100.00	1,622	99.51	8	0.49
Human Health and Social Work Services	2011	391	100.00	382	97.70	9	2.30
	2012	417	100.00	407	97.60	10	2.40
	2013	616	100.00	604	98.05	12	1.95
Arts, Entertainment and Recreation	2011	22,682	100.00	22,579	99.55	103	0.45
	2012	22,511	100.00	22,407	99.54	104	0.46
	2013	23,899	100.00	23,791	99.55	108	0.45
Other Services	2011	73,692	100.00	73,510	99.75	182	0.25
	2012	76,014	100.00	75,819	99.74	195	0.26
	2013	77,638	100.00	77,447	99.75	191	0.25

Note: 1. The industries are classified according to the 9th revision of Industry Classification Standard by DGBAS.
2. For the purposes of this table, SMEs are defined as enterprises in the Manufacturing, Construction and Mining and Quarrying industries with paid-in capital of NT$80 million or less, and enterprises in other industries which posted annual sales revenue of NT$100 million or less in the previous fiscal year.

Source: Fiscal Information Agency, Ministry of Finance, VAT Data for 2011 - 2013.

Table C-2 Total Sales Value by Industry and Enterprise Size, 2011-2013

Units: NT$ millions; %

Industries \ Size		Total	Share	SMEs	Share	Large enterprises	Share
Total	2011	37,881,681	100.00	11,226,933	29.64	26,654,748	70.36
	2012	37,649,075	100.00	11,381,770	30.23	26,267,306	69.77
	2013	38,460,894	100.00	11,321,842	29.44	27,139,052	70.56
Agriculture, Forestry, Fishing and Animal Husbandry	2011	33,843	100.00	18,321	54.14	15,522	45.86
	2012	37,067	100.00	19,966	53.87	17,101	46.13
	2013	40,262	100.00	21,881	54.35	18,381	45.65
Mining and Quarrying	2011	46,953	100.00	37,568	80.01	9,386	19.99
	2012	44,830	100.00	35,402	78.97	9,428	21.03
	2013	47,718	100.00	37,180	77.92	10,538	22.08
Manufacturing	2011	14,122,135	100.00	4,338,874	30.72	9,783,261	69.28
	2012	14,002,782	100.00	4,375,488	31.25	9,627,294	68.75
	2013	14,368,660	100.00	4,074,252	28.36	10,294,408	71.64
Electricity and Gas Supply	2011	833,515	100.00	3,372	0.40	830,143	99.60
	2012	895,151	100.00	3,692	0.41	891,458	99.59
	2013	944,235	100.00	4,281	0.45	939,954	99.55
Water Supply and Remediation Services	2011	190,890	100.00	55,021	28.82	135,869	71.18
	2012	181,289	100.00	55,632	30.69	125,658	69.31
	2013	182,086	100.00	54,501	29.93	127,586	70.07
Construction	2011	2,079,702	100.00	1,193,584	57.39	886,119	42.61
	2012	2,088,385	100.00	1,235,537	59.16	852,848	40.84
	2013	2,040,944	100.00	1,340,692	65.69	700,251	34.31
Wholesale and Retail Trade	2011	13,723,088	100.00	4,085,832	29.77	9,637,256	70.23
	2012	13,439,023	100.00	4,102,447	30.53	9,336,576	69.47
	2013	13,545,522	100.00	4,151,590	30.65	9,393,932	69.35
Transportation and Storage	2011	1,005,769	100.00	261,337	25.98	744,432	74.02
	2012	1,049,942	100.00	262,656	25.02	787,285	74.98
	2013	1,077,132	100.00	262,169	24.34	814,963	75.66
Accommodation and Food Services	2011	420,527	100.00	297,131	70.66	123,396	29.34
	2012	460,649	100.00	321,381	69.77	139,267	30.23
	2013	492,075	100.00	342,378	69.58	149,697	30.42

Table C-2 Total Sales Value by Industry and Enterprise Size, 2011-2013 (Continued)

Units: NT$ millions; %

Industries \ Size		Total	Share	SMEs	Share	Large enterprises	Share
Information and Communication	2011	906,897	100.00	100,770	11.11	806,127	88.89
	2012	961,866	100.00	105,364	10.95	856,503	89.05
	2013	1,016,833	100.00	109,473	10.77	907,360	89.23
Finance and Insurance	2011	2,451,486	100.00	195,036	7.96	2,256,450	92.04
	2012	2,235,043	100.00	186,220	8.33	2,048,823	91.67
	2013	2,179,157	100.00	195,397	8.97	1,983,760	91.03
Real Estate	2011	825,421	100.00	175,783	21.30	649,638	78.70
	2012	944,188	100.00	189,948	20.12	754,240	79.88
	2013	1,161,144	100.00	225,317	19.40	935,827	80.60
Professional, Scientific and Technical Services	2011	618,877	100.00	181,488	29.33	437,389	70.67
	2012	628,374	100.00	189,138	30.10	439,236	69.90
	2013	653,793	100.00	198,268	30.33	455,525	69.67
Support Services	2011	341,936	100.00	121,455	35.52	220,481	64.48
	2012	371,661	100.00	130,672	35.16	240,989	64.84
	2013	396,116	100.00	131,896	33.30	264,220	66.70
Education	2011	8,138	100.00	6,057	74.42	2,082	25.58
	2012	9,577	100.00	6,820	71.21	2,757	28.79
	2013	10,523	100.00	7,822	74.33	2,701	25.67
Human Health and Social Work Services	2011	4,728	100.00	1,920	40.62	2,807	59.38
	2012	5,440	100.00	1,933	35.53	3,507	64.47
	2013	6,036	100.00	2,179	36.11	3,856	63.89
Arts, Entertainment and Recreation	2011	73,876	100.00	46,376	62.78	27,500	37.22
	2012	80,578	100.00	48,023	59.60	32,555	40.40
	2013	80,067	100.00	48,626	60.73	31,441	39.27
Other Services	2011	193,900	100.00	107,008	55.19	86,891	44.81
	2012	213,242	100.00	111,460	52.27	101,782	47.73
	2013	218,593	100.00	113,942	52.12	104,652	47.88

Notes and Source: See Table C-1.

Table C-3 Domestic Sales Value by Industry and Enterprise Size, 2011-2013

Units: NT$ millions; %

Industries \ Size		Total	Share	SMEs	Share	Large enterprises	Share
Total	2011	27,754,779	100.00	9,576,948	34.51	18,177,832	65.49
	2012	27,797,659	100.00	9,633,690	34.66	18,163,970	65.34
	2013	28,624,527	100.00	9,897,617	34.58	18,726,910	65.42
Agriculture, Forestry, Fishing and Animal Husbandry	2011	29,567	100.00	16,339	55.26	13,228	44.74
	2012	32,021	100.00	18,178	56.77	13,843	43.23
	2013	34,984	100.00	19,202	54.89	15,782	45.11
Mining and Quarrying	2011	46,182	100.00	37,259	80.68	8,923	19.32
	2012	44,332	100.00	35,285	79.59	9,047	20.41
	2013	47,193	100.00	37,045	78.50	10,148	21.50
Manufacturing	2011	7,795,202	100.00	3,157,153	40.50	4,638,049	59.50
	2012	7,578,558	100.00	3,080,012	40.64	4,498,546	59.36
	2013	7,725,245	100.00	3,100,360	40.13	4,624,886	59.87
Electricity and Gas Supply	2011	817,410	100.00	3,329	0.41	814,081	99.59
	2012	880,884	100.00	3,653	0.41	877,231	99.59
	2013	929,802	100.00	4,235	0.46	925,567	99.54
Water Supply and Remediation Services	2011	178,826	100.00	53,599	29.97	125,228	70.03
	2012	169,914	100.00	54,222	31.91	115,692	68.09
	2013	171,929	100.00	53,109	30.89	118,819	69.11
Construction	2011	1,905,758	100.00	1,180,816	61.96	724,942	38.04
	2012	1,918,300	100.00	1,224,656	63.84	693,644	36.16
	2013	2,014,371	100.00	1,330,485	66.05	683,886	33.95
Wholesale and Retail Trade	2011	10,655,208	100.00	3,657,554	34.33	6,997,654	65.67
	2012	10,770,509	100.00	3,688,686	34.25	7,081,823	65.75
	2013	10,971,012	100.00	3,741,734	34.11	7,229,278	65.89
Transportation and Storage	2011	724,199	100.00	252,593	34.88	471,606	65.12
	2012	746,315	100.00	253,739	34.00	492,576	66.00
	2013	783,928	100.00	252,503	32.21	531,424	67.79
Accommodation and Food Services	2011	419,940	100.00	297,013	70.73	122,927	29.27
	2012	459,807	100.00	321,254	69.87	138,553	30.13
	2013	490,928	100.00	342,200	69.70	148,728	30.30

Table C-3 Domestic Sales Value by Industry and Enterprise Size, 2011-2013 (Continued)

Units: NT$ millions; %

Industries \ Size		Total	Share	SMEs	Share	Large enterprises	Share
Information and Communication	2011	807,960	100.00	94,949	11.75	713,011	88.25
	2012	864,099	100.00	99,309	11.49	764,790	88.51
	2013	914,074	100.00	103,183	11.29	810,892	88.71
Finance and Insurance	2011	2,449,468	100.00	194,508	7.94	2,254,960	92.06
	2012	2,231,191	100.00	185,531	8.32	2,045,659	91.68
	2013	2,174,011	100.00	194,720	8.96	1,979,291	91.04
Real Estate	2011	821,829	100.00	175,189	21.32	646,640	78.68
	2012	940,420	100.00	189,165	20.11	751,255	79.89
	2013	1,157,318	100.00	224,626	19.41	932,692	80.59
Professional, Scientific and Technical Services	2011	495,441	100.00	175,335	35.39	320,106	64.61
	2012	496,563	100.00	182,713	36.80	313,851	63.20
	2013	514,741	100.00	191,581	37.22	323,160	62.78
Support Services	2011	334,531	100.00	120,445	36.00	214,086	64.00
	2012	363,645	100.00	129,550	35.63	234,095	64.37
	2013	390,026	100.00	130,685	33.51	259,342	66.49
Education	2011	8,070	100.00	6,050	74.97	2,020	25.03
	2012	9,468	100.00	6,780	71.61	2,688	28.39
	2013	10,431	100.00	7,803	74.80	2,628	25.20
Human Health and Social Work Services	2011	4,567	100.00	1,847	40.44	2,720	59.56
	2012	5,148	100.00	1,911	37.13	3,237	62.87
	2013	5,857	100.00	2,126	36.29	3,731	63.71
Arts, Entertainment and Recreation	2011	73,705	100.00	46,264	62.77	27,441	37.23
	2012	80,451	100.00	47,942	59.59	32,509	40.41
	2013	79,852	100.00	48,442	60.66	31,410	39.34
Other Services	2011	186,915	100.00	106,705	57.09	80,210	42.91
	2012	206,034	100.00	111,103	53.92	94,931	46.08
	2013	208,825	100.00	113,578	54.39	95,246	45.61

Notes and Source:See Table C-1.

Table C-4 Export Sales Value by Industry and Enterprise Size, 2011-2013

Units: NT$ millions; %

Industries \ Size		Total	Share	SMEs	Share	Large enterprises	Share
Total	2011	10,126,901	100.00	1,649,985	16.29	8,476,916	83.71
	2012	9,851,416	100.00	1,748,080	17.74	8,103,336	82.26
	2013	9,836,367	100.00	1,424,225	14.48	8,412,142	85.52
Agriculture, Forestry, Fishing and Animal Husbandry	2011	4,276	100.00	1,981	46.34	2,294	53.66
	2012	5,046	100.00	1,788	35.44	3,258	64.56
	2013	5,278	100.00	2,679	50.76	2,599	49.24
Mining and Quarrying	2011	771	100.00	309	40.03	462	59.97
	2012	498	100.00	117	23.53	381	76.47
	2013	525	100.00	135	25.71	390	74.29
Manufacturing	2011	6,326,933	100.00	1,181,721	18.68	5,145,212	81.32
	2012	6,424,224	100.00	1,295,476	20.17	5,128,748	79.83
	2013	6,643,414	100.00	973,892	14.66	5,669,522	85.34
Electricity and Gas Supply	2011	16,105	100.00	43	0.26	16,062	99.74
	2012	14,266	100.00	39	0.28	14,227	99.72
	2013	14,432	100.00	45	0.31	14,387	99.69
Water Supply and Remediation Services	2011	12,064	100.00	1,422	11.79	10,642	88.21
	2012	11,375	100.00	1,409	12.39	9,966	87.61
	2013	10,158	100.00	1,391	13.70	8,766	86.30
Construction	2011	173,944	100.00	12,768	7.34	161,176	92.66
	2012	170,085	100.00	10,881	6.40	159,204	93.60
	2013	26,573	100.00	10,207	38.41	16,366	61.59
Wholesale and Retail Trade	2011	3,067,880	100.00	428,278	13.96	2,639,602	86.04
	2012	2,668,514	100.00	413,761	15.51	2,254,753	84.49
	2013	2,574,510	100.00	409,856	15.92	2,164,655	84.08
Transportation and Storage	2011	281,570	100.00	8,744	3.11	272,826	96.89
	2012	303,627	100.00	8,917	2.94	294,709	97.06
	2013	293,204	100.00	9,666	3.30	283,538	96.70
Accommodation and Food Services	2011	587	100.00	119	20.21	468	79.79
	2012	841	100.00	127	15.10	714	84.90
	2013	1,147	100.00	177	15.48	969	84.52

Table C-4 Export Sales Value by Industry and Enterprise Size, 2011-2013 (Continued)

Units: NT$ millions; %

Industries \ Size		Total	Share	SMEs	Share	Large enterprises	Share
Information and Communication	2011	98,937	100.00	5,822	5.88	93,116	94.12
	2012	97,767	100.00	6,055	6.19	91,713	93.81
	2013	102,758	100.00	6,290	6.12	96,468	93.88
Finance and Insurance	2011	2,018	100.00	528	26.16	1,490	73.84
	2012	3,853	100.00	689	17.88	3,164	82.12
	2013	5,146	100.00	677	13.16	4,469	86.84
Real Estate	2011	3,592	100.00	594	16.53	2,998	83.47
	2012	3,757	100.00	773	20.56	2,985	79.44
	2013	3,826	100.00	691	18.05	3,135	81.95
Professional, Scientific and Technical Services	2011	123,436	100.00	6,153	4.98	117,283	95.02
	2012	131,811	100.00	6,425	4.87	125,385	95.13
	2013	139,052	100.00	6,687	4.81	132,365	95.19
Support Services	2011	7,405	100.00	1,010	13.64	6,395	86.36
	2012	8,016	100.00	1,122	14.00	6,894	86.00
	2013	6,090	100.00	1,211	19.89	4,879	80.11
Education	2011	69	100.00	7	9.67	62	90.33
	2012	109	100.00	40	36.68	69	63.32
	2013	91	100.00	19	20.61	73	79.39
Human Health and Social Work Services	2011	160	100.00	73	45.68	87	54.32
	2012	292	100.00	22	7.37	270	92.63
	2013	178	100.00	54	30.00	125	70.00
Arts, Entertainment and Recreation	2011	170	100.00	112	65.57	59	34.43
	2012	127	100.00	81	63.87	46	36.13
	2013	215	100.00	184	85.47	31	14.53
Other Services	2011	6,985	100.00	304	4.35	6,681	95.65
	2012	7,208	100.00	357	4.95	6,851	95.05
	2013	9,769	100.00	363	3.72	9,405	96.28

Notes and Source: See Table C-1.

Table C-5 Total Employment by Industry and Enterprise Size, 2011-2013

Units: Thousand persons; %

Industries \ Size		Total	Share	SMEs	Share	Large enterprises	Share	Govern-ment
Total	2011	10,709	100.00	8,337	77.85	1,334	12.46	1,038
	2012	10,860	100.00	8,484	78.12	1,349	12.42	1,027
	2013	10,967	100.00	8,588	78.30	1,359	12.39	1,020
Agriculture, Forestry, Fishing and Animal Husbandry	2011	542	100.00	536	98.88	1	0.15	5
	2012	544	100.00	538	98.94	1	0.21	5
	2013	544	100.00	537	98.78	1	0.25	5
Mining and Quarrying	2011	4	100.00	3	86.50	0	0.00	1
	2012	4	100.00	4	87.13	0	0.58	1
	2013	4	100.00	3	85.30	-	-	1
Manufacturing	2011	2,949	100.00	2,158	73.19	762	25.85	28
	2012	2,975	100.00	2,171	72.99	780	26.22	24
	2013	2,988	100.00	2,195	73.48	768	25.70	25
Electricity and Gas Supply	2011	29	100.00	3	10.41	3	10.47	23
	2012	29	100.00	3	11.36	3	10.78	23
	2013	29	100.00	3	11.77	3	9.69	23
Water Supply and Remediation Services	2011	79	100.00	32	41.12	1	1.89	45
	2012	82	100.00	36	43.13	1	1.68	45
	2013	84	100.00	37	43.78	2	2.85	45
Construction	2011	831	100.00	813	97.85	9	1.10	9
	2012	845	100.00	826	97.80	10	1.14	9
	2013	861	100.00	843	97.99	10	1.11	8
Wholesale and Retail Trade	2011	1,763	100.00	1,696	96.20	57	3.26	10
	2012	1,800	100.00	1,731	96.16	60	3.35	9
	2013	1,817	100.00	1,745	96.03	64	3.51	8
Transportation and Storage	2011	411	100.00	296	72.04	60	14.57	55
	2012	414	100.00	302	72.77	58	13.90	55
	2013	425	100.00	310	72.88	63	14.84	52
Accommodation and Food Services	2011	728	100.00	709	97.43	18	2.53	0
	2012	750	100.00	731	97.52	18	2.41	1
	2013	775	100.00	756	97.46	19	2.47	1

Table C-5 Total Employment by Industry and Enterprise Size, 2011-2013 (Continued)

Units: Thousand persons; %

Industries \ Size		Total	Share	SMEs	Share	Large enterprises	Share	Govern-ment
Information and Communication	2011	218	100.00	156	71.67	61	27.97	1
	2012	228	100.00	165	72.13	63	27.57	1
	2013	234	100.00	165	70.67	68	29.08	1
Finance and Insurance	2011	428	100.00	321	75.08	92	21.47	15
	2012	426	100.00	323	75.68	86	20.28	17
	2013	422	100.00	320	75.82	86	20.31	16
Real Estate	2011	87	100.00	83	95.50	2	2.74	2
	2012	90	100.00	85	95.27	3	3.17	1
	2013	92	100.00	88	96.31	2	2.38	1
Professional, Scientific and Technical Services	2011	339	100.00	270	79.70	43	12.69	26
	2012	342	100.00	274	80.20	43	12.48	25
	2013	347	100.00	278	80.21	44	12.74	24
Support Services	2011	247	100.00	227	91.99	19	7.62	1
	2012	260	100.00	237	91.40	22	8.39	1
	2013	263	100.00	242	91.81	21	7.98	1
Public Administration and Defense; Compulsory Social Security	2011	388	100.00	0	0.00	0	0.00	387
	2012	384	100.00	1	0.26	0	0.02	383
	2013	383	100.00	1	0.23	0	0.02	382
Education	2011	629	100.00	226	36.00	71	11.26	332
	2012	630	100.00	230	36.43	67	10.57	334
	2013	634	100.00	232	36.65	69	10.87	333
Human Health and Social Work Services	2011	408	100.00	203	49.67	124	30.37	82
	2012	420	100.00	216	51.47	125	29.73	79
	2013	427	100.00	222	52.02	128	29.88	77
Arts, Entertainment and Recreation	2011	94	100.00	75	79.38	4	4.51	15
	2012	95	100.00	76	80.13	5	5.17	14
	2013	96	100.00	75	77.48	6	6.36	16
Other Services	2011	536	100.00	528	98.40	6	1.03	3
	2012	541	100.00	534	98.83	4	0.81	2
	2013	541	100.00	534	98.58	5	0.99	2

Note: 1. The industries are classified according to the 9th revision of Industry Classification Standard by DGBAS.
2. For the purposes of this table, SMEs are defined as firms in the Manufacturing, Construction and Mining and Quarrying industries with less than 200 regular paid employees, and firms in other industries with less than 100 regular paid employees. 3. "-" denotes no available data.
Source: DGBAS, Raw Data from *Monthly Bulletin of Manpower Statistics*..

Table C-6 Number of Paid Employees by Industry and Enterprise Size, 2011-2013

Units: Thousand persons; %

Industries \ Size		Total	Share	SMEs	Share	Large enterprises	Share	Govern-ment
Total	2011	8,328	100.00	5,958	71.54	1,332	15.99	1,038
	2012	8,495	100.00	6,122	72.06	1,346	15.85	1,027
	2013	8,615	100.00	6,237	72.40	1,357	15.76	1,020
Agriculture, Forestry, Fishing and Animal Husbandry	2011	84	100.00	78	92.77	1	0.99	5
	2012	85	100.00	79	93.26	1	1.31	5
	2013	88	100.00	81	92.42	1	1.57	5
Mining and Quarrying	2011	4	100.00	3	86.36	0	0.00	1
	2012	4	100.00	3	86.71	0	0.60	1
	2013	4	100.00	3	84.72	-	-	1
Manufacturing	2011	2,684	100.00	1,895	70.60	761	28.35	28
	2012	2,721	100.00	1,919	70.52	779	28.62	24
	2013	2,734	100.00	1,942	71.04	767	28.06	25
Electricity and Gas Supply	2011	29	100.00	3	10.13	3	10.51	23
	2012	29	100.00	3	11.36	3	10.78	23
	2013	29	100.00	3	11.77	3	9.69	23
Water Supply and Remediation Services	2011	70	100.00	23	33.35	1	2.14	45
	2012	74	100.00	27	36.34	1	1.88	45
	2013	77	100.00	30	39.29	2	3.07	45
Construction	2011	694	100.00	676	97.43	9	1.32	9
	2012	708	100.00	690	97.37	10	1.36	9
	2013	727	100.00	710	97.62	10	1.31	8
Wholesale and Retail Trade	2011	1,059	100.00	992	93.67	57	5.43	10
	2012	1,110	100.00	1,041	93.78	60	5.41	9
	2013	1,116	100.00	1,044	93.55	64	5.70	8
Transportation and Storage	2011	319	100.00	204	64.02	60	18.76	55
	2012	329	100.00	217	65.76	58	17.47	55
	2013	341	100.00	226	66.21	63	18.48	52
Accommodation and Food Services	2011	428	100.00	409	95.64	18	4.29	0
	2012	451	100.00	433	95.99	18	3.88	1
	2013	481	100.00	461	95.99	19	3.90	1

Table C-6 Number of Paid Employees by Industry and Enterprise Size, 2011-2013 (Continued)

Units: Thousand persons; %

Industries \ Size		Total	Share	SMEs	Share	Large enterprises	Share	Govern-ment
Information and Communication	2011	204	100.00	142	69.71	61	29.90	1
	2012	213	100.00	149	70.17	63	29.50	1
	2013	220	100.00	152	68.99	68	30.75	1
Finance and Insurance	2011	423	100.00	317	74.83	92	21.69	15
	2012	422	100.00	318	75.44	86	20.48	17
	2013	418	100.00	316	75.57	86	20.52	16
Real Estate	2011	78	100.00	74	94.98	2	3.06	2
	2012	80	100.00	76	94.70	3	3.55	1
	2013	83	100.00	80	95.94	2	2.62	1
Professional, Scientific and Technical Services	2011	268	100.00	199	74.30	43	16.06	26
	2012	267	100.00	199	74.64	43	15.97	25
	2013	274	100.00	205	74.90	44	16.16	24
Support Services	2011	224	100.00	204	91.23	19	8.34	1
	2012	236	100.00	213	90.57	22	9.19	1
	2013	241	100.00	220	91.07	21	8.69	1
Public Administration and Defense; Compulsory Social Security	2011	388	100.00	0	0.00	0	0.00	387
	2012	384	100.00	1	0.26	0	0.02	383
	2013	383	100.00	1	0.23	0	0.02	382
Education	2011	598	100.00	195	32.69	71	11.82	332
	2012	596	100.00	195	32.74	67	11.18	334
	2013	600	100.00	198	33.05	69	11.45	333
Human Health and Social Work Services	2011	377	100.00	171	45.46	124	32.89	82
	2012	386	100.00	182	47.13	125	32.38	79
	2013	396	100.00	191	48.23	128	32.24	77
Arts, Entertainment and Recreation	2011	73	100.00	53	73.42	4	5.81	15
	2012	73	100.00	54	74.30	5	6.60	14
	2013	75	100.00	53	71.07	6	8.10	16
Other Services	2011	328	100.00	319	97.38	6	1.68	3
	2012	327	100.00	321	98.06	4	1.33	2
	2013	328	100.00	320	97.65	5	1.63	2

Notes and Source: See Table C-5.

Table C-7 Overview of Newly-Established Enterprises in 2013 by Industry and Enterprise Size

Units: Enterprises; NT$ millions; %

Industries \ Size	Total	SMEs	Share	Large enterprises	Share
Number of enterprises					
Total	99,044	98,821	100.00	223	100.00
Agriculture, Forestry, Fishing and Animal Husbandry	718	718	0.73	0	0.00
Mining and Quarrying	80	79	0.08	1	0.45
Manufacturing	5,256	5,198	5.26	58	26.01
Electricity and Gas Supply	104	104	0.11	0	0.00
Water Supply and Remediation Services	452	451	0.46	1	0.45
Construction	8,873	8,856	8.96	17	7.62
Wholesale and Retail Trade	43,717	43,609	44.13	108	48.43
Transportation and Storage	1,190	1,185	1.20	5	2.24
Accommodation and Food Services	15,497	15,495	15.68	2	0.90
Information and Communication	2,103	2,098	2.12	5	2.24
Finance and Insurance	916	908	0.92	8	3.59
Real Estate	4,394	4,383	4.44	11	4.93
Professional, Scientific and Technical Services	3,963	3,959	4.01	4	1.79
Support Services	2,423	2,423	2.45	0	0.00
Education	265	264	0.27	1	0.45
Human Health and Social Work Services	203	203	0.21	0	0.00
Arts, Entertainment and Recreation	3,330	3,329	3.37	1	0.45
Other Services	5,560	5,559	5.63	1	0.45
Total sales					
Total	238,848	186,644	100.00	52,204	100.00
Agriculture, Forestry, Fishing and Animal Husbandry	498	498	0.27	0	0.00
Mining and Quarrying	324	324	0.17	0	0.00
Manufacturing	24,843	21,324	11.43	3,518	6.74
Electricity and Gas Supply	181	181	0.10	0	0.00
Water Supply and Remediation Services	1,102	962	0.52	140	0.27
Construction	25,945	23,785	12.74	2,160	4.14
Wholesale and Retail Trade	121,528	87,085	46.66	34,442	65.98
Transportation and Storage	4,156	2,825	1.51	1,330	2.55
Accommodation and Food Services	18,212	17,917	9.60	295	0.57
Information and Communication	6,837	5,811	3.11	1,026	1.96
Finance and Insurance	5,941	1,892	1.01	4,049	7.76
Real Estate	11,747	8,968	4.80	2,779	5.32
Professional, Scientific and Technical Services	7,902	6,148	3.29	1,754	3.36
Support Services	3,391	3,391	1.82	0	0.00
Education	542	396	0.21	146	0.28
Human Health and Social Work Services	127	127	0.07	0	0.00
Arts, Entertainment and Recreation	2,119	1,719	0.92	400	0.77
Other Services	3,453	3,289	1.76	164	0.31

Table C-7 Overview of Newly-Established Enterprises in 2013 by Industry and Enterprise Size (Continued)

Units: NT$ millions; %

Industries \ Size	Total	SMEs	Share	Large enterprises	Share
Domestic sales					
Total	220,750	175,715	100.00	45,036	100.00
Agriculture, Forestry, Fishing and Animal Husbandry	463	463	0.26	0	0.00
Mining and Quarrying	317	317	0.18	0	0.00
Manufacturing	17,953	15,976	9.09	1,977	4.39
Electricity and Gas Supply	181	181	0.10	0	0.00
Water Supply and Remediation Services	1,101	961	0.55	140	0.31
Construction	24,910	23,766	13.53	1,145	2.54
Wholesale and Retail Trade	112,926	82,022	46.68	30,903	68.62
Transportation and Storage	3,094	2,683	1.53	411	0.91
Accommodation and Food Services	18,174	17,879	10.18	295	0.66
Information and Communication	6,695	5,669	3.23	1,026	2.28
Finance and Insurance	5,927	1,878	1.07	4,049	8.99
Real Estate	11,746	8,967	5.10	2,779	6.17
Professional, Scientific and Technical Services	7,650	6,048	3.44	1,601	3.56
Support Services	3,380	3,380	1.92	0	0.00
Education	542	396	0.23	146	0.32
Human Health and Social Work Services	127	127	0.07	0	0.00
Arts, Entertainment and Recreation	2,113	1,713	0.97	400	0.89
Other Services	3,453	3,289	1.87	164	0.36
Export sales					
Total	18,097	10,929	100.00	7,168	100.00
Agriculture, Forestry, Fishing and Animal Husbandry	36	36	0.33	0	0.00
Mining and Quarrying	8	8	0.07	0	0.00
Manufacturing	6,890	5,348	48.93	1,541	21.50
Electricity and Gas Supply	0	0	0.00	0	0.00
Water Supply and Remediation Services	1	1	0.01	0	0.00
Construction	1,035	20	0.18	1,015	14.16
Wholesale and Retail Trade	8,602	5,063	46.33	3,539	49.37
Transportation and Storage	1,062	142	1.30	920	12.83
Accommodation and Food Services	37	37	0.34	0	0.00
Information and Communication	142	142	1.30	0	0.00
Finance and Insurance	15	15	0.13	0	0.00
Real Estate	1	1	0.01	0	0.00
Professional, Scientific and Technical Services	252	100	0.91	153	2.13
Support Services	11	11	0.10	0	0.00
Education	0	0	0.00	0	0.00
Human Health and Social Work Services	0	0	0.00	0	0.00
Arts, Entertainment and Recreation	6	6	0.06	0	0.00
Other Services	0	0	0.00	0	0.00

Notes and source: See Table C-1.

Table C-8 Overview of Female-Owned Enterprises in 2013 by Industry and Enterprise Size

Units: Enterprises; NT$ millions; %

Industries \ Size	Total	Female-Owned enterprises	SMEs	Share	Large enterprises	Share
Number of enterprises						
Total	1,351,254	489,109	483,253	100.00	5,856	100.00
Agriculture, Forestry, Fishing and Animal Husbandry	12,078	2,904	2,886	0.60	18	0.31
Mining and Quarrying	1,191	278	275	0.06	3	0.05
Manufacturing	143,647	39,001	38,438	7.95	563	9.61
Electricity and Gas Supply	539	97	84	0.02	13	0.22
Water Supply and Remediation Services	7,488	2,218	2,152	0.45	66	1.13
Construction	108,541	27,351	27,114	5.61	237	4.05
Wholesale and Retail Trade	677,280	256,572	252,979	52.35	3,593	61.36
Transportation and Storage	30,893	7,868	7,719	1.60	149	2.54
Accommodation and Food Services	129,979	62,432	62,345	12.90	87	1.49
Information and Communication	17,956	5,186	5,095	1.05	91	1.55
Finance and Insurance	17,063	5,377	4,885	1.01	492	8.40
Real Estate	31,287	9,284	8,987	1.86	297	5.07
Professional, Scientific and Technical Services	41,053	14,657	14,526	3.01	131	2.24
Support Services	28,840	11,141	11,065	2.29	76	1.30
Education	1,585	632	631	0.13	1	0.02
Human Health and Social Work Services	609	166	166	0.03	0	0.00
Arts, Entertainment and Recreation	23,793	8,542	8,528	1.76	14	0.24
Other Services	77,432	35,403	35,378	7.32	25	0.43
Total sales						
Total	34,549,316	5,201,179	2,689,388	100.00	2,511,791	100.00
Agriculture, Forestry, Fishing and Animal Husbandry	39,908	9,817	4,591	0.17	5,227	0.21
Mining and Quarrying	47,718	4,701	4,135	0.15	567	0.02
Manufacturing	12,684,890	997,463	645,559	24.00	351,904	14.01
Electricity and Gas Supply	929,656	6,550	751	0.03	5,798	0.23
Water Supply and Remediation Services	179,488	40,550	16,262	0.60	24,287	0.97
Construction	1,939,608	391,914	310,118	11.53	81,797	3.26
Wholesale and Retail Trade	12,007,415	2,584,121	1,220,657	45.39	1,363,464	54.28
Transportation and Storage	934,289	129,023	73,004	2.71	56,018	2.23
Accommodation and Food Services	456,117	138,105	119,428	4.44	18,677	0.74
Information and Communication	916,421	113,607	27,075	1.01	86,533	3.45
Finance and Insurance	2,064,141	302,512	51,155	1.90	251,357	10.01
Real Estate	1,141,946	219,099	58,225	2.16	160,874	6.40
Professional, Scientific and Technical Services	582,468	123,049	60,211	2.24	62,838	2.50
Support Services	331,455	65,906	41,999	1.56	23,907	0.95
Education	10,044	2,257	1,779	0.07	478	0.02
Human Health and Social Work Services	5,851	589	589	0.02	0	0.00
Arts, Entertainment and Recreation	76,891	16,576	13,019	0.48	3,556	0.14
Other Services	201,010	55,340	40,831	1.52	14,509	0.58

Table C-8 Overview of Female-Owned Enterprises in 2013 by Industry and Enterprise Size (Continued)

Units: NT$ millions; %

Industries \ Size	Total	Female-Owned enterprises	SMEs	Share	Large enterprises	Share
Domestic sales						
Total	26,356,035	4,407,051	2,439,370	100.00	1,967,680	100.00
Agriculture, Forestry, Fishing and Animal Husbandry	34,650	8,911	4,172	0.17	4,739	0.24
Mining and Quarrying	47,193	4,641	4,077	0.17	563	0.03
Manufacturing	7,225,125	731,289	530,783	21.76	200,506	10.19
Electricity and Gas Supply	915,955	6,550	751	0.03	5,798	0.29
Water Supply and Remediation Services	169,527	39,479	15,742	0.65	23,737	1.21
Construction	1,917,188	390,046	308,680	12.65	81,367	4.14
Wholesale and Retail Trade	9,778,127	2,096,189	1,093,535	44.83	1,002,654	50.96
Transportation and Storage	719,289	113,518	70,999	2.91	42,519	2.16
Accommodation and Food Services	454,992	137,992	119,316	4.89	18,676	0.95
Information and Communication	824,634	99,572	25,975	1.06	73,596	3.74
Finance and Insurance	2,059,634	302,211	50,856	2.08	251,355	12.77
Real Estate	1,138,144	217,490	58,015	2.38	159,475	8.10
Professional, Scientific and Technical Services	451,754	119,581	58,605	2.40	60,976	3.10
Support Services	327,844	65,187	41,802	1.71	23,385	1.19
Education	9,954	2,249	1,771	0.07	478	0.02
Human Health and Social Work Services	5,697	588	588	0.02	0	0.00
Arts, Entertainment and Recreation	76,680	16,487	12,933	0.53	3,554	0.18
Other Services	199,649	55,071	40,768	1.67	14,303	0.73
Export sales						
Total	8,193,282	794,129	250,018	100.00	544,111	100.00
Agriculture, Forestry, Fishing and Animal Husbandry	5,257	907	419	0.17	488	0.09
Mining and Quarrying	525	61	58	0.02	3	0.00
Manufacturing	5,459,765	266,174	114,776	45.91	151,399	27.82
Electricity and Gas Supply	13,701	0	0	0.00	0	0.00
Water Supply and Remediation Services	9,960	1,070	520	0.21	551	0.10
Construction	22,420	1,868	1,438	0.58	430	0.08
Wholesale and Retail Trade	2,229,288	487,932	127,122	50.84	360,810	66.31
Transportation and Storage	215,000	15,504	2,005	0.80	13,499	2.48
Accommodation and Food Services	1,125	113	112	0.04	1	0.00
Information and Communication	91,788	14,036	1,100	0.44	12,936	2.38
Finance and Insurance	4,506	301	299	0.12	2	0.00
Real Estate	3,802	1,609	210	0.08	1,399	0.26
Professional, Scientific and Technical Services	130,715	3,468	1,607	0.64	1,862	0.34
Support Services	3,611	720	197	0.08	523	0.1
Education	90	7	7	0.00	0	0.00
Human Health and Social Work Services	154	0	0	0.00	0	0.00
Arts, Entertainment and Recreation	211	88	86	0.03	2	0.00
Other Services	1,361	270	63	0.03	206	0.04

Note: The totals given in this table do not conform to those given in Table C1-C4 because some enterprises are registered as being owned by other enterprises or by foreigners; these enterprises were excluded from the data used in this table.

Source: Fiscal Information Agency, Ministry of Finance, VAT Data for 2013.

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