(96) 027.115

GPN: 2009300168

ISBN: 978-986-00-9376-6

## ECONOMIC DEVELOPMENT R.O.C. (TAIWAN) 2007

COUNCIL FOR ECONOMIC PLANNING AND DEVELOPMENT EXECUTIVE YUAN, R.O.C. (TAIWAN)

(96) 027.115

GPN: 2009300168

ISBN: 978-986-00-9376-6

## ECONOMIC DEVELOPMENT R.O.C. (TAIWAN) 2007

Edited by the Council for Economic Planning and Development Executive Yuan, R.O.C. (TAIWAN)

COUNCIL FOR ECONOMIC PLANNING AND DEVELOPMENT EXECUTIVE YUAN, R.O.C. (TAIWAN)

# Economic Development R.O.C. (Taiwan) 2007

#### **CONTENTS**

• Geographic Features and Natural Resources ·······2	• Labor Force and Employment24
• Economic Performance in 2006······4	• Education · · · · · · · · · · · · · · · · · · ·
• Growth with Stability and Equity6	• Science and Technology ······28
• Savings and Investment ······8	• Social Security ······30
• Trade······10	• Challenge 2008 National Development Plan32
• Composition of Trade·····12	• The New Ten Projects·····32
• Trading Partners ······14	• Big Investment, Big Warmth ······36
• Foreign Direct Investment······16	• Strategies of Economic Development ······38
• Production Structure·····18	<ul> <li>Major Themes of Taiwan's Economic</li> </ul>
• Monetary and Financial Development20	Development Plans 1953-2008······44
• Public Finance ······22	• Future Development Prospects ·······47

#### **Geographic Features and Natural Resources**

Strategically located in the middle of a chain of islands stretching from Japan in the north to the Philippines in the south, and only 160 kilometers off the southeastern coast of the Chinese mainland, the island of Taiwan is a natural gateway to East Asia. Taiwan occupies an area of only 36,006 square kilometers, roughly equal to the size of the Netherlands. At mid-2006, its population stood at 22.7 million. With 632 persons per square kilometer, Taiwan is one of the most densely populated areas in the world.

Three-quarters of the land is mountainous, with a spine-like ridge of steep mountains extending from north to south. About 60% of the land is forested, but forest resources are minimally exploited because of limited accessibility and environmental concerns. Even though only one-quarter of the land is arable, the subtropical climate permits multi-cropping of rice and growing of fruit and vegetables all year round. However, agricultural production accounted for only 1.5% of gross domestic product (GDP) in 2006.

Although Taiwan does have deposits of coal, limestone, marble, dolomite, and natural gas, it is not richly endowed by nature. Indeed, more than 90% of its energy needs are met by imports, and its rapid industrialization also has relied heavily on imports of raw materials. However, Taiwan has an ample supply of human resources, of which it has made highly effective use.

#### POPULATION & NATURAL RESOURCES (2006)

TOTAL AREA 36,006 Km<sup>2</sup>

TOTAL POPULATION (mid-year) 22,740 1,000 Persons

POPULATION DENSITY 632 Persons/Km<sup>2</sup>

#### **RESERVES**

☐COAL 103 Million M.T.

□NATURAL GAS 8 Billion M<sup>3</sup>

MARBLE 297 Billion M.T.

DOLOMITE 110 Million M.T.

FOREST 357 Million M<sup>3</sup>

#### **Economic Performance in 2006**

In 2006, the global economy entered a phase of accelerating growth. According to estimation by the International Monetary Fund, the world trade volume expanded 9.2%, well above the 7.4% recorded in the previous year, while the global economic growth rate rose by half a percentage point to 5.4%. A boom in export trade boosted Taiwan's economic growth rate to 4.68%, an improvement on the 4.07% recorded in 2005, higher than the targeted 4.5%, and second best in the past six years to the 6.15% achieved in 2004. Per capita GNP climbed to NT\$535,993 (US\$16,471), US\$404 higher than in 2005. Other economic highlights of the year included:

- The expansion of external demand remained the main driver of Taiwan's economic growth, contributing 77.6% of the economy's growth.
- A 1.7% growth in employment, the second highest in twelve years, sustained the steady alleviation of the unemployment problem, with the jobless rate falling to a six-year low of 3.91%.
- The consumer price index (CPI) climbed only 0.6%, markedly lower than the previous year's rise of 2.3%.
- Taiwan's energy efficiency continued its steady rise, with the energy consumption elasticity ratio down to 0.38 from 0.69 in 2005, demonstrating the slowing growth rate of domestic energy consumption. Moreover, by year-end 2006, 3,303 Taiwan-made products, with a production value of over NT\$80 billion, had obtained Green Mark certification, reflecting the growing boom of green consumption in Taiwan.
- -Environmental sustainability indicators showed a solid year-on-year improvement, with the proper disposal rate of garbage at 99.77%, the garbage recycling rate at 35.41%, and 65.8% of the total length of major rivers either unpolluted or only slightly polluted.

## **Major Economic Indicators\***

Item	Unit	2004	2005	2006
Economic growth rate (real GDP increase)	%	6.15	4.07	4.68
Gross national product (GNP)	US\$ billion	342.1	364.0	374.5
Per capita GNP	US\$	15,156	16,067	16,471
Changes in consumer price index (CPI)	%	1.62	2.30	0.60
Exchange rate (end of the year)	NT\$ per US\$	31.92	32.85	32.60
Base lending rate (end of the year)	%	3.450	3.740	3.990
Unemployment rate	%	4.44	4.13	3.91
Foreign exchange reserves (end of the year)	US\$ billion	241.7	253.3	266.1
Merchandise exports (at FOB prices)	US\$ billion	182.4	198.4	224.0
Merchandise imports (at CIF prices)	US\$ billion	168.8	182.6	202.7
Balance of trade in merchandise	US\$ billion	13.6	15.8	21.3
Balance of trade in goods & services	US\$ billion	11.2	14.5	20.4
Balance of trade in goods & services as percentage of GDP	%	3.4	4.1	5.6

<sup>\*</sup> GNP and trade figures are given at current prices.

**Sources:** 1. Directorate-General of Budget, Accounting and Statistics (DGBAS), Executive Yuan, R.O.C., *Statistical Abstract of National Income, Taiwan Area, R.O.C.*, May 2007.

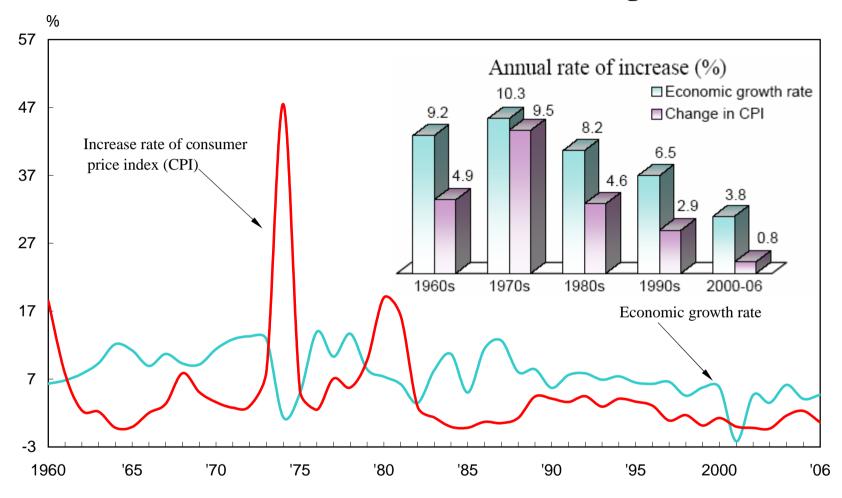
<sup>2.</sup> The Central Bank of China, R.O.C., Financial Statistics Monthly, Taiwan District, R.O.C., April 2007.

## **Growth with Stability and Equity**

Rapid economic growth, stable prices, low unemployment, and equitable income distribution — these are among Taiwan's most noteworthy economic achievements.

- From 1960 through the 1980s, Taiwan sustained an average annual economic growth rate of 9.2%, while unemployment remained below 2.0% of the labor force for most years after the mid-1960s.
- Aside from the oil-crisis years, consumer prices rose at an average annual pace of 4.3% during the 1970s. In the 1980s, their increase slowed to only 3.0% per year.
- Although Taiwan's economy has entered a more-mature stage in recent years, growth momentum has been maintained. In the 1990s, the economy expanded 6.5% per year, consumer prices rose at an average annual rate of 2.9%, and the unemployment rate averaged 2.0%. From 2000 through 2006, the corresponding figures were 3.8%, 0.8%, and 4.3%, respectively.
- Breaking the US\$1,000 level in 1976, per capita GNP reached US\$16,471 in 2006. The ratio between income received by the most-affluent one-fifth of Taiwan's households and that received by the least-affluent one-fifth rose from 4.17 in 1980 to 6.39 in 2001. The increase in the ratio was largely due to a decrease in the size of households in the lower income group as well as rising unemployment. Since then, the ratio has been gradually lowered to 6.04 in 2005, thanks to the growing redistributional effects of government programs (including the provision of living allowances and social insurance premium subsidies for less well-off members of society, the adjustment of taxes and fees, etc.) and the creation of more jobs.
- This record of growth with stability and equity has been matched by only a handful of other countries worldwide.

## **Economic Growth and Price Changes**



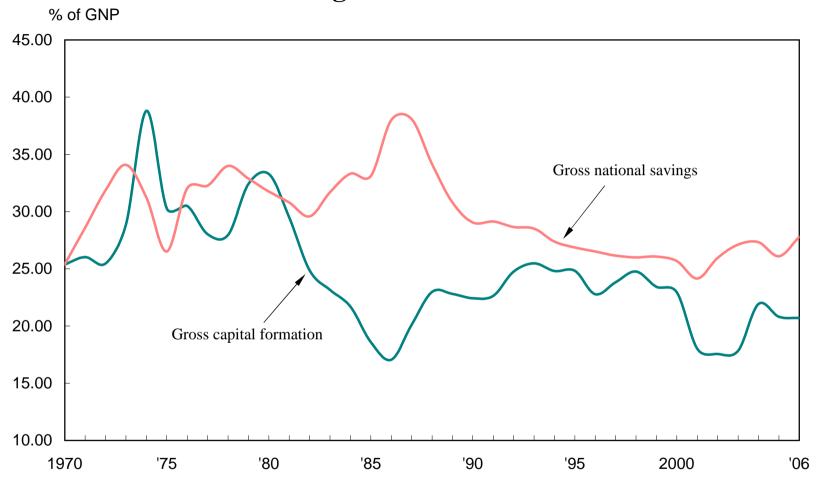
Source: DGBAS, Statistical Abstract of National Income, Taiwan Area, R.O.C., May 2007.

#### **Savings and Investment**

High levels of savings and investment have contributed importantly to Taiwan's economic growth since the 1960s. However, in the 1980s a sharp increase in Taiwan's trade surplus, coupled with explosive growth in liquidity, gave rise to an economic-bubble boom toward the end of the decade. In 1986, excess savings (external current account surplus) rose to a peak of 21.4% of GNP. Stock and real estate prices exploded, production costs soared, and the investment climate deteriorated rapidly. The government responded by stepping up the pace of economic liberalization, increasing public investment, and encouraging industrial restructuring. These measures succeeded in reducing the trade imbalance and restoring economic stability.

In recent years, as a result of higher income and the opening of domestic markets, consumer tastes and preferences have become more sophisticated, and household savings relative to income has fallen. At the same time, rising costs of land, labor, and environmental protection have shaved profits and reduced internal savings by business enterprises. Meanwhile, because of slower growth in current revenue and rising expenditures for social welfare, the current account surplus in the government's budget has declined sharply. For all of these reasons, national savings fell markedly to 27.8% of GNP in 2006 from an all-time high of 38.1% in 1987. However, gross investment (capital formation) rose sharply from 17.1% of GNP in 1986 to 25.5% in 1993, then slipped back to 17.6% in 2002, rebounded to 21.9% in 2004, and stood at 20.7% in 2006. The recent higher level of investment was due mainly to increased investment in machinery and construction, and the purchase of imported aircraft by the private sector.

## **Savings and Investment**



Source: DGBAS, Statistical Abstract of National Income, Taiwan Area, R.O.C., May 2007.

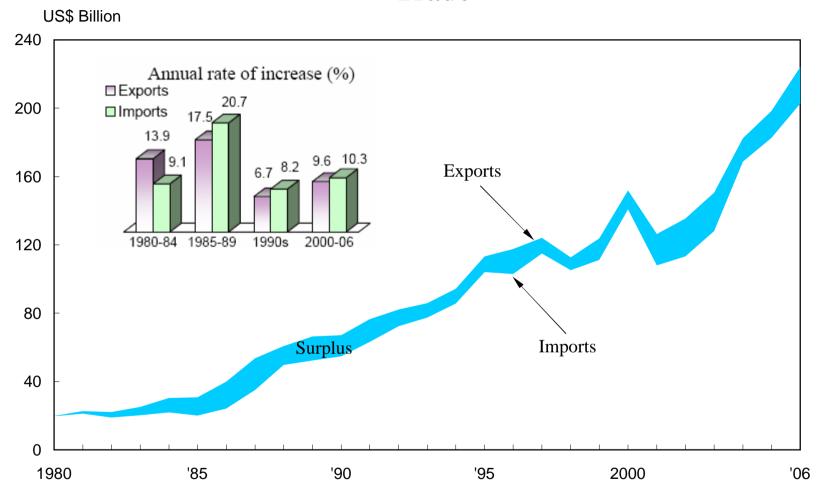
#### **Trade**

By switching to an outward-looking strategy and promoting foreign trade early in the course of its development, Taiwan was able to achieve a much more rapid pace of economic expansion than would have been possible if it had focused attention on only its limited domestic market. Taiwan's foreign trade grew rapidly in the 1960s and 1970s. In 1971, Taiwan recorded its first trade surplus. The amount by which merchandise exports exceeded imports soared to a peak of US\$18.7 billion in 1987.

To correct this external imbalance, the government first allowed Taiwan's currency to appreciate to a level determined by the market, then began to increase public spending and bolster domestic demand. It also aggressively pursued economic liberalization and took steps to upgrade the legal and administrative structure, assigning high priority to services and the development of infrastructure. As a result, the trade surplus narrowed significantly and in 1998 amounted to only US\$7.4 billion.

As global trade expansion rose from 7.4% in 2005 to 9.2% in 2006, Taiwan's two-way trade continued to expand strongly. Exports rose by 12.9% and imports by 11.0%, higher than the year-earlier increases of 8.8% and 8.2%, respectively. With exports expanding faster than imports, the annual trade surplus for 2006 amounted to US\$21.3 billion, up from US\$15.8 billion in 2005. However, it is worthy of note that Taiwan's trade surplus with mainland China and Hong Kong reached a historic high of US\$62.5 billion in 2006.

## **Trade**



Source: Bureau of Foreign Trade, Ministry of Economic Affairs, R.O.C.

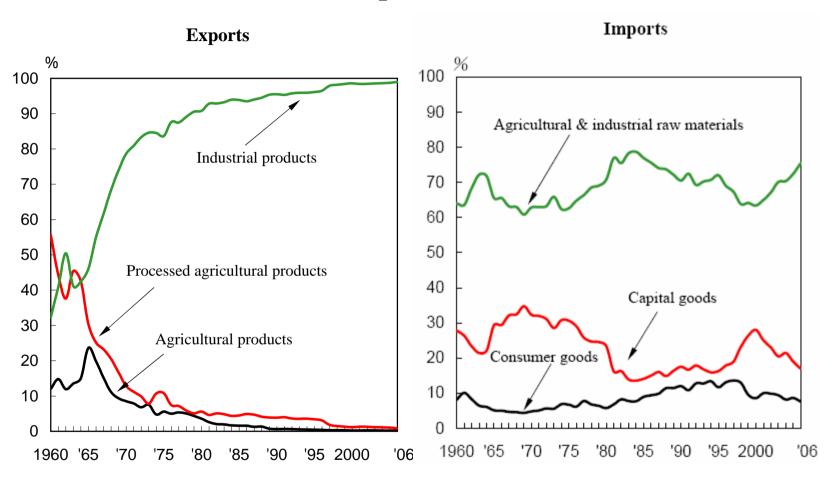
#### **Composition of Trade**

The composition of Taiwan's merchandise trade has changed substantially over the years, reflecting the restructuring and upgrading of its industry as well as progress in the liberalization and globalization of its economy.

Industrial products have steadily increased their share of Taiwan's exports, accounting for more than 90% of total exports in 1990 and reaching 99.0% in 2006. Within this category, exports of capital- and technology-intensive goods have shown impressive growth, raising their share of total exports from 32.2% in 1981 to 82.0% in 2006. And as efforts to develop high-technology industries have borne fruit, electronics and products related to information technology have seen their share of total exports rise considerably, from 13.7% in 1981 to 32.5% in 2006.

Because Taiwan has few natural resources, more than 70% of its total imports consist of agricultural and industrial raw materials. Between 1981 and 1997, rapid expansion of the local machinery industry held imports of capital goods to less than 20% of total imports. However, following a surge in investment by high-tech firms beginning in 1998, the share of capital goods in imports climbed to 28.0% in 2000 before easing to 17.0% in 2006. Similarly, because of progress in economic liberalization and rising income, the proportion of consumer goods in total imports grew steadily to 13.6% in 1997, after which it changed course and diminished to 7.6% in 2006.

## **Composition of Trade**



Source: Ministry of Finance, R.O.C., Monthly Statistics of Exports and Imports, Taiwan Area, R.O.C., various issues.

#### **Trading Partners**

Because of the continuing shift of the center of world economic gravity from West to East, and the increasing trend toward regional economic integration, Taiwan's trade with countries of the Asia-Pacific region has been steadily increasing, and its trade and economic ties with those countries have been strengthening.

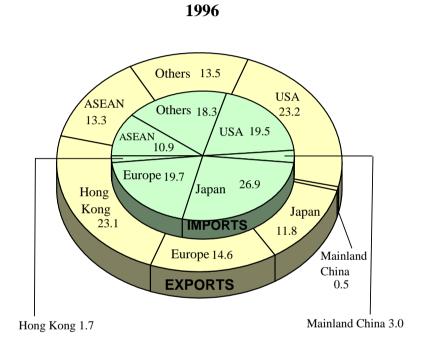
In 2006, Taiwan shipped 21.6% and 16.2% of its exports to mainland China and Hong Kong, respectively, making them its largest and second-largest export markets worldwide. Moreover, most of the Hong Kong-bound exports were transshipped to the Chinese mainland, further underscoring the growing significance of cross-strait trade. The United States slipped to third place among Taiwan's major export markets, with its share of Taiwan's total exports diminishing sharply from 23.2% in 1996 to 14.4% in 2006.

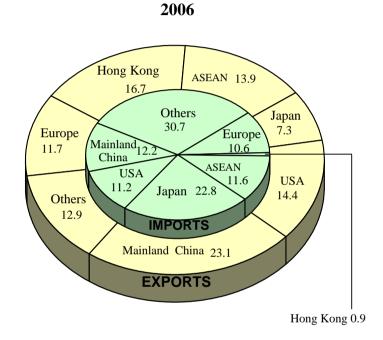
Seeking to further diversify Taiwan's trade markets, the government in recent years has been vigorously promoting a "southward policy." Under this policy, trade between Taiwan and ASEAN has shown steady growth. Taiwan's exports to ASEAN accounted for only 5.5% of its total exports in 1987, gradually rose to 13.3% in 1997, subsequently hovered around 12%, and climbed again to 13.9% in 2006.

Because of geographic factors and industrial complementarity, Japan and the United States have long been the major suppliers of Taiwan's imports. Before 1995, these two countries consistently provided more than half of Taiwan's total imports. In 2006, however, they accounted for only 34.0%. On the other hand, the share of Taiwan's imports originating in ASEAN has gradually increased, from 10.9% in 1996 to 11.6%, while that from mainland China has jumped from 3.0% to 12.2%.

## **Trading Partners**

Unit: %





Exports: US\$117.6 Billion
Imports: US\$102.9 Billion
Imports: US\$202.7 Billion

Source: Bureau of Foreign Trade, Ministry of Economic Affairs, R.O.C.

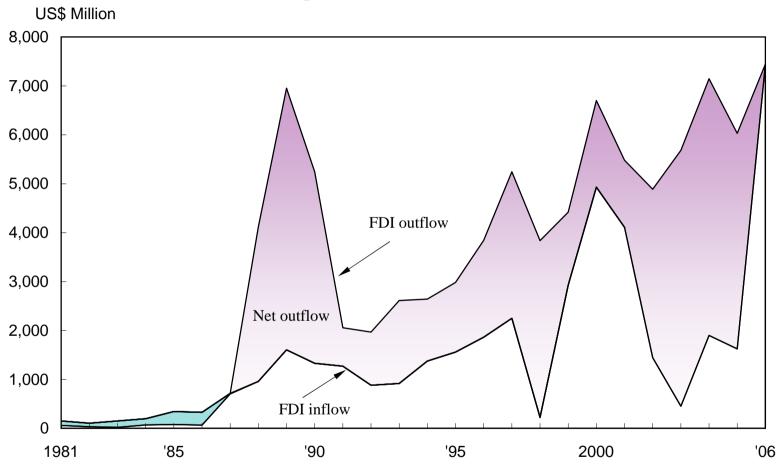
#### **Foreign Direct Investment**

Foreign direct investment (FDI) plays an important role in the process of Taiwan's economic development. And the transfer of technology and broadening of markets that accompany such investment have made a vital contribution to the industrialization of the Taiwan economy. The years since the mid-1980s have brought dramatic change to both the domestic and the world economy. As liberalization and globalization became new watchwords worldwide during the 1990s, Taiwan's foreign direct investment in Asia-Pacific countries rose precipitously, making the island the second-largest intra-regional investor after Japan.

In Taiwan's 1989 balance of payments, outward FDI reached a peak of US\$7.0 billion and net capital outflow stood at US\$5.3 billion. Thereafter, the FDI outflow from Taiwan largely followed a moderating trend before going back up to US\$7.1 billion in 2004 and down again to US\$6.0 billion in 2005. In 2006, Taiwan's total outward FDI increased 21.4% to US\$7.3 billion while inward FDI shot up dramatically 358.2% to US\$7.4 billion, resulting in a net capital inflow for the year of US\$0.1 billion. The sudden upsurge in FDI inflow was mainly due to direct investment by non-residents in the financial industry, reversing the long-term trend of net capital outflow prevailing since 1988.

Approved inward investment peaked at US\$7.6 billion in 2000, owing mainly to the opening of the fixed-network market of the telecommunications sector. In 2006 it rose sharply to US\$14.0 billion, a year-on-year increase of 230.4%. Approved outward investment increased from US\$8.5 billion in 2005 to US\$11.9 billion in 2006, of which 19.1% went to the Americas, 63.9% to mainland China, 11.6% to Asia excluding mainland China (8.9% to ASEAN), and 3.9% to Europe.

## **Foreign Direct Investment**



Source: The Central Bank of China, R.O.C., Financial Statistics, Monthly, R.O.C., April 2007.

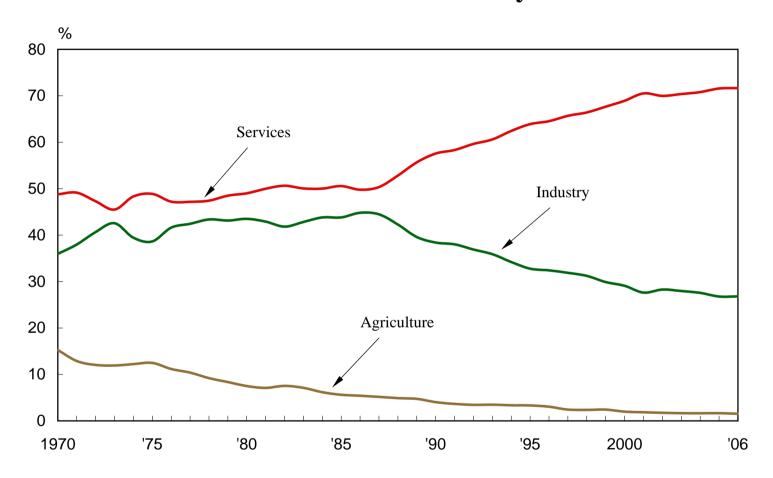
#### **Production Structure**

During the early stage of Taiwan's rapid industrialization, there was a heavy flow of productive resources from agriculture to industry. The period also saw a steady increase in industrial production as a share of gross domestic product (GDP). Industry's share of GDP rose from 26.1% in 1961 to a peak of 44.8% in 1986, after which it began to gradually decline. Since the mid-1980s, owing to increasing consumer spending fueled by a considerable accumulation of personal wealth, domestic demand has been growing strongly. With growth in demand for services particularly robust, the service sector has generated more than 60% of Taiwan's GDP since 1993.

Over the course of Taiwan's economic development, the government has given high priority to continuous upgrading of the industrial structure. As the competitive advantage of Taiwan's traditional industries began to erode in the 1980s, the government responded by establishing the Hsinchu Science-Based Industrial Park as a seedbed for the new technologies and industries of the future. Currently, Taiwan is the leading world-market supplier of 10 products, and plays a crucial role in the global IT production chain.

The government since 2005 has been implementing the Guidelines and Action Plans for Service Industry Development. Under this initiative, twelve categories of services have been selected for special promotion in the current stage of development, namely: finance; logistics; communications and media; medical, healthcare, & care-giving services; manpower training & dispatch, and property management services; tourism, sporting & recreational services; cultural and creative services; design; information; R&D; environmental protection; and engineering consulting services. In 2006, industrial production accounted for 26.8% (manufacturing for 23.0%) of GDP and agriculture for only 1.5% (roughly one-tenth of its contribution in 1970). Continuing its strong-growth trend, the service sector generated 71.7% of GDP for the year.

## **Gross Domestic Product by Sector**



Source: DGBAS, Statistical Abstract of National Income, Taiwan Area, R.O.C., May 2007.

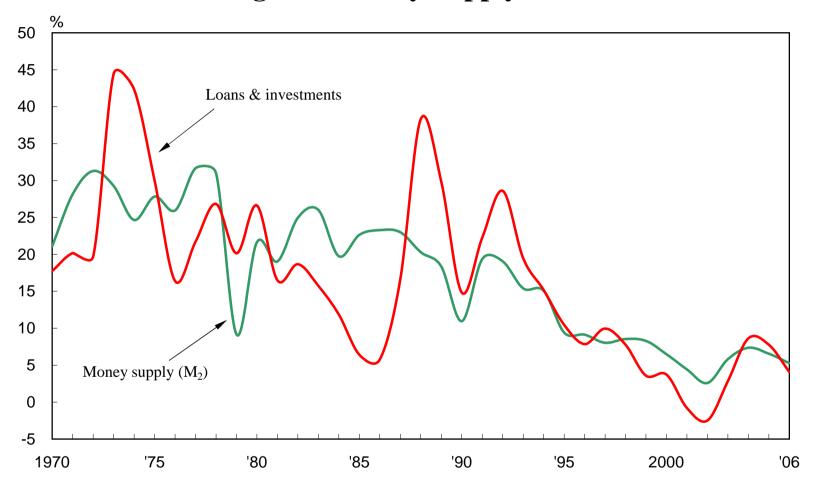
#### **Monetary and Financial Development**

With the economy entering a period of more-moderate growth and the use of credit and debit cards growing rapidly, demand for more-traditional forms of money has slackened and the pace of monetary expansion has slowed. After expanding at an average rate of 25.1% per year from 1970 to 1982, and 19.4% per year from 1983 to 1994, the broadly defined money supply (M<sub>2</sub>) grew at a still-lower average rate of 7.0% from 1995 to 2005. The corresponding figures for outstanding loans and investments by major financial institutions were 24.7%, 18.7%, and 5.4%, respectively. In 2006, although the economic growth rate rose to 4.7% from 4.1% the previous year, M<sub>2</sub> grew more slowly at 5.3% compared with 6.6% in 2005, while outstanding loans and investments grew by 4.1%, lower than the year-earlier increase of 7.8%.

To enable Taiwan to keep pace with the increasing world trend toward financial liberalization, improve its competitive standing in world financial markets, and encourage the adoption of international financial practices, the government since the late 1970s has been modernizing its financial regulations and lifting restrictive financial controls, generating many opportunities for financial innovation and new financial products.

In new economic legislation enacted since the turn of the century, a Financial Institutions Merger Act paves the way for the expansion of such institutions through mergers and acquisitions, and a Financial Holding Company Act seeks to tap the benefits arising from the integrated management of financial-services firms. Meanwhile, a vigorous drive by the government to enhance the soundness of the banking sector has seen domestic banks' average non-performing loan (NPL) ratio pared to just 2.1% at the end of 2006 from 11.7% in March 2002, and their capital adequacy ratio had reached 10.1%, well above the 8% recommended by the Bank for International Settlements.

## **Changes in Money Supply and Credit**



Source: The Central Bank of China, R.O.C., Financial Statistics Monthly, Taiwan Area, R.O.C., various issues.

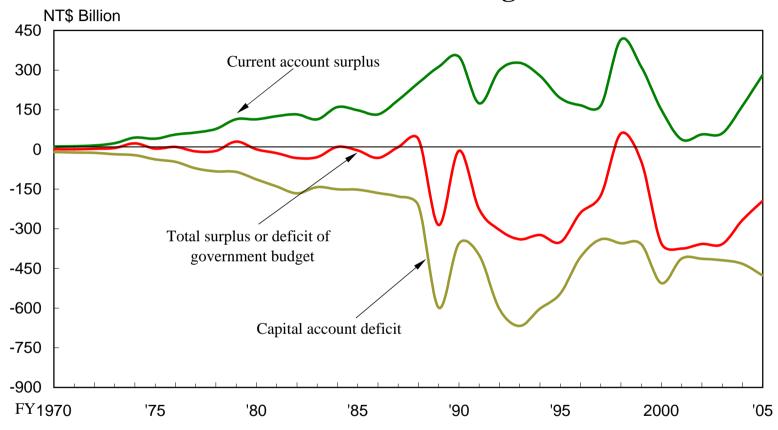
#### **Public Finance**

Taiwan's public sector long enjoyed a surplus in its current account large enough to cover capital-account expenditures. However, in 1991, as the government launched a new series of major infrastructure projects and significantly expanded social welfare programs, fiscal outlays began to rise rapidly. In FY 1992 and FY 1993, government spending accounted for 30% of GNP. And with the increase in public expenditures outpacing growth in revenue, the government turned to public debt issues and borrowings to finance the growing budgetary deficits.

In response to this situation, the government in June 1996 introduced a package of fiscal reforms designed to reduce the imbalance between revenues and outlays and to lay the groundwork for a more rational system of taxation and expenditure.

Thanks to a big jump in the growth of tax receipts, from 6.3% in FY 1997 to 20.5%, the government recorded a budgetary surplus of NT\$60.9 billion in FY 1998, the first surplus in ten years and a considerable improvement over the NT\$174.0 billion deficit in FY 1997. Subsequently, the budget slipped back into deficit, due mainly to sluggish or declining revenue growth and a dramatic increase in social welfare spending, including the cost of recovering from the severe earthquake that struck Taiwan on September 21, 1999. After peaking at NT\$374.9 billion in FY 2001, the deficit of all levels of government was gradually reduced to NT\$194.3 billion in FY 2005. Moreover, the central government achieved its target of balancing its budget for the first time in seven years and created a surplus of NT\$16.6 billion in FY 2006. Total actual public debt outstanding increased 2.0% during FY 2006, from NT\$4.01 trillion to NT\$4.09 trillion, but its share of average GNP for the preceding three years decreased from 37.3% to 36.9%.

## **Government Budget**



**Notes:** 1. Financing revenues and debt repayments are excluded.

2. Before 2000, the fiscal year begins July 1 of preceding year and ends June 30. FY 2000 extends from July 1, 1999, to Dec. 31, 2000. Subsequent fiscal years follow the calendar year (from Jan. 1 to Dec. 31).

Source: Ministry of Finance, R.O.C.

## **Labor Force and Employment**

Because of a high birth rate prior to the early 1980s, Taiwan's working-age population expanded steadily, from 66.7% of the total population in 1990 to 71.9% in 2006. But at the same time, largely because of a desire by young people to extend their education, the labor force participation rate fell steadily from its peak of 60.9% in 1987 to 57.2% in 2001, though it subsequently climbed back up to a seven-year high of 57.92% in 2006.

Over the last ten years, total employment has increased 1.1% annually. Unemployment remained between 1.5% and 2.0% of the labor force until 1995. However, from the second half of 1995, owing to short-term slack in the economy and labor-market rigidity, unemployment turned upward. A higher level of structural unemployment, resulting from the ongoing transformation of Taiwan's domestic economic structure and exacerbated after 2001 by sluggish world economic growth, contributed to the rise in joblessness. The unemployment rate reached 2.6% in 1996, jumped to 4.57% in 2001, and rose again to 5.17% in 2002. Since then, thanks to the government's implementation of a series of employment promotion measures, the rate has trended steadily downward, dipping to 3.91% in 2006.

As Taiwan has developed from an agricultural into an industrial economy, dramatic changes have taken place in its employment structure. Agricultural employment, for example, fell from 36.7% of total employment in 1970 to 5.5% in 2006, while employment in industry rose from 28.0% to a peak of 42.8% in 1987, before declining to 36.6% in 2006. Meanwhile, the service sector has increased its share of total employment from 35.3% to 57.9%, and promises to be the major provider of new job opportunities for years to come.

#### **Employment Structure** % 70 Services 60 50 40 30 Industry 20 10 Agriculture 0 1970 '75 '80 '85 '90 '95 '06 2000

Sources: 1. DGBAS, Retrospective Estimation and Adjustment of Taiwan Area Manpower Data: 1951-1983, Oct. 1984.

2. DGBAS, Monthly Bulletin of Manpower Statistics, Taiwan Area, R.O.C., April 2007.

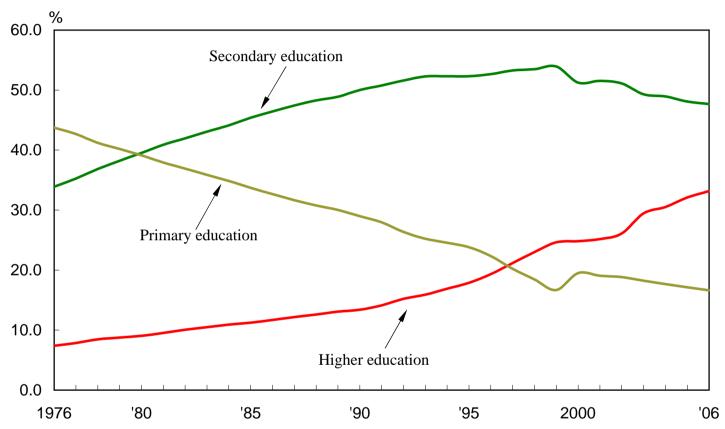
#### **Education**

The government has long placed heavy emphasis on education, and educational expenditures have consistently accounted for a major proportion of its annual budget. Since the introduction of a nine-year compulsory education system in 1968, all public education programs have stressed not only high standards of excellence but also easy access for everyone. The achievement of these goals is reflected by a steady rise in the rate of literacy and in the educational attainment of Taiwan's population.

While only 33.9% of the population 15 years of age and older had graduated from high school or vocational school in 1976, by 2006 the rate had risen to 47.7%. Similarly, the proportion of the population aged 15 or older with a college or university degree rose from 7.4% in 1976 to 33.2% in 2006. Those with a higher education now outnumber those with only a primary-level education, reflecting the success of efforts to upgrade Taiwan's human resources.

Thanks to high educational standards and equal educational opportunity, Taiwan has accumulated an impressive stock of human capital and developed a significant capacity for research and development (R&D). To ensure the continuous upgrading of human resources, Taiwan's most precious asset, the government has made plans to enhance the cultivation of high-quality technical talent domestically while recruiting top-flight scientists and technicians from abroad. It will also promote the learning of English in order to provide a more-cosmopolitan living environment. At the same time, it will encourage the habit of lifelong learning by completely integrating its education system with the Internet, fostering the emergence of a computer-literate, world-conscious, and innovative e-generation.

## **Population Aged 15 and Over by Level of Education**



**Note:** Primary education includes primary school and "self-taught" education outside the formal school system; secondary education includes high school, vocational school, and the first three years of five-year junior college; and higher education includes university and the senior two years of junior college.

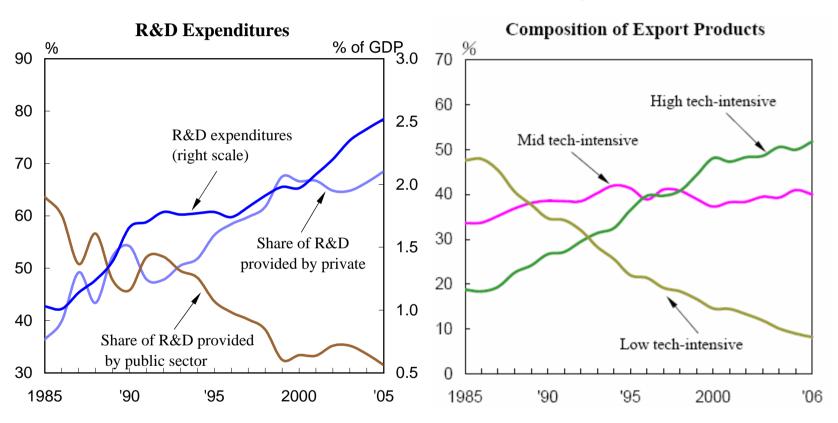
Source: Ministry of Education, R.O.C.

#### **Science and Technology**

Science and technology (S&T) development in Taiwan may be divided into two stages: a labor-intensive stage from 1952 to 1985, and a technology-intensive stage after 1985. During the earlier period, Taiwan significantly enhanced the international competitiveness of its light industries by introducing production, managerial, and marketing know-how from abroad and by achieving better use of labor and capital. The later stage has been marked by strong government support for applied technological development and by the promotion of technology-intensive industries. Thanks to a concerted effort by the government, research institutions, and the business community, Taiwan's progress in S&T development includes the following milestones since 1985:

- —Total R&D spending rose from only 1.03% of GDP in 1985 to 2.52% in 2005. Moreover, the private sector overtook the public sector in R&D spending for the first time in 1993, and, since then, private-sector R&D expenditures have grown much more rapidly than those of the public sector. In addition, the number of research personnel per 1,000 population rose from 1.3 in 1985 to 3.9 in 2005. Meanwhile, Taiwan's world ranking rose from 36th to 18th in the Science Citation Index and from 26th to 11th in the Engineering Index.
- —Having graduated from Original Equipment Manufacturing (OEM), to Original Design Manufacturing (ODM), and on to Configure to Order (CTO) manufacturing, Taiwan's business enterprises now literally straddle the world, marking the island's emergence as a key player in global logistics. Taiwan is currently the world's fourth-largest producer of IT hardware and the largest provider of foundry services.
- From 1985 to 2006, high-tech-intensive products increased their share of total exports from 18.8% to 51.8%.

## **Science and Technology**



Sources: 1. National Science Council, Executive Yuan, R.O.C., *Indicators of Science and Technology, R.O.C.*, 2006.

2. Ministry of Finance, R.O.C., *Monthly Statistics of Exports and Imports, Taiwan Area, R.O.C.*, April 2007.

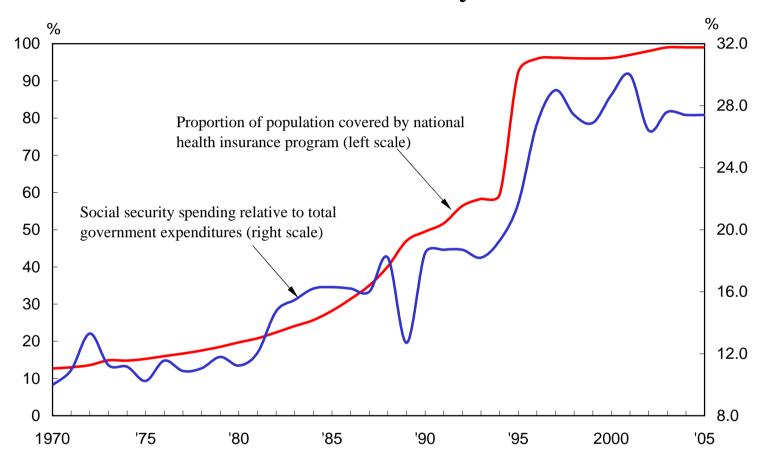
#### **Social Security**

In recent years, amid sweeping social, economic, and political transformation, the people of Taiwan have looked to the government to ensure the provision of basic needs. In response, the government has not only enacted new social security legislation, but worked on improving the quality and efficiency of existing social services. These efforts are reflected by a steady rise in public spending on social security, from 10.0% of total government outlays in FY 1970 to 27.4% (social welfare, 15.3%; pension & survivors' benefits, 8.3%; and community development & environmental protection, 3.8%) in FY 2005.

The government has been taking additional steps to strengthen Taiwan's social safety net. In March 1995, it introduced national health insurance, which now covers almost the entire population. In addition, unemployment insurance coverage was inaugurated in January 1999.

As part of its efforts to tackle the rising level of structural unemployment stemming from Taiwan's industrial transition, in July 2003 the government launched a NT\$20 billion Program to Expand Employment in Public Service. This program created 72,000 new jobs in the public sector during the second half of 2003, helping to reduce the jobless rate by 0.23 of a percentage point for the year as a whole. To further boost employment, follow-up supporting measures totaling NT\$6.5 billion were introduced in the second half of 2004. Other initiatives to alleviate unemployment include a Mid- to Long-Term Program for the Promotion of Sustainable Employment, a Project for the Upgrading of Job Skills, a Plan for the Development of Care-Services and Welfare Industry, and an NT\$5,000-per-person-per-month subsidy scheme to encourage companies to hire the unemployed.

## **Social Security**



**Note:** Debt repayments are excluded from government expenditures.

**Sources:** 1. Ministry of Finance, R.O.C.

2. Bureau of National Health Insurance, R.O.C.

#### Challenge 2008 National Development Plan

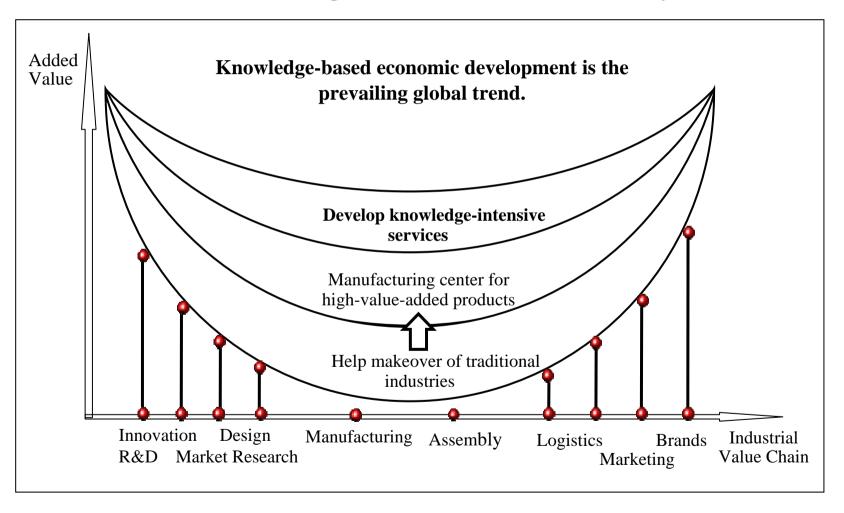
To prepare Taiwan to meet the needs of economic development in the new century, in 2002 the Executive Yuan unveiled the *Challenge 2008* Six-Year National Development Plan. The plan sets out three reforms — in the political, financial, and fiscal spheres — and ten key individual plans.

Political reform aims to transform government into a system of public administration that is small, lean, and proactive. Fiscal reform seeks to balance government revenues and expenditures within five to ten years. And financial reform set the targets of cutting the banking sector's non-performing loan (NPL) ratio — a measure of bad loans as a proportion of total bank-loan portfolios — to 5%, and raising banks' capital adequacy ratio to 8%, within two years, as was duly achieved on schedule and has since been well surpassed.

The ten key individual plans are focused on accelerating development of the economy, improving the living environment, and upgrading the role of culture and the arts in modern life — all with a view to speeding Taiwan's emergence as a "green silicon island." No longer able to rely on the type of low-value-added mid-stream processing and contract manufacturing that provided a key source of growth in the past, Taiwan must now invest more heavily in human resources, R&D, innovation, logistics networks, and its living environment. It must strive to lift its industrial value chain, especially at the two ends, to create a steeper smile curve for Taiwan and ensure its future economic prosperity. Toward this end, the government is stepping up implementation of the "Two-Trillion and Twin-Star Industries" program, under which investment of NT\$1.8 trillion in the period from 2002 to 2005 generated additional production value of NT\$7.5 trillion during the same period, and further investment of NT\$0.6 trillion added another NT\$3.2 trillion to output in 2006.

## "Smile"-Oriented Industrial Development

#### -Promoting Innovation-oriented Industry



#### The New Ten Projects

To speed the implementation of *Challenge 2008*, the government has designated key projects related to this plan as the New Ten Projects. These projects are designed to enhance Taiwan's competitive strength, maintain its number-one competitiveness ranking in Asia, and make Taiwan one of the world's three strongest economies.

- Investing in Human Resources for Innovation and R&D
- 1. Top-notch Universities and Research Centers
- Number one ranking in Asia in at least 15 disciplines within 5 years; at least one university ranked among the world's top 100 universities within 10 years.

- Cultural & Creative Knowledge Industries
  - 2. International Arts and Popular Music Centers
  - 3. "M" Taiwan Plan
  - 4. Taiwan Exposition

- © Opening international art and cultural exhibition centers in northern, central, and southern Taiwan.
- Building two integrated broadband networks with a total length of 6,000 km.
- \* Holding the Taiwan Exposition in 2011.

## The New Ten Projects

- Internationally Competitive Global Logistics
  - Conversion of Taiwan Railway System to a Rapid Transit Network
  - 6. Third-phase Expressways
  - 7. Kaohsiung Harbor Intercontinental Container Center
- Convenient and Ecologically Sustainable Living Environment
  - 8. MRT Systems in Northern, Central, and Southern Taiwan
  - 9. Sewerage Systems
  - 10. Lowland Reservoirs and Desalination Plants

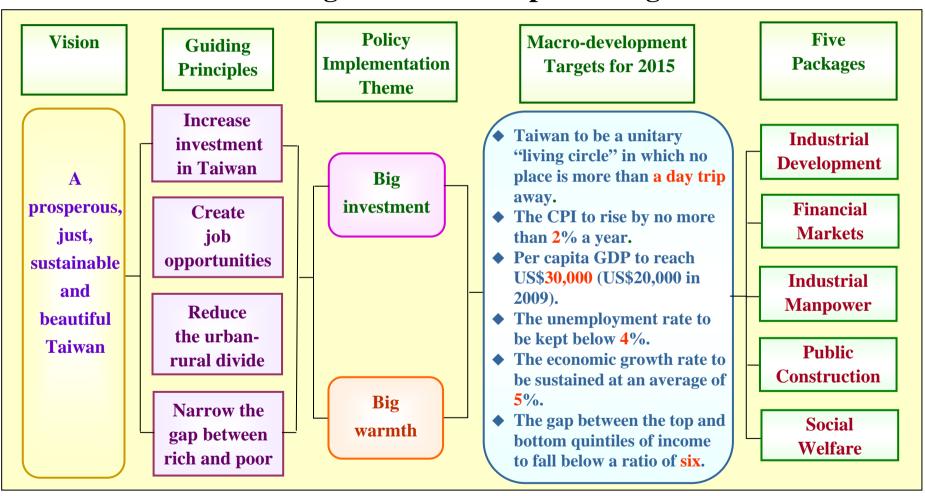
- Transforming the Taiwan Railway: converting 8 sections to MRT mode; developing 3 new branch lines.
- Developing sightseeing areas in Yilan, Hualien, Taitung, and Nantou that are conveniently accessible to urban residents in northern, central, and southern Taiwan.
- Building a deep-water container harbor with storage facilities for 15,000 TEU containers.
- © Constructing ten major "green transport" MRT lines with a combined length of 199 kilometers.
- Raising the percentage of users connected to the public sewerage network from 10.7% to 22.1%, and wastewater treated from 20.7% to 32.0%.
- © Constructing one artificial lake reservoir in a lowland area (the Kaoping Lake).
- Building seawater desalination plants in the Taoyuan-Hsinchu region and on offshore islands.

### **Big Investment, Big Warmth**

The socio-economic environments at home and abroad have changed rapidly in recent years, with globalization intensifying international competition, and the problems of population aging and a low birth rate emerging in Taiwan. To address these challenges and act upon the conclusions of the "Conference on Sustaining Taiwan's Economic Development" (COSTED), in 2006 the Executive Yuan formulated the "Economic Development Vision for 2015" and mapped out its "First-Stage Three-Year Sprint Program" for 2007~2009. This initiative involves the re-examination and adjustment of socio-economic systems and development directions, with the aim of advancing toward a "prosperous, just, sustainable and beautiful Taiwan" in 2015 as the new vision and target of efforts for national development. It will be implemented in stages under three sequential "Three-Year Sprint Programs."

The "First-Stage Three-Year Sprint Program" was drawn up in adherence to the President's directive to increase investment in Taiwan, create job opportunities, reduce the urban-rural divide, and narrow the gap between rich and poor. Under the core planning theme of "big investment, big warmth," it is divided into five packages for industrial development, financial markets, industrial manpower, public construction, and social welfare. Concrete implementation goals and key plans have been mapped out for each, and flagship plans have been strictly selected on the criteria of being forward-looking, breakthrough and key in nature, all with the aim of adjusting national resources allocation, concentrating focus, and making an all-out sprint ahead.

## Framework of Economic Development Vision for 2015 First-Stage Three-Year Sprint Program



## **Strategies of Economic Development**

During the past five decades, Taiwan has achieved rapid economic growth, price stability, and equitable income distribution, as well as very low unemployment until 2001. In addition, its industry has successfully shifted from labor-intensive to capital- and technology-intensive production. A very important factor behind Taiwan's economic success has been pragmatic and flexible government policies — especially the promotion of social and political stability and the adoption of an outward-looking development strategy. And whenever new problems have arisen, timely, market-friendly policy initiatives have been undertaken to cope with them. Taiwan's economic development can be divided into six stages:

#### The 1950s: in Pursuit of Stability and Self-sufficiency

In the 1950s, top priority was given to economic stabilization and food production. The major tasks were to effectively utilize U.S. economic aid for development, and to make use of tariffs and import controls in fostering the development of domestic industry. A land reform program was introduced to encourage food production, stabilize food prices, and promote social stability. At the same time, the development of labor-intensive import-substituting industries was encouraged in order to lessen dependence on imports and the need for foreign exchange.

### The 1960s: Expanding Exports of Light Industry

In the 1960s, emphasis was placed on promoting labor-intensive and export-oriented industries to take advantage of low-cost labor and tap the potential of markets beyond Taiwan. Toward that end, the government introduced

reforms in foreign exchange administration and taxation, enacted the Statute for the Encouragement of Investment, and in 1966 established Taiwan's first export-processing zone. Amid buoyant recovery of the world economy, Taiwan's exports increased rapidly, becoming the locomotive of its economic growth.

#### The 1970s: Developing Basic and Heavy Industries

By the end of the 1960s, rapid export expansion had stimulated strong domestic demand for machinery, equipment, and intermediate materials on the one hand, and led to a substantial improvement in the production structure on the other. Meanwhile, management had become more sophisticated and industrial technology more advanced. The time had come to encourage a gradual shift to basic and heavy industries. This was accomplished by promoting the production of domestic substitutes for imported intermediates and the development of capital-intensive industries. This strategy enabled Taiwan to effectively reduce its reliance on foreign suppliers of essential intermediate products and to upgrade its industrial structure.

### The 1980s: Economic Liberalization and Technology-Intensive Development

In the early 1980s the economy began to reap the benefits of trade-promotion policies, and an increasing surplus was recorded in foreign trade. Against this background, the government adopted economic liberalization and internationalization as new guiding principles for Taiwan's further development, and endeavored to bring market forces into full play. At the same time, Taiwan began to tap its ample capital resources to develop such capital- and technology-intensive industries as electronics, information, and machinery.

#### The 1990s: Coping with Change and Setting New Priorities

As the 1990s began, Taiwan turned to the task of strengthening its infrastructure. Toward this end, a Six-Year National Development Plan was introduced in 1991. In 1994, the government assigned top priority to the implementation of Twelve Major Construction Projects, covering transportation, culture and education, improvement of living standards, water resources development, and environmental protection. A Comprehensive Physical Development Plan was initiated with a view to rationalizing land use, improving the investment climate, and upgrading the quality of life. In January 1997, a Plan for National Development into the Next Century (1997-2000) was introduced. Aimed at accelerating Taiwan's transformation into a modern industrialized society, this plan was centered on the achievement of three goals: strengthening national competitiveness, improving the quality of life, and promoting sustainable development. At the same time, as an overture to the emergence of a mature economy, efforts were begun to develop Taiwan into an Asia-Pacific Regional Operations Center (APROC).

In 1998, to remove Taiwan from the shadow of the Asian financial crisis as quickly as possible, the government launched a Domestic Demand Stimulus Plan. And in February 1999, it began to implement a package-style program to strengthen Taiwan's economic fundamentals.

### The 2000s: Sustainable Development on a Green Silicon Island

The Plan for National Development in the New Century (2001-2004), the Plan to Develop a Knowledge-Based Economy, and the Global Logistics Development Plan were given the highest priority as Taiwan moved forward into

the twenty-first century. With liberalization, internationalization, and systemization as its core guiding principles, this agenda set Taiwan on course toward the ultimate goal of harnessing the power of its dynamic silicon-based economy to provide a clean and self-renewing natural environment for an increasingly affluent and compassionate civil society.

In 2002, the government began to implement the new six-year national development plan, *Challenge 2008*. This is a strategic development plan that emphasizes such goals as strengthening international competitiveness, upgrading the quality of life, and promoting sustainable development. Built around ten programs involving substantial investments in manpower, R&D and innovation, logistics networks, and the living environment, the plan also aims to achieve significant political, financial, and fiscal reforms. And in 2004 the Executive Yuan launched the New Ten Projects to raise public investment in infrastructure and speed the implementation of *Challenge 2008*.

To mark the start of President Chen's second term in May 2004, the government drafted the "Second-Term Plan for National Development in the New Century: Four-Year Plan for 2005-2008 and Outlook for 2015." With a "green silicon island" as its overall goal, the New Second-Term Plan strives to build a new "Taiwan Dream." Moreover, to increase added value and create jobs, the government since 2005 has been vigorously implementing the Guidelines and Action Plans for Service Industry Development. And to promote the sustainable growth of Taiwan's economy, and to advance toward the new national development vision of a "prosperous, just, sustainable and beautiful Taiwan" in 2015, the government is now actively implementing the "First-Stage Three-Year Sprint Program" of the "Economic Development Vision for 2015."

# **Strategies of Economic Development**

1950s	In Pursuit of Stability and Self-sufficiency							
	• Introducing economic planning in 1953, after the completion of postwar rehabilitation							
	• Implementing a land-reform program, stimulating agricultural production, and promoting economic stability							
	Developing labor-intensive import-substituting industries to reduce the trade deficit							
1960s	Expanding Exports of Light Industry							
	Encouraging saving, investment, and exports							
	Introducing new agricultural products							
	Establishing export-oriented industries and export-processing zones							
1970s	Developing Basic and Heavy Industries							
	Improving infrastructural facilities and eliminating transport bottlenecks							
	Establishing intermediate-goods industries							
	Developing basic and heavy industries							
1980s	Economic Liberalization and Technology-intensive Development							
	Restructuring industrial production and expanding R&D spending							
	Promoting economic liberalization and internationalization							
	Expanding domestic demand to improve the trade imbalance							

# **Strategies of Economic Development** (*Continued*)

1990s	Coping with Change and Setting New Priorities							
	• Stepping up public investment (promoting the BOT scheme) and improving the investment climate							
	Speeding up deregulation to strengthen national competitiveness							
	• Enforcing pollution controls and rationalizing land use to promote sustainable development							
	• Encouraging more-balanced economic and social development to improve the quality of life							
	Developing Taiwan into an Asia-Pacific Regional Operations Center							
2000s	Sustainable Development on a Green Silicon Island							
	Developing a knowledge-based economy, and providing a clean and self-renewing natural environment							
	Fostering the development of an affluent and compassionate civil society							
	• Promoting the spread of e-commerce and developing a complete range of supply-chain services to speed							
	Taiwan's emergence as a major international procurement and logistics base							
	• Implementing the Challenge 2008 National Development Plan— a strategic plan paving the way for							
	Taiwan's emergence as a "green silicon island" in the first decade of the new century							
	• Planning the New Ten Projects, to address the pressing need for raising public investment in							
	infrastructure and to speed the implementation of Challenge 2008							
	• Advancing toward a "prosperous, just, sustainable and beautiful Taiwan" in 2015 as the new vision and							
	target of efforts for national development.							

# **Major Themes of Taiwan's Economic**

Plan	1st Medium-Term Plan 1953-1956	2nd Medium-Term Plan 1957-1960	3rd Medium-Term Plan 1961-1964	4th Medium-Term Plan 1965-1968	5th Medium-Term Plan 1969-1972
Theme	Step up agricultural and industrial production	Expand agricultural production	Maintain economic stability	Foster economic modernization	Maintain price     stability
	Promote economic stability	Accelerate industrial and mining development	2. Speed up economic growth	2. Maintain economic stability	2. Promote export expansion
	·	<ul> <li>3. Stimulate export expansion</li> <li>4. Create job opportunities</li> <li>5. Improve the balance-of-payments position</li> </ul>	<ul><li>3. Expand industrial base</li><li>4. Upgrade investment environment</li></ul>	3. Stimulate the development of high-level industries	<ul> <li>3. Intensify infrastructural development</li> <li>4. Upgrade industrial structure</li> <li>5. Push forward with agricultural modernization</li> </ul>

# **Development Plans 1953-2008**

6th Medium-Term Plan		7th Medium-Term Plan*		8th Medium-Term Plan		9th Medium-Term Plan		10th Medium-Term Plan
1973-1975		1976-1981		1982-1985		1986-1989	-	1990-1993
1. Accelerate industrial	1.	Raise energy efficiency	1.	Maintain reasonable	1.	Promote trade liberalization	1.	Basic Policy:
modernization				price stability				(1) Increase public
	2.	Improve industrial			2.	Expand public investment		expenditures
2. Expand infrastructural		structure	2.	Continue economic				(2) Improve laws and
development				growth	3.	Strengthen the fiscal		regulations, and pursue
	3.	Strengthen manpower				and monetary system		economic liberalization
3. Enhance manpower		development	3.	Harmonize industrial				
quality				development	4.	Speed up the	2.	Development emphases:
	4.	Promote balanced				modernization of services		(1) Improve investment
4. Encourage export		economic and social	4.	Provide adequate job				environment
expansion		development		opportunities	5.	Actively develop key		(2) Develop transportation
						technologies		infrastructure
	5.	Complete the Ten	5.	Promote more-equitable				(3) Strengthen
		Major Development		income distribution	6.	Strengthen the control of		environmental
		Projects				environmental pollution		protection
			6.	Balance regional				(4) Augment social welfare
				development				
			7.	Harmonize social life				

<sup>\*</sup> Plan revised for last 3 years (1979-1981).

## **Major Themes of Taiwan's Economic Development Plans 1953-2008** (continued)

Plan	Six-Year National	Plan for National	Plan for National Development	Second-Term Plan for National
	Development Plan	Development into the	in the New Century	<b>Development in the New Century</b>
	1991-1996	Next Century 1997-2000	2001-2004	2005-2008
Theme	1991-1996	_	· ·	_

## **Future Development Prospects**

From a trading outpost in the 17th century, Taiwan has today been transformed into a major player in the global economy, and a key innovator in information technology. Taiwan's economic achievements have been in no small part due to its continuous pursuit of economic liberalization and globalization, which also helped it gain membership in the WTO in January 2002. In the 21st century, we have committed ourselves to accelerating progress in this direction, with the aim of strengthening the competitiveness of our increasingly knowledge-driven economy. We will continue to build upon our economic and industrial achievements, enhancing our capacity for innovation and developing a society noted not only for its material prosperity but also for its cultural diversity and high quality of life. Working together, we will realize our vision of transforming Taiwan into a "green silicon island."

In 2007, national development plans and projects will be carried out with dual stress on embracing the concept of "innovalue" to raise the overall value added of the economy, and on stimulating private consumption and investment to achieve optimum effect in boosting domestic demand. Taiwan's economic growth is targeted to reach 4.6%, with unemployment being kept at under 3.8% and consumer prices rising by no more than 2%.

Expanding our trade and investment in the Asia-Pacific region will remain an important priority, as we reach out to form closer trade and economic ties with neighboring countries. While seeking to promote greater harmony and balance between the different sectors of our own economy, we will continue to pursue the healthy development of cross-strait ties, helping to create a 'win-win' situation for both sides on the basis of equality and mutual benefit.

Economic Development, R.O.C. (Taiwan), 2007

Editor: Council for Economic Planning and Development,

**Executive Yuan** 

Publisher: Council for Economic Planning and Development

Taipei, R.O.C. (Taiwan)

**Edition: First Edition** 

Sales: National bookstores/TTV

B1F, No.10, Sec. 3, Bade Rd., Songshan District, Taipei

City 10502, R.O.C. (Taiwan)

TEL: 886-2-2578-1515 # 643; 886-2-2578-7542

Wunanbooks Store

No.6, Jhongshan Rd., Central District, Taichung City

40042, R.O.C. (Taiwan)

TEL: 886-4-2226-0330 # 12

Price: NT\$150.00

ISBN: 978-986-00-9376-6 (pbk.)

GPN: 2009300168

May 2007