

2. Taiwan - Inside the Miracle: A Development Success Story

Taiwan is one of the four East Asian "tigers," or "mini-dragons," whose dramatic economic successes of recent decades, along with South Korea, Singapore, and Hong Kong, have influenced the way economists think about development. With a population of about 22 million, Taiwan is a mountainous, 14,000-square-mile island off the coast of China, about the combined size of Massachusetts, Connecticut, and Rhode Island.

Taiwan's claim to its status as a "development miracle" is as strong as that of any other economy in the world. The island racked up a measured annual economic growth rate averaging close to 8% over more than four decades. Taiwan grew nearly 10% annually in the widely used benchmark 1965-80 period, higher than any other reported figure. Despite its now high income status, with a per capita income of \$13,925 in 2000 at market exchange rates (\$22,646 in 2000, at PPP), Taiwan continued to grow, at a rapid rate of 5.7% on average over the 1996-2000 period. Though growth in various countries has occasionally reached rates as high as 14%, and in some regions as high as 25% or more, Taiwan's average growth performance is the highest ever recorded over such a long stretch of time. In the postwar period, Taiwan has grown from an impoverished annual per capita income of just \$100, to the prosperous society it is today. At least as important, Taiwan has achieved universal elementary and middle school education (nine years are mandatory), a healthy population with a life expectancy of 75 years, and an infant mortality rate of only five per thousand. Absolute poverty has been essentially eliminated, there is very little unemployment, and relative inequality is modest even by developed country standards.

Although not yet really a fully developed economy and society, Taiwan has had to adjust to some of the changes that face economies that have reached the threshold of high-income status. There has been "hollowing out" of basic manufacturing, as plants have moved to mainland China in search of lower-wage labor. Production that has remained has been forced to rapidly shift to high-tech products and processes, in the face of rising competition in basic industries from other developing countries. There has been continued uncertainty about the island's political future, given saber-rattling from China, which continues to view Taiwan as a renegade province, but so far the society has adapted. It has also transformed itself into a credibly and competitively democratic polity, with far less corruption and lack of government transparency than either its neighbors or than some of its own history.

Taiwan thus seems to have achieved almost everything we look for in development. This achievement is in dramatic contrast to many other economies that started in a similar—or even

much better—set of circumstances in the postwar world. The question begs itself: how did they do it?

Explanations for Success. Paradoxically, but as is often the case in development studies, the problem is not that we have too few explanations for success or failure, but too many. Taiwan's success in particular has been ascribed to many factors. Here are 14 of the major ones: 1) emphasis on education; 2) extensive infrastructure development; 3) early and thorough land reform; 4) very high rates of savings and investment; 5) a mixture of constructive foreign influences and diffusion of commercial ideas from Japan and the United States; 6) effective government industrial planning; 7) the free market's release of human energies and creativity; 8) the 1960s Vietnam War boom; 9) direct American aid—and Taiwan's use of that aid for investment rather than consumption; 10) the work ethic and productive attitudes of the labor force; 11) a long history as an entrepreneurial culture; 12) the initiation of an export-led growth strategy in the midst of the rapidly expanding world economy of the early 1960s; 13) the movement into entrepreneurship of capable local islanders seeking opportunities for advancement, as they were blocked from the political arena; and 14) the survival instinct: the necessity of economic development as a defense against attack from the mainland (the Peoples' Republic of China).

We will be able to dismiss several of these explanations as major factors, but any of just a few of the remaining factors might appear to offer sufficient explanation for Taiwan's success. The case of Taiwan's development may thus be "overdetermined." But an alternative interpretation is that development success requires many things to work well together, and in this sense there may not be too many explanations after all: many of these factors may reflect necessary but not sufficient conditions. In this view, the key is to understand the magnified impact of having many development factors operating successfully at the same time (for a detailed analysis of this approach, see Todaro and Smith, chapter 5).

Nevertheless, despite advances in such techniques as cross-national econometrics, we still lack adequate ways of measuring factors of development across countries. Uncovering the key factors in any one "development miracle" thus remains almost as much art as science. What follows then is an imprecise but intendedly systematic exercise in the art of the case study of arguable the most successful development experience. It results from a combination of an interpretation of the literature and a series of on-site visits and interviews with public and private sector leaders in Taiwan.

Emphasis on education. Consistent with the historical Chinese cultural veneration for

education, six years of education became compulsory on Taiwan in 1950. This was remarkable enough, but more remarkable still in the troubled history of developing economies was that this edict was actually carried out within just a few years. Especially impressive were enrollment rates for girls, which surpassed 90% for those aged 6 to 11 by 1956. (The comparable figure for boys in that year was over 96%.) Emphasis on girls' education is one of the most important factors in successful development, if not the single most vital factor, as the case of girls' education in Pakistan demonstrates (see Case 16).

When compulsory education was expanded to a full nine years in 1968, there were doubts that the economy could afford it. Today, while nine years remains a remarkable minimum educational standard for any developing economy, plans are being considered to expand compulsory schooling to twelve years.

Some other features are: Students go to school seven hours per day, for five and one-half days per week. In 1992-93, the student-teacher ratio was just 26 for elementary school, 21 for junior high, and 22 each for academic and vocational high schools. Teacher salaries are relatively high, comparable to lower-middle management in Taiwan. The U.S. was Taiwan's model for general education and Japan for vocational education. Greater emphasis is placed on general rather than job-specific skills. But incentives for close relationships between education and business are also stressed. In one innovative program, vocational high school teachers are paid to work in industry during the summer months to stimulate the development of curriculum relevant to industry's current needs. Tax breaks are given for company donations of personnel and equipment to schools.

Assuming the world development community is serious in its Millennium Development Goal of enrolling all children in six years of elementary school by 2015, it could do far worse than to study the early experience of Taiwan, where despite some glitches enrollment was real and not just on paper, students generally remained in school after they enrolled, teachers actually showed up for class and taught seriously, and corruption was kept to a minimum. The contrast in most of these respects to today's low-income countries is all too striking.

Extensive infrastructure development. Development of infrastructure has been widely cited as a crucial factor in successful development by economists such as Paul Rosenstein-Rodan and Albert Hirschman. A major highway, for example, is argued to represent a "growth pole" around which industrial and commercial development can consolidate and grow. From the period of Japanese colonial rule (1905-1945), Taiwan inherited an infrastructure system that was far superior to that of most poor countries. The Japanese built roads, ports, and railroads to facilitate

their own acquisition of rice and other farm products from the island. But this same infrastructure became a vehicle for national industrial growth from the 1950s. This endowment was supplemented by the government's own extensive program in the 1950s and 1960s. Taiwan's army was too large for the island, a legacy of the pre-1949 control of the mainland by the governing Kuomintang, or Chinese Nationalists. Thousands of soldiers participated in a voluntary program to retire from active military service to build infrastructure, including the technically challenging east-west highway projects, a program reckoned in Taiwan to be a major factor in its subsequent success. In more recent years, the emphasis has moved to telecoms and other high tech infrastructure, which has proven to be a limiting factor elsewhere.

There was some waste, fraud, and abuse in infrastructure spending, though apparently less than average. When the press was freed a number of infrastructure scandals were uncovered, many affecting the capital, Taipei. The political openings have played a role in keeping infrastructure development and other development necessities on track as development proceeded, another reflection of the interactive roles played by several contributory factors in economic growth.

Early and thorough land reform. Not burdened by close political ties to landlords, the Taiwan government was politically able to implement a thoroughgoing land-to-the-tiller reform program in the 1950s. Landowners received stock in state-owned enterprises in return for transferring land to peasants. This was a major factor in the extremely rapid growth of agricultural productivity in this period—a crucial foundation for later industrialization. Other countries with similar land reform efforts, such as South Korea and Japan, have seen impressive results. The U.S. analogously benefited from 19th-century programs such as the Homestead Act. In contrast, development in Latin America, as well as some neighboring countries, notably as the Philippines, has been severely hampered by the lack of land reform.

Very high rates of savings and investment. Capital formation has long been deemed crucial to successful development. Developed countries have much higher levels of capital per head than less developed countries, one of the factors enabling developed countries to enjoy higher productivity and incomes. Taiwan's savings rates were among the highest ever recorded, reaching 30 to 40% in the 1950s and 60s.

The savings ethic is deeply rooted in Taiwanese culture. Parents teach children the overriding need to save for a rainy day. This cultural pattern is supplemented by public policies that keep real interest rates for savers relatively high and tax free. Interestingly, like fellow tiger South Korea but unlike Singapore, Taiwan has a relatively low foreign capital share in total investment,

about 10%. High savings and investment is an important factor in development, but not a sufficient one. India has substantially increased its rates of investment since independence, but not its growth rate, in part because capital equipment is more expensive there, in part because investments have not been made in the most productive sectors at any point in time.

Diffusion of commercial ideas. High saving alone will not create a development miracle without productive ideas among entrepreneurs about what use to make of it. Though hard to document precisely, Taiwan has had considerable success at absorbing commercial ideas from Japan and the United States. Much of this was due to the diligence of thousands of individual small companies. But government also played a role, through agencies like the China External Trade Development Council (CETDC) that combed the world, especially the United States, for ideas on how Taiwan firms could upgrade their technology and adapt to enter industrial markets. The World Bank's Donald Keesing has offered some fascinating insights into its operation:

"Market research in CETDC's New York office as of 1980 was based on an active search for items that could be sold in the United States. The search began with an analysis of the size and origin of U.S. imports, followed by a preliminary study of the price and quality of the more competitive imported and U.S. products. From this the officers in New York reached an estimate of the likelihood of Taiwan, China firms competing successfully against offerings already on the market. (They claimed to understand the manufacturing capabilities of Taiwan, China firms well enough to do this.) Once a likely product was identified, the office asked firms in Taiwan, China to send it samples of the product and price lists. Representatives of the office would then visit importers, wholesalers, and other traders with samples and price lists, prospecting for sales. They would try to get reactions to the product. If the buyers were interested they would telex the manufacturers. If not, they would find out why and then suggest appropriate steps to the manufacturer."

These observations lead us to perhaps the most complex set of development issues—the roles of state and market in successful development.

Effective government industrial planning. A traditional explanation for Taiwan's success is the operation of the free market. In contrast, Robert Wade and others have effectively championed the idea that Taiwan's success is due in large measure to effective government industrial planning. These policies are in large measure analogous to those of South Korea, though the industrial base of Taiwan is in small firms and that of Korea in large firms. (See Case 15 on South Korea.)

Taiwan has had active industrial policy systems in place to license exports, control direct foreign investment both to and from Taiwan, establish export cartels, and to provide fiscal incentives for investment in priority sectors and concessional credit for favored industries. The government plays a much less active role today, now that developed country status has been nearly attained, but it is interesting to view the roles played in Taiwan's more formative development stages.

Taiwan's economic history began with a very highly *dirigiste*, or state-directed, import substitution-oriented industrialization, in the 1949-1950 period. The 1958 reforms switched intervention to export promotion and introduced market forces. But what emerged was far from a free market—only a less thoroughly planned economy. Into the 1980s, all imports and exports in Taiwan have had to be covered by a license. Imports are classified into "prohibited," "controlled," and "permissible." Controlled goods include luxuries and some goods produced locally with reasonable quality, in sufficient quantities, and whose prices are not more than a narrow margin (about 5%) above comparable import prices. Even the "permissible" items were subject to strong controls, such as with garments, which until 1980 could only be imported from Europe and America—the least competitive sources. Other goods subject to "competitive origin restrictions" have included yarns, artificial fibers, fabrics, some processed foodstuffs, chemicals, machinery and electrical apparatus. Because the controlled list is larger than the published one, not all "permissibles" are automatically approved. As Wade shows, a potential importer of an item on the hidden list has been asked to provide evidence that domestic suppliers cannot meet foreign price, quality, and timing-of-delivery terms. Wade presents evidence that their function is to jump-start growth industries by providing domestic demand for products targeted by government. Then aggressive incentives are provided to induce companies to begin to export these products.

Wade's interpretation of the relative success of this import substitution program, however, is consistent with an emphasis on market incentives. He argues that because it controls quantities of foreign goods entering the local economy, the government can use international prices to discipline the price-setting behavior of protected domestic producers. The government demands to know good reasons why domestic prices of protected items are significantly higher than international prices, especially in the case of inputs to be used for export production. In this way, domestic prices for controlled goods can be kept near world price levels through the threat of permitting imports, even without free trade of goods across national borders. Wade concludes that an effective government threat of allowing in more goods can itself be sufficient to hold prices down, despite the current trade protection. Wade's argument can be interpreted as analogous to the theory that monopolists will keep prices low to the extent that they fear the entry of a rival firm seeking to

take advantage of a prevailing high price in an industry. Thus the argument is that government is able to play an active role in industrial planning without compromising the vitality of market incentives.

But some observers feel that Taiwan's government has been quite happy to promote the developmental state explanation, perhaps finding greater domestic political benefits in the implication that it has been competent in formulating economic policy than diplomatic costs, in that it will be viewed as interventionist and anti-free market. Clearly, Taiwan's economy has been very far from a free market, but explanations for Taiwan's success other than its actively interventionist policies can be given. In particular, general policies such as support of basic education and encouragement of high savings cannot be said to have been ruled out as more important factors in Taiwan's success. Many small entrepreneurs in Taiwan seem to feel that government has done more to harass them than help them. And the stable, consistent macroeconomic policies in Taiwan and elsewhere in East Asia also stand in dramatic contrast to much of the rest of the developing world, especially the poorest-performing regions.

Free market incentives. Claims that an economy's success is due to government industrial policies, rather than the action of the free market, are impossible to fully prove. There is always the danger of corruption and inefficiency when government is excessively involved in the economy. Some anti-interventionist economists have gone so far as to argue that Taiwan would have done even better without its industrial policies; part of their contention is that "government failure" is almost always worse than market failure in developing countries.

At the same time, while entrepreneurial dynamism is hard to measure precisely, it is plain for all to see throughout the island. Taiwan is a case in which incentives to produce wealth rather than merely to seek a share of existing wealth ("rent-seeking behavior") are established with solid property rights and not significantly undermined by other policies.

Certainly, the government of Taiwan has not always been a highly efficient engine of progress. There would seem to be plenty of room for inefficiency merely because the Republic of China is in the unique situation of administering both a central and a provincial government covering exactly the same territory. This is a legacy of the Chinese civil war, which Taiwan's governing Kuomintang lost. Moreover, until 1991, the government ruled Taiwan under martial law. This would seem to have offered ample opportunities for corruption. Indeed, in the 1990s, new corruption scandals seemed to be reported almost daily in Taiwan's many independent newspapers. The free election of Lee Teng-hui as President in 1996 was the culmination of a smooth five-year transition to democratic governance. Elections have been highly competitive since then, and are generally

viewed as having been free and increasingly fair.

Listening to Taiwan's government and opposition leaders, one might conclude that there are not only two Chinas, but two Taiwans. One is clean, efficient, has a free press, and is democratic. The other is corrupt, inefficient, features government control of television, and has democratic institutions that are little more than a figleaf over Kuomintang dictatorship. The truth about the government role lies somewhere in between. Taiwan is best understood as a case in which the dynamism of the marketplace is sustained and harnessed with a generally, though not universally, effective role of government in correcting market failure and promoting sustainable development. Taiwan might indeed have done better if government activities had been scaled back in some fields—but on net there is little doubt that its industrial policies have helped more than hurt. The reverse is true of many other developing countries, and it is difficult to draw general conclusions. Of course, now that Taiwan is approaching developed country status, earlier government economic policies may no longer be applicable. The emergence of an effective opposition in the independence-minded Democratic Progressive Party is a factor keeping government failure in check.

Other factors. The other explanations listed earlier were also somewhat important, but are unlikely to have been critical given the decisive role of the seven factors just discussed. They are also special features that other economies cannot easily encourage through policy measures. The 1960s Vietnam War boom affected countries such as the Philippines as much if not more, but without lasting effect; this suggests that other conditions were more important in Taiwan's success. American aid to Egypt has been far larger, and substantially used for investment purposes, but with less impressive results. Undoubtedly the work ethic and attitudes of the labor force were important. At the same time, they could not be called into play without the right incentives being in place, and without the availability of economically productive ideas. And a work ethic can be stimulated by the right incentives. A long history as an entrepreneurial culture may also be important, but in the long term these will similarly be influenced by incentives for entrepreneurship.

The fact that Taiwan benefited from beginning export-led growth in the early 1960s, a time of unequalled world growth and a wide-open American market, was an undoubted advantage. On the other hand, other countries such as Thailand have successfully grown through manufactures exports in the 1980s, despite far slower U.S. and world income and trade growth rates. Export-oriented Guangdong province of China is growing far faster in the 1980s and 1990s than Taiwan ever did, despite sometimes sluggish world trade growth (see Case 3). Indeed, China as a whole has set record growth rates in this period. Many of China's reform policies since 1978 have been

quite consciously copied from the experience of Taiwan.

The idea that local islanders had little opportunities outside of entrepreneurship has not been proven; in any case, Taiwan seems hardly to differ in this regard from the situation under many other authoritarian regimes around the developing world that have suffered negative per capita income growth.

As to the necessity of economic development as a defense strategy, one can hardly single out Taiwan. The United States guaranteed Taiwan's defense after President Truman sealed off the island in 1950, in response to the Korean crisis. Other developing countries lacking the natural defenses of an island and as gravely threatened by hostile neighbors have made little development progress in the same period. Military necessity more often represents a diversion of resources needed for development than a productive stimulus. Indeed it often seems to lead to war, which inevitably sets back development performance.

Conclusion. It seems that Taiwan's success is best explained by a combination of emphasis on education, absorption of productive ideas from abroad, extensive infrastructure development, thoroughgoing land reform, very high rates of savings and investment, effective industrial policy, and last but not least, ensuring that incentives of the marketplace to produce wealth rather than seek a share of existing wealth are established with solid property rights and not undermined by other policies.

Today, Taiwan seems well-characterized by Walt Rostow's notion of an economy in a "drive to maturity," in which the range of the world's most advanced technology and skills are mastered. Government is focussing on collaborating with the private sector on more advanced research and development (R&D), as Taiwan moves into high technology fields. In 1991, a huge \$300-billion-plus infrastructure development project was announced as part of the ambitious 1991-1996 Development Plan, designed to propel Taiwan into the ranks of the developed economies. Unfortunately, the program had to be scaled back considerably for budgetary reasons, and corruption has hampered the program's effectiveness, as organized crime moved into the construction sector. The private sector is being encouraged through incentives and exhortation to take up the slack, but it is unlikely that it can fully do so. In recent years, Taiwan's dynamic firms have invested vast sums in mainland China. The country has been striving to adapt to a future in which relatively unskilled industrial jobs will no longer be available. The focus has been on education, high technology production in several sectors including computers, software, and biotechnology, and on financial development. The fact that Taiwan weathered the enormous storms

of the East Asian financial crisis in 1997-98 was an impressive sign of the economy's development and resilience.

Are there any drawbacks to Taiwan's growth? Certainly environmental considerations have taken a backseat to economic growth until very recently. Taipei suffers from exceedingly noxious air pollution, for example. Despite a nominal beginning at land use planning, a driver down the island's West coast will find a dizzying jumble of various agricultural, industrial, commercial, and residential uses, defying any economic rationale, let alone land use aesthetics. She will find industrial sites perched on landfill over rice paddies and prawn pools, into which some waste products inevitably seep. Attention is given to matters such as endangered species only after much Western pressure has been applied. Even then, as one Taiwan official frankly put it, "the private sector is flexible and vibrant in Taiwan—where there is profit, there is activity."

Housing remains small and basic in Taiwan; and motorbikes outnumber cars, a large fraction of which are taxis. (Some of this may be due to incentives of the tax code). Left behind by the miracle, homeless derelicts can be seen sleeping on the streets of Taipei and Kaohsiung—though these cities differ little in this regard from New York and Washington. Again, with the opening of China, many Taiwan companies are moving lock, stock, and barrel to the mainland; fears of the hollowing out of the economy, such as has been seen in the U.S. and U.K., are being voiced. But this is likely to bring as much opportunity as problems. And even with such caveats, Taiwan has come exceptionally far; the caveats only qualify Taiwan's success, and point to some necessary future directions; they do not in any way negate its impressive accomplishments.

In sum, Taiwan illustrates well the complex mix of factors behind the kind of rapid economic and social progress often termed a development miracle. The factors that stood out were education, infrastructure, land reform, high savings and investment, absorption of commercial ideas, effective industrial policy in formative stages, market incentives, and recently policies and incentives for continued improvement and upgrading in skills, productive knowledge and efficiency.

Sources

Due to Taiwan's peculiar status as a non-member of the United Nations and the World Bank, little authoritative scholarly work is available. This study is based largely on government documents, interviews of the author with government and opposition leaders, and other firsthand observations. Additional sources:

Amsden, Alice. "Taiwan's Economic History: A Case of Etatism and a Challenge to Dependency Theory." *Modern China* 5 (1979): 341-80.

Amsden, Alice. "Taiwan," Special Issue: Exports of Technology by Newly Industrializing Economies. *World Development* 12, nos. 5/6 (1984): 627-633.

Balassa, Bela. "The Lessons of East Asian Development: An Overview." *Economic Development and Cultural Change* 36, Supplement, S273-290, 1988.

Borus, Michael, and Denis Fred Simon. "High Technology in the Pacific Basin: Analysis and Policy Implications." Paper presented at the State Department-NAS Conference on Foreign Competition in Science and Technology, National Academy of Science, May 11, 1989.

Bradford, C.I. "Trade and Structural Change, NICs and Next-Tier NICs as Transitional Economies." *World Development* 15 (1987): 299-316.

Hollis, Chenery, Sherman Robinson, and Moses Syrquin. *Industrialization and Growth: A Comparative Study*. New York: Oxford, 1986.

Chu, Wan-Wen. "Export Led Growth and Import Dependence, the Case of Taiwan 1969-1981." *Journal of Development Economics* 28 (1988): 265-276.

Cline, William. "Can the East Asian Model of Development Be Generalized?" *World Development*. 10 (1982): 81-90.

Dahlman, Carl J., Bruce Ross-Larson, and Larry E. Westphal. "Managing Technical Development: Lessons from the Newly Industrializing Countries." *World Development* 15, (1987): 759-75.

Jacobsson, Steffan. "Technical Change and Industrial Policy: The Case of Computer Numerically

Controlled Lathes in Argentina, Korea and Taiwan." *World Development* 10 (1982): 991-1014.

Keesing, Donald B. "The Four Successful Exceptions. Official Export Promotion and Support for Export Marketing in Korea, Hong Kong, Singapore and Taiwan, China," *United Nations Development Program-World Bank Trade Expansion Program Occasional Paper 2*, 1988.

Lal, Deepak. *The Poverty of Development Economics*. London: Hobart, 1984.

Pack, Howard, and Larry Westphal. "Industrial Strategy and Technological Change: Theory versus Reality." *Journal of Development Economics*. 22 (1986): 87-128.

Rostow, Walt W. *The Stages of Economic Growth: A Non-Communist Manifesto*. London: Cambridge University Press, 1960.

Smith, Stephen C. *Industrial Policy in Developing Countries: Reconsidering the Real Sources of Export-Led Growth*. Washington, DC: Economic Policy Institute, 1991.

Wade, Robert. *Governing the Market*. Princeton Univ. Press, 1991.

Wade, Robert. "The Role of Government in Overcoming Market Failure: Taiwan, Republic of Korea and Japan." In Helen Hughes, ed., *Achieving Industrialization in East Asia.*, New York: Cambridge University Press, 1988.

Wade, Robert. "State Intervention in Outward-looking Development: Neoclassical Theory and Taiwanese Practice." in Gordon White, ed. *Developmental States in East Asia*, New York: St. Martins, 1988.