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Historical Development of Taiwan Automotive Industry[1]

Sıtkı Selim Dolanay
Independent Researcher, Isparta, Türkiye

Taiwan, a Southeast Asian region, achieved rapid economic growth and the level of economic development it achieved in the 20th century, making it one of the countries and/or regions that created the Asian Miracle in the 1990s. Following the establishment of the People's Republic of China under the leadership of Mao, Chinese Nationalist Party leader Chiang Kai-shek established the Republic of China in Taiwan and established Taipei as its capital. Taiwan's automotive industry began with the establishment of a vehicle manufacturing company in 1953. Starting in the mid-1960s, automotive industry production began to increase, and with the new economic policies of the government from 1985 onwards, rapid production increases in the automotive industry accompanied the high economic growth rates. In addition, Taiwanese automotive companies were able to shift their production to China in order to benefit from the rapid economic growth period in China in the 1980s. Thus, we can say that the rapidly growing Taiwanese automotive industry came into question in the 1990s with all internal and external effects. Focusing on the historical development of the automotive industry is important in order to determine whether the development in the automotive industry is dependent on path. Today, we can say that Taiwan is one of the important automotive manufacturers. However, we can say that it is not one of the leading manufacturers.

Keywords: Taiwan economy, industrialization, motor vehicle industry, automobile industry, path dependency

Introduction

Taiwan, one of the Four Asian Tigers, is a region of approximately 36,000 km² located south of mainland China and within easy reach of Japan and the Philippines. Its capital is Taipei. The official currency of Taiwan is the New Taiwan dollar, symbolized as NT$ or TWD (Ministry of Foreign Affairs, 2016). (Arslan, & Ayhan, 2018, p. 64; Dolanay, 2024m, pp. 808-815)

Taiwan, which the Portuguese, who first discovered the island, named "İlha Formosa (beautiful island)", was ruled by six different colonial regimes from 1624 to 1988: The Dutch from 1624 to 1662, the Dutch and Spanish from 1626 to 1642, the Cheng Dynasty and the Qing Dynasty from 1662 to 1895, and the Nationalist Chinese from 1895 to 1945 and from 1945 to 1988 (Jacobs, 2014, p. 48). (Arslan, & Ayhan, 2018, p. 64; Dolanay, 2024m, pp. 808-815)

Brief Economic History of Taiwan

Following his defeat on the mainland, Chinese Nationalist Party leader Chiang Kai-shek declared martial

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Sıtkı Selim Dolanay, Ph.D., Independent Researcher, Isparta, Türkiye.
Correspondence concerning this article should be addressed to Sıtkı Selim Dolanay (PhD), Independent Researcher, Isparta, Türkiye. Email: sitkidolanay01@gmail.com. ORCID: https://orcid.org/0000-0002-3971-2887.

law in Taiwan in 1949, banned the formation of new political parties, and ruled Taiwan single-handedly until his death in 1975 (Taiwan Comminique, 1987, pp. 3-4; Dolanay, 2024m, pp. 808-815). After martial law was lifted in Taiwan in 1987, Taiwan entered a period of political democratization and economic liberalization. As a result, Taiwan entered a multi-party era. A producer of basic goods, Taiwan became a producer in the global information and communication technology sector (Ministry of Foreign Affairs, 2016). (Arslan, & Ayhan, 2018, p. 64; Dolanay, 2024m, pp. 808-815)

Towards the end of the 1940s, land reform was implemented in Taiwan, and agricultural activities increased with state support, resulting in increased income. Furthermore, it has been observed that the US supported land reform to prevent the spread of communism in Taiwan (Jolly, 2003, pp. 6-7; Dolanay, 2024m, pp. 808-815). Taiwan's neutrality during the Korean War in the 1950s enabled it to sign an alliance agreement with the US in 1954 (Moment, 2013). (Arslan, & Ayhan, 2018, p. 65; Dolanay, 2024m, pp. 808-815)

It can be said that the Taiwanese economy entered a period of stable growth with import substitution policies starting in the 1960s (Hsiao, & Hsiao, 2002, p. 188). From the mid-1960s onward, Taiwan transitioned from import substitution policies to an export-led growth model. It is known that Taiwan's exports consisted of low-quality, low-cost goods produced by labor-intensive sectors (Wang, 2001, pp. 350-352; Dolanay, 2024m, pp. 808-815). Thus, by 1990, Taiwan's nominal per capita income was $12,333 (Arslan, & Ayhan, 2018, pp. 65-66; Dolanay, 2024m, pp. 808-815).

The Taiwanese government stands out as a "country" that has made innovations in this area because it prioritizes the education system (Şenel, & Gençoğlu, 2003, p. 57; Dolanay, 2024m, pp. 808-815; Arslan, & Ayhan, 2018, p. 66). The share of Fordism in production began to decline in the late 1970s, and the share of knowledge in production began to increase. Knowledge led to the emergence of flexible production techniques. The "flexible specialization" that emerged with flexible production techniques paved the way for computer-aided design, significantly reducing costs, and large firms were able to escape economies of scale. Taiwan became one of the "(developing) countries" where large firms operated in production in the 1970s (Dulupçu, 2003, p. 57). (Arslan, & Ayhan, 2018, p. 67; Dolanay, 2024m, pp. 808-815)

The share of foreign direct investment stock in world GDP rose from 5% in the 1980s to 16% in 1999. Taiwan became one of the major "(developing) countries" receiving international investment in the 1990s (Bayraktar, 2003, pp. 1-30; Arslan, & Ayhan, 2018, pp. 67-68; Dolanay, 2024m, pp. 808-815). Taiwan was also slightly affected by the Asian crisis (Değertekin, 2008, p. 22). (Arslan, & Ayhan, 2018, p. 68; Dolanay, 2024m, pp. 808-815)

Prior to its WTO (World Trade Organization) membership, Taiwan pursued state-controlled economic policies (Wang, 2003, pp. 317-320; Dolanay, 2024m, pp. 808-815). With its WTO membership on January 1, 2002, the Taiwanese government opened its domestic markets to foreign economies, reduced protections on some sectors, and prioritized the protection of intellectual property rights (WTO, 2014, pp. 9-12). (Arslan, & Ayhan, 2018, pp. 68-69; Dolanay, 2024m, pp. 808-815)

Taiwan's economic growth rate increased, reaching 10.6% in 2010. GDP per capita in the same year reached $19,261 (IMF, 2017; Arslan, & Ayhan, 2018, p. 69; Dolanay, 2024m, pp. 808-815). The GDP growth rate for 2023 was 1.31% due to exports not being at the expected level.[2] (Dolanay, 2024m, pp. 808-815)

[2] https://www.statista.com>...>Economy

Taiwan Electronics and Information Industry

Taiwan's personal computer (PC) industry began in the late 1970s, when some Taiwanese companies began producing PC kits for local sales using microprocessors imported from Intel, Zilog, Texas Instruments, and others. This was particularly evident in the computer monitor sector, where technologies developed in previous TV production experience were successfully translated into monitor production. Taiwan's TV industry matured in the 1970s and consolidated into a few large manufacturers, including Tatung, Sampo, and Teco, by the early 1980s. All had close ties to Japanese technologies; Tatung licensed technology from Toshiba, Sampo from Sharp, and Teco from Mitsubishi. Electronics companies imported microprocessors from the United States and designed the circuit boards that formed the machines' basic operating units. Leveraging the experience gained in TV production, these TV manufacturers expanded into producing computer monitors for PCs or terminals for minicomputers. They often served as subcontractors for American or Japanese firms, engaging in fierce price competition. For example, Tatung produced monitors for IBM. (Chen, & Ku, 2002, pp. 2-13; Dolanay, 2024m, pp. 808-815)

Taiwan's Technology Policies

In terms of technology policies, the Taiwanese government published the "Guidelines for the Long-Term Development of Science" in 1959 and implemented the "National Science Development Plan (1969-1980)" in 1968. To more effectively commercialize technologies, the government launched the "Science and Technology Development Program" in 1979. The National Long-Term Development of Science Program, passed by the Legislative Yuan (Taiwan's parliament) in 1959, was the first technological policy program initiated by the government since 1949. This program aimed to lay a foundation for scientific development. Measures under such programs included personnel recruitment, promotion of research, development of research facilities, and the provision of special funding for scientific purposes. At the same time, to encourage the development of science-related approaches, the cabinet (Executive Yuan) established the "National Long-Term Science Development Council", the predecessor of the National Science Council, which later became the "National Science Council, Executive Yuan" in 1969. More importantly, with the establishment of the "National Science Development Plan" in 1968, Taiwan's science and technology (S&T) policy shifted from a focus on pure science and basic research to an emphasis on technological research to meet the needs of national development. (Li, 1988; Intarakumnerd, & Liu, 2019, pp. 120-121; Dolanay, 2024m, pp. 808-815)

The new direction in the 1980s meant an emphasis on high-technology and skill-intensive activities. Three areas in particular; information technology, electronics, and machinery were identified as strategic. Despite the openness, flexibility, and strategic vision of the Taiwanese economy, challenges arose in generating innovations that would impact the economy. The high proportion of small firms can be considered an obstacle to large R&D expenditures for high-technology enterprises. The strategic complement to R&D—skilled human resources—has also been a bottleneck in some sectors. However, there is one particular sector where Taiwan may have developed a mature capacity for innovation: the electronics sector. A discussion of the state of the electronics sector can serve as a prelude to a discussion of the ability to innovate (the ability to develop technology) in the economy as a whole. (Khan, 2004, p. 512; Dolanay, 2024m, pp. 808-815)

Historical Development of Taiwan's Automotive Industry

Taiwan's automotive industry has a long tradition. Yue Loong Motor Co., Ltd., the island's oldest vehicle

manufacturer, was founded in 1953. However, the development processes before and after 1985 were completely different. (Kawakami, 1995, p. 26; Dolanay, 2024m, pp. 808-815)

Since the early 1960s, the government regulated the establishment of new vehicle manufacturers, introduced a strict domestic component policy, and imposed high import tariffs. Before 1985, these protective policies contributed to the growth of the industry through import substitution. However, at the same time, protective measures led to oligopolisation of the market and created an inefficient environment in assemblers' production systems. (Kawakami, 1995, p. 26; Dolanay, 2024m, pp. 808-815)

Recognizing the failure of these policies in 1985, the government announced the "Automotive Industry Development Plan", a gradual liberalization policy that streamlined the regulation of new establishments and reduced import tariffs and the proportion of domestic components. The plan also encouraged the inflow of foreign capital and technology. (Kawakami, 1995, p. 27; Dolanay, 2024m, pp. 808-815)

However, intense competition suddenly emerged in the Taiwanese automotive industry after 1985. First, the number of vehicle manufacturers increased from seven in 1985 to eleven in 1993. Second, as import tariffs were lowered, the number of imported cars increased rapidly. The share of imported cars in total passenger car sales was 13% in 1985, 43% in 1989, and 33% in 1993. As competition intensified, the rate of production growth accelerated significantly. The number of cars produced on the island increased rapidly, from approximately 160,000 in 1985 to 400,000 in 1993. (Kawakami, 1995, p. 27; Dolanay, 2024m, pp. 808-815)

Taiwan's strategy in the automotive sector is to replicate its successful IT business model and achieve excellence in subcontracting, particularly for emerging market segments like autonomous driving. In fact, the first Level 4 autonomous concept vehicle was manufactured in Taiwan and unveiled at the end of 2018. (Global Fleet, 2019; Dolanay, 2024m, pp. 808-815)

To further advance its ambitions in autonomous driving technology, Taiwan has formed an alliance with Israel, a global leader in this field. In August, the country launched the Taiwan + Israel High-Tech Forum, with contributions from Israeli companies Mobileye, Check Point, and Karamba. The forum's goal is to create a completely new supply chain and collaboration paradigm for autonomous driving technology by combining Israel's innovation dynamics with Taiwan's IT manufacturing infrastructure. (Global Fleet, 2019; Dolanay, 2024m, pp. 808-815)

In total, Taiwan has approximately 3,000 automotive-related companies. Hotai Motor accounted for 28.8% of total automobiles sold in Taiwan, followed by China Motor Corporation (10.9%), Yulon Nissan Motor Corporation (9.6%), and Honda Taiwan (7.7%). Approximately 41.7% of vehicles sold in Taiwan were imported.[3] (Dolanay, 2024m, pp. 808-815)

Taiwan's automotive industry production figures provide an idea of the industry's current state (Dolanay, 2024m, pp. 808-815).

[3] https://en.wikipedia.org

Table 1

Taiwanese Automotive Industrial Production (Unit) Between 2001 and 2024

Years	Total Production
2000	372.613
2001	271.704
2002	333.699
2003	386.686
2004	430.814
2005	446.345
2006	303.221
2007	283.039
2008	182.974
2009	226.356
2010	303.456
2011	343.296
2012	339.038
2013	338.720
2014	379.223
2015	351.085
2016	309.531
2017	291.563
2018	253.241
2019	251.304
2020	245.615
2021	265.320
2022	261.263
2023	285.962
2024	275.156

Source: www.oica.net[4]

General Evaluation

Taiwan's electronics and IT industries are highly developed as a result of the importance placed on them. However, while Taiwan has failed to innovate in these two industries, it is collaborating to create innovations in the automotive industry. Therefore, it appears that the technological development capability has not yet been acquired. (Global Fleet, 2019; Dolanay, & Oğuztürk, 2018; Dolanay, 2022a; Dolanay, 2024m, pp. 808-815)

Total production in Taiwan's automotive industry increased from 271,704 units in 2001 to 446,345 units in 2005, but after fluctuating declines in the following years, it reached 285,962 units in 2023. This fluctuating production structure suggests path dependence. (Dolanay, 2024m, pp. 808-815)

Conclusion

Taiwan, whose automotive industry began to form relatively early for the Asian region in 1953, has not reached the expected level of development following a path-dependent development, implying a path-dependent technological development structure. We can say that Taiwan can only escape this path-dependent economic development by gaining the ability to develop technology and creating its own unique path.

[4] www.oica.net

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