

## Challenges facing Taiwan, the Asian Tiger

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*Rising as a “tiger economy” in Asia since the 1960s, Taiwan is recently struggling with a number of challenges. What will be the future for Taiwan?*

When Tsai Ing-wen, the candidate of the independence-seeking Democratic Progressive Party, became the first female president of the Republic of China (R.O.C.) on Taiwan (simply Taiwan hereafter) on January 16, 2016, she targeted to relieve Taiwan’s heavy economic reliance on the People’s Republic of China (P.R.C.)<sup>1</sup>. The historical discussions regarding the political status and independence of Taiwan heightened once again when the US president-elect Donald Trump accepted on December 2, 2016 the congratulatory phone call from President Tsai Ing-wen. This was the first official contact ever since the USA closed its embassy in Taiwan on January 1, 1979, a strategic move in line with developing good relations with the opening economy of the P.R.C. against possible military threats from the Soviet Union<sup>2</sup>. Increasing tensions between Taiwan and the P.R.C. could have a negative impact on the Taiwanese economy, which was highly dependent on trading with the P.R.C. At the same time, the innovation capabilities of the Taiwanese industries were not high value-adding, and as a result, Taiwan, which had a heavy reliance on manufacturing and assembly operations in the shrinking technology sectors like notebook personal computers (PCs), was facing the threat of losing these operations to low-cost nearby countries such as the P.R.C.<sup>3</sup>.

### Historical background and the economic miracle of Taiwan

Taiwan is a small island (35,980 square kilometers) located in East Asia, surrounded by the East China Sea, the Philippine Sea, the South China Sea, and the Taiwan Strait (see Exhibit 1). It had a population of 23,492,000 as of 2015, and the average annual growth in population decreased from 3.7% during 1956-1966 to 0.4% during 2000-2015<sup>4</sup>. The original inhabitants were of Malay Polynesian origin. The Portuguese occupied the island in 1590, and the Dutch ruled it from 1624 to 1662 before the Chinese Empire annexed it to mainland China. Taiwan stayed under the Chinese rule until 1895 when the Japanese invaded it. The Japanese rule ended in 1945, and the island came back to the government of China when Japan lost the Second World War.<sup>5</sup>

Following the end of the Chinese civil war with the victory of the Communists led by Mao Zedong, about two million well-educated and skilled Chinese nationalists belonging to the Kuomintang political party, led by General Chiang-kai Shek, fled to Taiwan and established the R.O.C. on Taiwan after their defeat by the communist party in the P.R.C.<sup>6</sup>. The Beijing governments on mainland P.R.C. claimed sovereignty over Taiwan and proposed during the 2000s a reincorporation into China under the “one country, two systems” policy like with Hong Kong and Macau<sup>7</sup>. Paradoxically, Taiwan held the “China Seat” in the United Nations General Assembly and Security Council until 1971, but as more countries in the world recognized it as an autonomous but not an independent, sovereign state, Taiwan abandoned its claim on the mainland in 1991<sup>8</sup>. The dispute on the sovereignty of Taiwan continues today, and this has limited the number of countries having official diplomatic relationships with Taiwan.

Despite the political tensions with the P.R.C., Taiwan succeeded to transform itself from a poor country with shortages in natural resources in the 1950s to a technology-oriented economy in the 1980s<sup>9</sup>. One contributor in this direction was the strong relationship with the USA. When P.R.C. supported North Korea at the Korean War, USA signed a Mutual Defense Treaty with Taiwan in 1954, committing to defend Taiwan against a possible military attack by the P.R.C.<sup>10</sup>. The USA saw Taiwan as both an “anti-communist bulwark” and an “unsinkable aircraft carrier” in East Asia and donated total 1.3 billion USD as aid between 1950 and 1967<sup>11</sup>. The monetary aid was important as initial financial capital for improving the infrastructure in the country. Taiwanese students went to the USA for higher education in engineering studies, and social connections developed to facilitate commerce between Taiwan and the USA. In addition, the USA became a role model for Taiwan in developing its private sector as it pushed the principles of free economy in return for the monetary aid<sup>12</sup>.

The Taiwanese government took the leadership in transforming the economy. Starting from 1958 the government adopted an outward-oriented policy and introduced export incentive schemes supporting initially the heavy and chemical industries but later shifting the priority to technology-intensive industries such as the semiconductor industry. As a result, exports increased with an annual compound growth rate of 16.3% from 1950 to 1973, and the ratio of manufactured goods among exports grew from 20% in 1960 to 90% in late 1970s<sup>13</sup>. It also tried to attract foreign direct investments especially from US companies. The miracle of Taiwan, however, was not state-led, rather it was led by the emergence of small and medium-sized enterprises (SMEs) owned by the

Taiwanese<sup>14</sup>. The government set the overall direction for economic development, prioritized economic stability, made the necessary reforms for liberalizing the economy, provided incentives for exports, made investments in infrastructural commons, but it did not interfere to business by any means other than investing in strategic industries that required high levels of investment<sup>15</sup>.

SMEs make up 98.5% of all companies in Taiwan contributing to 75-80% of all employment<sup>16</sup>. With a ratio of nearly one SME for every 10 people in the labor force, Taiwan ranks as a highly entrepreneurial location, especially compared with other Asian countries<sup>17</sup>. We can attribute this to the Chinese *guanxi* capitalism, which builds upon family ties and personal networks in the society<sup>18</sup>. Hence, different from Korea or Japan, SMEs have played a significant role in the economic miracle of Taiwan. In the early stages of economic development during the 1960s and the 1970s, SMEs were highly involved in export-led growth especially in labor-intensive sectors such as wood products, rubber products, apparels, plastic, and footwear<sup>19</sup>. The high number of SMEs meant high level of domestic competition. Taiwan's SMEs avoided, however, direct competition with each other by finding niches to specialize<sup>20</sup>. The flexibility of SMEs allowed them to adapt fast to changes in market conditions. This was good for the Taiwanese economy, which was highly dependent on exports and thus vulnerable to crisis in global markets. In the 1980s when the Ministry of Economic Affairs adopted the technology strategy for Taiwan, prioritizing and moving into high-tech industries, SMEs had little motivation to engage in innovation activities due to their resource limitations. Understanding the situation, the government stepped in by promoting cooperation between academic institutions and SMEs, attracting foreign multinational enterprises (MNEs) to set up R&D centers, and creating regional innovation centers<sup>21</sup>.

The semiconductor industry and its cluster has been the key sector in Taiwan's technology strategy. This strategy was about developing high-tech capabilities first in the public sector and then transferring them to the private sector<sup>22</sup>. For this purpose, the government established the Industrial Technology Research Institute (ITRI) in 1973. This public institute, which comprised of seven laboratories and three research centers, scanned global technological developments, imported and adapted relevant technologies, and finally engaged private firms to utilize the adapted technologies<sup>23</sup>. Through the technology adoption model of ITRI, Taiwanese firms have been quick followers of technology in high-tech industries. The government established in 1980 the Hsin-chu Science-based Industrial Park, modeled from the Silicon Valley, to become a home for the semiconductor industry. Located close to the National Tsing-Hua and National Chiao-Tung Universities, the science park grew rapidly thanks to the inflow of capital from the government<sup>24</sup>. The park enabled the clustering of strategic suppliers and lowered the entry barriers for SMEs by providing them superior infrastructure at low cost<sup>25</sup>. United Microelectronics Corporation (UMC) spun-off from ITRI in 1982 to commercialize adapted technologies. ITRI also formed a joint venture with Philips, the Dutch MNE, to establish in 1985 the Taiwan Semiconductor Manufacturing Corporation (TSMC). Acer made a joint venture with Texas Instruments in 1992 to manufacture Taiwan's first dynamic random-access memories (DRAMs). In 2003, Intel opened its innovation center in capital Taipei's financial district, and Taiwan became the mecca of the computer industry making two-thirds of the world's notebook PCs and desktop PC components<sup>26</sup>. The government offered incentives to attract Taiwanese engineers who were educated in the USA to meet the need for increasing production levels and R&D activities<sup>27</sup>.

Besides the semiconductor cluster, Taiwan is also the home for a number of excellent clusters like precision machinery, luxury yachts, orchids and saxophones<sup>28</sup>. The Taiwanese precision machinery cluster, located in Central Taiwan in the county of Taichung and employing ca. 500,000 people, is the world's fourth largest exporter of machine tools after Japan, Germany, and Italy<sup>29</sup>. The luxury yacht cluster, located in the port city of Kaohsiung, is a global manufacturer of custom-made, luxury yachts with annual sales of 200 million USD, exporting to customers in the USA, Japan, Australia and the EU<sup>30</sup>. Exporting about 80 million orchids per year, Taiwan delivers one out of every second orchid sold in the world<sup>31</sup>. The orchid cluster, located in the Chiayi and Tainan counties, combines technology and breeding techniques in order to rapidly reproduce orchids to stay ahead of competition<sup>32</sup>. The town of Houli hosts Taiwan's saxophone cluster, which accounts for one third of the world's production: Taiwanese saxophones, which are hand-made in small workshops, are reputable for their refined tone quality<sup>33</sup>.

Taiwan's small geographic size is a strength for its clusters: specialized suppliers, universities and R&D centers are accessible within a few hours' drive<sup>34</sup>. Experienced and skilled workers, flexibility to customize products, aiming for high quality by constantly developing the products, as well as strong R&D capabilities with close cooperation between universities and firms are the strengths of Taiwan's world-class clusters<sup>35</sup>.

### **The Taiwanese economy in 2015-2016 and its challenges**

According to the World Economic Forum (WEF) Taiwan ranked as the world's 15<sup>th</sup> most competitive economy in 2016<sup>36</sup> (see Exhibit 2 for a comparison against selected Asian economies). This was better than the majority of Asian countries; only Singapore (2<sup>nd</sup>), Japan (6<sup>th</sup>), and Hong Kong SAR (7<sup>th</sup>) ranked higher. Taiwan was the world's 26<sup>th</sup> largest economy in 2015 with a gross domestic product (GDP) of 523,009 million USD (22,263 USD per capita), and it was growing at a rate of 3.4% per annum during 2010-2015<sup>37</sup>. The GDP of Taiwan was composed of exports (69.9%), imports (59.6%), domestic household consumption (53.3%), gross capital

formation (21.8%), and government consumption (14.5%)<sup>38</sup>. The unemployment rate was low at 3.8%, but the labor-force participation rate was also low at 58.65%<sup>39</sup>. Taiwan's exports in 2015 valued at 285,344 million USD: the main export items were information and communication products (29.4%) and electronics products (25.5%)<sup>40</sup>, both of which required capital-intensive and high-tech factor inputs. 73.1% of the exports went to Asia, and the main export destinations were P.R.C. (27.1%), Hong Kong SAR (13.7%), USA (12.1%), Japan (6.9%), and Singapore (6.1%)<sup>41</sup>. Taiwan's imports were 237,219 million USD in 2015: the main import items were electronics, machinery, crude petroleum, computers, coal, organic chemicals and metals. 67.6% of the imports was from Asian countries, and the main import countries were P.R.C. (27.6%), Japan (16.4%), and USA (12.3%)<sup>42</sup>. Foreign trade with the P.R.C. increased significantly after both countries joined the World Trade Organization in early 2002, making the P.R.C. Taiwan's leading trading partner. Taiwan is also a member of the Asia-Pacific Economic Cooperation (APEC) and the Asian Development Bank. Inward foreign direct investments in 2015 amounted to 2,415 million USD, and outward foreign direct investments in the same year totaled 14,773 million USD<sup>43</sup>.

Hosting some of the world's leading Taiwanese-origin technology companies like Acer, Asus, HTC, Foxconn and TSMC, Taiwan is a competitive location in information and communication technologies and electronics industry. The country ranked as the 10<sup>th</sup> most innovative location in the world by Bloomberg, and the first in terms of holding the highest number of patents registered in the USA per one million people<sup>44</sup>. It has been hosting Computex, the biggest technology trade fair of Asia, for 35 years<sup>45</sup>. As WEF researcher Thierry Geiger said, "*Taiwan is an innovation powerhouse and should endeavor to maintain the status by training and attracting talents at the core of the innovation ecosystem*"<sup>46</sup>.

Despite the good statistics and recognitions, Taiwan is facing a number of challenges. Based on the WEF's executive opinion survey, political instability and the insufficient capacity to innovate top the list of most problematic factors for doing business in Taiwan as perceived by Taiwanese executives (see exhibit 3 for the full list).

The political status of Taiwan is complex. As the official media of the P.R.C. call Taiwan "China's Taiwan Province", it is difficult for Taiwan to develop international relations without the consent of the P.R.C. As a result, Taiwan has been isolated from entering international trade agreements. For example, it applied to enter the Trans-Pacific Partnership trade deal, but the partner countries only listed it as an interested country<sup>47</sup>. The new President envisioned deepening bilateral relationships through investments with the members of the Association of Southeast Asia Nations (ASEAN) and India, as well as continuing the talks regarding the Trade and Investment Framework Agreement with the USA<sup>48</sup>. The situation is also complex because of Taiwan's high economic dependence on the P.R.C. market. Having a large Chinese population with connections to the mainland and the restrictions on trade agreements makes the P.R.C. by far Taiwan's most important economic partner. As for the first time the independence-seeking Democratic Progressive Party is in power, President Tsai Ing-wen faces the challenge of fulfilling the wish of the party's supporters in the reality of the dependences on the P.R.C. She is wondering how the P.R.C. government will react to Taiwan's intentions to connect with the rest of the world and how that will affect the Taiwanese economy. Sun Yang-ming, a former vice-president of the Cross-Strait Interflow Prospect Foundation, expressed worries by saying "*I am afraid our economy might turn even worse in the next two years, given the plan to cut reliance on the mainland, and besides, even if the new measure works, it will take at least a couple of years to show effects. Can the general public wait?*"<sup>49</sup>

The Taiwanese economy has transformed successfully under the guidance of the technology strategy of the government through transferring technology by state-owned research institutes and commercializing it to highly entrepreneurial private firms. As R&D, innovations and patenting new technologies have been at the core of this strategy, Taiwan tops the world in terms of the number of patents registered in the USA per capita<sup>50</sup>. However, the high number of patents fail to contribute to Taiwan's competitiveness because only a very small percentage of them are high-impact patents; in other words, Taiwanese patents mostly incrementally develop the existing ideas of others, hence, they are not genuine innovations creating completely new products<sup>51</sup>. "*We do have innovations in the production process, but not in the final product, so the value added is quite limited,*" said Chung-Ming Kuan, the minister of the Council for Economic Planning and Development<sup>52</sup>. Cyrus C.Y. Chu, minister of the National Science Council, also argued: "*There has been no new emerging industry in Taiwan in the last thirty years. Rather Taiwan is stuck with following Japanese abandoned technology sectors like semiconductors and electronics*"<sup>53</sup>. It will be interesting to see how long Taiwanese firms can succeed as followers in the face of rising competition from neighboring low-cost rivals. Heavy reliance on a small number of technology sectors, which are declining will be another challenge.

What strategies should the new President adopt in tackling the political and economic challenges of Taiwan?

**Exhibit 1.** The map of Taiwan and its neighbors



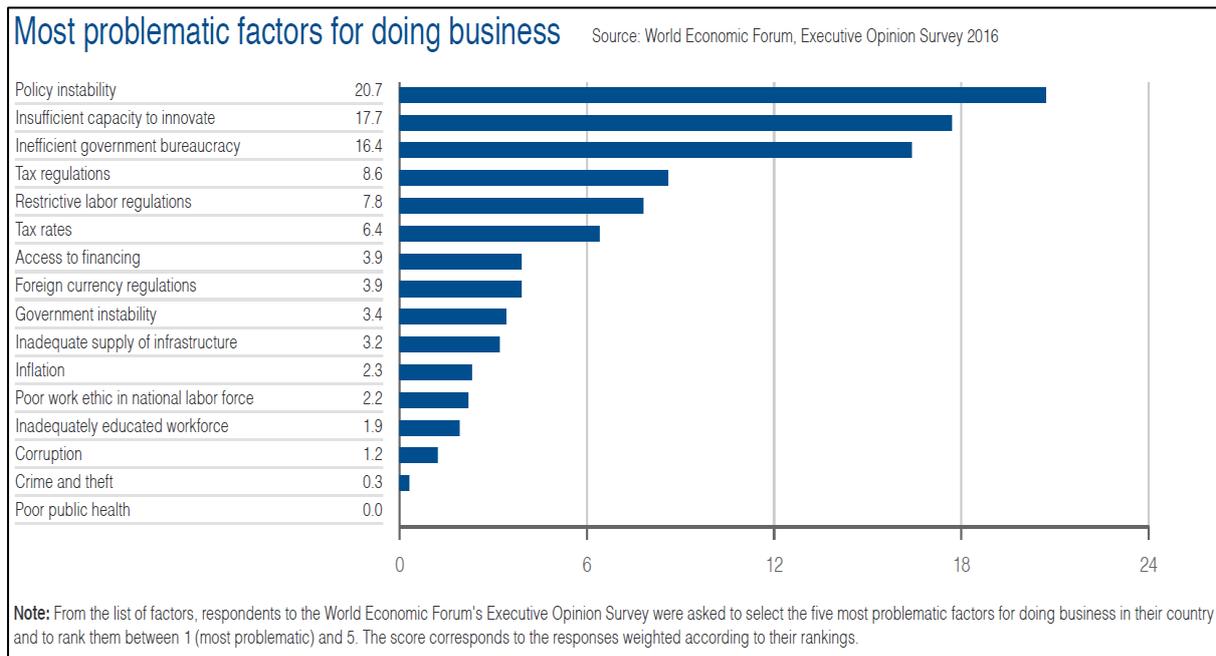
Source: Harvard University Center for Geographic Analysis

**Exhibit 2.** Competitiveness of Taiwan and selected Asian economies

Global Competitiveness Index			Sub-indexes ranking		
Country	Score (1-7)	Ranking	Basic requirements	Efficiency enhancers	Innovation and sophistication factors
Singapore	5.72	2	1	2	12
Japan	5.48	8	22	10	4
Hong Kong SAR	5.48	9	3	3	23
<b>Taiwan</b>	<b>5.28</b>	<b>14</b>	<b>14</b>	<b>16</b>	<b>17</b>
Malaysia	5.16	25	26	24	20
China	4.95	28	30	30	29
Vietnam	4.31	60	73	65	84

Source: World Economic Forum

**Exhibit 3.** Most problematic factors for doing business in Taiwan



Source: World Economic Forum, Executive Opinion Survey 2016

## Endnotes

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